

Proposed Changes to the DIRA and Related Regulations: An Economic Assessment of the Domestic Market Implications



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List of abbreviations

DIRA	Dairy Industry Restructuring Act 2001 and Dairy Industry Restructuring Amendment Act 2012
DIRA milk price	FGMP plus reasonable transport costs
EBIT	Earnings before interest and tax
FBNZ	Fonterra Brands (NZ) Limited
FGMP	Farm gate milk price
Fonterra	Fonterra Co-Operative Group Limited
kgMS	Kilograms of milk solids. 1 litre milk is comprised of approximately 8.5% milk solids. To approximately convert 1 kgMS to the equivalent litres of milk, multiply it by 12.
Kiwi	Kiwi Co-Operative Dairies Limited
IPs	Independent processors
MPI	Ministry for Primary Industries
NZDG	New Zealand Co-Operative Dairy Company Limited
Raw Milk Regulations	Dairy Industry Restructuring (Raw Milk) Regulations 2001 and Dairy Industry Restructuring (Raw Milk) Regulations 2012
UHT milk	Ultra heat treatment milk
WMP	Whole milk powder

1 Executive summary and conclusions

TDB Advisory Ltd (TDB), assisted by Pat Duignan, has been commissioned by Goodman Fielder Limited (Goodman Fielder) to provide an independent economic assessment of the implications of the changes proposed by the Ministry for Primary Industries (MPI) to the Dairy Industry Restructuring Act (DIRA) and Dairy Industry Restructuring (Raw Milk) Regulations 2012 (the Raw Milk Regulations).¹ In our assessment we focus in particular on the implications for New Zealand's factory gate and domestic retail markets for dairy products.

The New Zealand dairy industry is characterised by:

- highly seasonal patterns of milk production. New Zealand's milk production in the 2016 season was 1.86 billion kilograms of milk solids (kgMS), with a peak of 263 million kgMS in October 2015 and a trough of 13 million kgMS in June 2015²; and
- a very small domestic market, with around 95% of dairy products exported.

In 2001, the merger of New Zealand's two largest dairy processors, New Zealand Co-Operative Dairy Company Limited (NZDG) and Kiwi Co-Operative Dairies Limited (Kiwi), and the New Zealand Dairy Board (NZDB) was facilitated under special legislation (the Dairy Industry Restructuring Act or DIRA) that permitted the merger to bypass the normal protections provided to New Zealand consumers by the Commerce Act and the Commerce Commission (the Commerce Commission having reached the preliminary view that the merger was not in the interests of the New Zealand public). The merger resulted in New Zealand having a unified dairy exporter, Fonterra Co-Operative Group Limited (Fonterra), competing on international markets. But the merger also resulted in Fonterra having a near monopsony (single buyer) position in the New Zealand farm gate market (buying 95% of New Zealand's milk production) and a dominant position in the domestic market for dairy products.

At the time of the merger, both NZDG and Kiwi had domestic consumer businesses. Fonterra's resultant dominant position in domestic markets was ameliorated somewhat by the requirement that NZDG's domestic consumer business, New Zealand Dairy Foods (NZDF), be divested and by regulations that gave NZDF's (eventual) new owner, Goodman Fielder, guaranteed access to 250 million litres of raw milk per annum from Fonterra at a regulated price while the DIRA remained in place.

In its March 2016 review of the state of competition in the New Zealand dairy industry, the Commerce Commission concluded that there is insufficient competition at both the farm gate and factory gate markets.

The Commission estimated that if the DIRA regulations requiring Fonterra to supply milk at the regulated milk price were not in place, Fonterra would be able to use its dominant position to increase the factory gate raw milk price by around 25%, leading to a transfer of wealth from New Zealand consumers of dairy products of between \$51 million and \$90 million per annum and an efficiency

¹ MPI, "Discussion Document, Proposed changes to the Dairy Industry Restructuring Act 2001 and Dairy Industry Restructuring (Raw Milk) Regulations 2012", May 2016, p.15.

² Dairy Companies Association of NZ.

(deadweight) loss to the economy as a whole of around \$6 million per annum.³ The Commission noted that these estimates were probably conservative.

Despite the protections afforded to New Zealand dairy product consumers by the DIRA regulations, the Ministry for Primary Industry's Discussion Document of May 2016 proposes staged reductions in the volumes of regulated raw milk that Fonterra is required to provide domestic processors, with the volume reduced by 60% by 2020/21. As stated in the Discussion Document, it is seen that this reduction *"would gradually decrease the reliance of domestic processors on the raw milk regulations and encourage processors like Goodman Fielder to look to either the factory gate or farm gate markets for their supply of raw milk."*⁴

In TDB's view, the proposal to reduce the requirement for Fonterra to supply milk to the domestic market at a regulated price could have significant adverse impacts on domestic consumers and domestic economic welfare. It is likely to increase Goodman Fielder's milk cost significantly owing to, amongst other things, the seasonality of the New Zealand milk supply curve and the unattractiveness of the domestic market owing to its size relative to the export market for New Zealand processors.

While under the proposed regulatory changes more competition in the farm gate market may result if Goodman Fielder loses access to Fonterra's raw milk post 2021 (i.e., once Goodman Fielder's current contract expires), we consider it highly unlikely that a sufficiently deep factory gate market will develop. Most if not all processors will prefer to process their own milk rather than divert it and sell to anyone else unless the purchaser pays a substantial premium. Processors will prefer to use their own capacity (which will be sized for the peak milk supply from their contracted farm suppliers) and build their own businesses rather than supply their raw materials to someone else. The Commerce Commission's 2016 review was not required to express an opinion on the likelihood of a deep factory gate market developing. However, the Commission's 2011 report "Consideration of whether to initiate a Commerce Act Part 4 Inquiry into milk prices" was required to do so and stated *"Other processors only supply milk at times when they cannot process it themselves. We estimate that Fonterra accounts for [] of the supply of raw milk to the factory gate in New Zealand. In terms of potential competition, we consider it is not likely that alternative suppliers of sizeable, consistent quantities of milk throughout the year to the factory gate will develop in the medium-term."*⁵

In summary, in TDB's view the proposal to reduce the requirements on Fonterra to supply milk to the domestic market is risky and as the Commerce Commission advises would likely lead:

- to an increase in factory gate milk prices and, if the higher costs Goodman Fielder faces are able to be passed on to the consumer, to higher retail prices for milk and other dairy products. In line with the Commerce Commission's analysis, TDB estimates the increase in Goodman Fielder's milk costs could be around [REDACTED] / kgMS (approximately [REDACTED]% based on the average farm gate milk price for last ten years of \$5.89) and the increase in average

³ Commerce Commission, "Review of the state of competition in the New Zealand Dairy Industry", March 2016, p. 129, footnote 327. ("Commerce Commission (2016)").

⁴ MPI, op. cit., p.15.

⁵ Commerce Commission "Consideration of whether to initiate a Commerce Act Part 4 Inquiry into milk prices", August 2011, paras 158 &159.

retail prices for Goodman Fielder's dairy products could be around \$0.10⁶ / litre including GST (approximately 6%)⁷; or

- if the higher costs Goodman Fielder faces are not able to be passed to retail consumers, to less rather than more competition in domestic retail markets as Fonterra Brands (NZ) Limited (FBNZ) increases its market share of the domestic markets at the expense of Goodman Fielder and other potential competitors.

Given the dominant position Fonterra has been granted in the New Zealand dairy industry under the DIRA and the absence of any real prospect of a competing supply of milk at relevant scale for a domestic market orientated processor, TDB considers there is a strong case for ongoing regulation of Fonterra's operations in the domestic dairy products market to protect the interests of consumers until a vigorous, competitive and innovative domestic market has developed.

In particular, given Fonterra's dominant position, there is a need to maintain, through regulation, an obligation on Fonterra to supply raw milk to suppliers of dairy products to the domestic dairy market at a regulated price. There are a number of options for such regulations. These include:

- i. retaining the status quo requiring Fonterra to supply Goodman Fielder 250 million litres of raw milk per annum for the domestic market post 2021, regardless of any changes in DIRA relating to the export market; or
- ii. catering for the growth in the domestic dairy market by linking Goodman Fielder's entitlement to the growth in the domestic dairy products market (i.e., expressing Goodman Fielder's entitlement as a % of the domestic dairy market); or
- iii. requiring Fonterra to supply raw milk for 100% of the domestic market at a regulated price to any applicant (including FBNZ), with no special regulatory entitlement for Goodman Fielder or any other participant.

Under any of the above regimes, restrictions or on-going audits may be required to ensure that takers of raw milk from Fonterra supply the domestic market only (and do not export the milk).

In TDB's view the third option above has the potential to lead over time to a more innovative and competitive dairy products market. It allows successful niche participants to grow to scale without the associated costs of an ingredient business to balance milk supply. It provides competitive neutrality amongst current and potential buyers of raw milk at the factory gate. It allows Fonterra to capture the economies of scale in collecting and processing milk for the international market while not penalising domestic consumers of dairy products. Careful evaluation of all the options will be required to minimise the potential for unintended consequences from changes to the DIRA regulations and to foster a market that is in the best long-term interests of New Zealand consumers and the economy as a whole.

⁶ Conversion of increase in the FGMP to an increase in the retail price was calculated by GF.

⁷ This [REDACTED]% assumes that Goodman Fielder has access to 100 million litres of DIRA milk, being 40% of its total requirement. The 25% increase finding by the Commerce Commission (p.13) is on the basis of there being no DIRA milk.

2 History / context

New Zealand's largest dairy processor, Fonterra, was established in 2001 from an amalgamation of the two largest dairy co-operatives, New Zealand Co-Operative Dairy Company Limited (NZDG) and Kiwi Co-Operative Dairies Limited (Kiwi), and the New Zealand Dairy Board. The industry sought to realise efficiencies of scale and scope in the collection and processing of farmers' milk and to compete in international dairy markets to the overall benefit of New Zealand.

Upon its creation, Fonterra collected approximately 96 percent of New Zealand's raw milk production. Allowing the creation of such a dominant firm had competition policy implications. In particular, a dominant firm could have:

- the incentives and ability to create barriers for farmer suppliers to prevent them switching to potential competitors;
- the incentives and ability to impede entry into the farm gate market by new dairy processors;
- the incentives and ability to set wholesale prices in downstream domestic dairy markets; and
- fewer incentives to drive cost efficiencies and invest in innovation, as it could use its market position to retain farmer suppliers even if they were dissatisfied with the company's performance.

DIRA authorised the amalgamation after the Commerce Commission's draft determination was that the merger would result in a strengthening of a dominant position in each of the relevant markets.

As the amalgamation resulted in an entity with a substantial degree of market power in a number of key domestic New Zealand dairy markets, DIRA was also designed and implemented to mitigate the risks of Fonterra's market power. DIRA allows for contestability in the New Zealand raw milk market and provides for access to other dairy goods or services supplied by Fonterra to be regulated if necessary.

Regulations made under the Dairy Industry Restructuring (Raw Milk) Regulations 2001 (and as amended and re-enacted in 2012) contain further provisions to facilitate the entrance of independent processors to New Zealand dairy markets and enable them to obtain the raw milk necessary for them to compete in dairy markets.

Fonterra must supply, at a regulated price, up to 50 million litres of raw milk per season to any independent processor and up to 250 million litres per season to Goodman Fielder. The price of regulated raw milk is the farm gate base milk price (FGMP) for that season plus reasonable transport costs.

The DIRA provisions work in parallel with and are supplementary to the general competition provisions of the Commerce Act 1986.

The reference to a substantial degree of market power in a number of key domestic New Zealand markets was a reference to the fact that both NZDG and Kiwi had substantial domestic New Zealand consumer businesses.

A condition of the amalgamation was that Fonterra had to divest the domestic business of NZDG, being NZDF, which is, albeit with some material changes over the years, the business now owned by Goodman Fielder.

2.1 New Zealand dairy industry

Around 95% of New Zealand dairy products are exported. In other words, New Zealand produces twenty times more dairy products than the domestic market can consume. The relative size of the domestic market makes it relatively unattractive to new independent processors who could potentially participate in a factory gate market because they would and do naturally tend to focus on the export market.

2.2 Goodman Fielder's dairy business in New Zealand

DIRA currently gives Goodman Fielder access to 250 million litres of milk per season. The overwhelming bulk of this DIRA milk supplied to Goodman Fielder goes into the fresh milk market in New Zealand. A small proportion of it goes into the manufacture of specialty cheeses at Goodman Fielder's Puhoi factory north of Auckland.

Goodman Fielder has three milk processing sites – one at Longburn and one in Puhoi in the North Island and one in Christchurch in the South Island. As well as producing fresh milk for sale under its own brands, Goodman Fielder also produces private label fresh milk for the supermarkets and Fonterra-branded fresh milk for Fonterra in Christchurch.

The supermarkets do not meet the definition of an independent processor under DIRA and therefore do not have any access to DIRA milk.

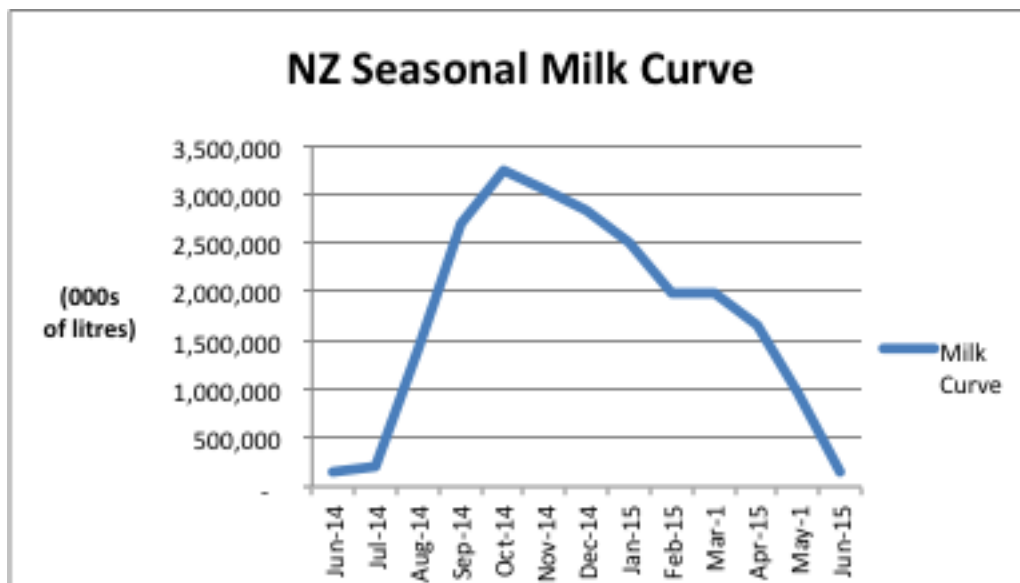
2.3 The challenges of the domestic fresh milk, short-life market

Demand for fresh milk in the domestic market does not match the seasonal milk supply curve of the industry.

Figure 1 below shows the seasonal supply curve using DCANZ⁸ monthly milk collection data for the 2015 milk season.

⁸ Dairy Companies Association of New Zealand.

Figure 1: New Zealand milk curve

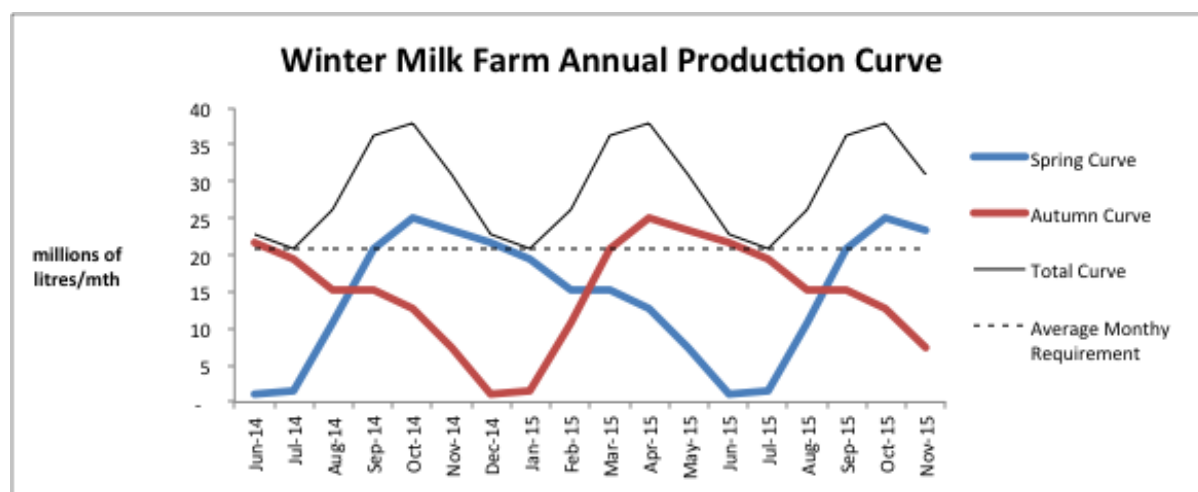


The area under the curve equals New Zealand's total milk production in the 12 months ended 31 May 2015. The seasonal curve is based predominantly on a spring calving regime (to match grass growth). It is an average milk curve in the sense that seasonal milk curves vary throughout the country because of, amongst other things, different climatic conditions and different farming practices. It also includes Fonterra's winter milk collections and it uses monthly data (rather than daily data). Therefore, it is a flatter curve than Goodman Fielder would expect to face.

The vast majority of Goodman Fielder's milk goes into the domestic market, where demand is relatively constant throughout the year rather than being seasonal in nature. Therefore, there is a requirement to incentivise farmers to alter their farming practices and produce winter milk so that enough fresh milk can be procured all year around. Please refer to Annex 1 – Winter Milk.

Figure 2 below uses the same DCANZ information as used above to create a Goodman Fielder milk curve.

Figure 2: Winter milk farm annual production curve sized to Goodman Fielder



The blue curve is proportionally exactly the same as the DCANZ curve in Figure 1 except that it has been sized to fit Goodman Fielder’s annual fresh milk requirements. The red curve is the blue curve moved forward by six months, being an illustration of a seasonal curve based on Autumn calving. The two curves together illustrate the milk production pattern of a “winter milker”, that is a farmer who splits the herd in two with half calving in Autumn and the other half calving in Spring.

The dotted line is the minimum amount of milk required by Goodman Fielder in any month throughout the year being 21 million litres.

The black curve is the sum of the Spring and Autumn curves. At its minimum it equals the minimum required in any month throughout the year.

All the milk below the black curve and above the dotted line is milk in excess of Goodman Fielder’s requirements.

Figure 2 demonstrates that in order for Goodman Fielder to be able to supply a minimum of 21 million litres per month (or 250 million litres per annum), it would need to recruit 350 million litres⁹, 40% more than is actually required¹⁰.

Excess milk is normally handled by creating long-life products where the date of manufacture is less important. These products are then sold domestically or exported. Such products include bulk cheese, bulk butter, UHT milk, and a range of milk powders.

Given the seasonal milk curve, it is no surprise then that the original two large pre-merger domestic businesses were subsidiaries of NZDG and Kiwi. Both NZDG and Kiwi had large ingredient businesses

⁹ This figure does not take into consideration the 100 million litres DIRA milk that MPI currently proposes Goodman Fielder should continue to have access to.

¹⁰ Figure 2 represents an average production curve. There will be variations in the detail with some farmers splitting their herds 60/40 Spring / Autumn and other farmers calving 100% in Autumn.

to funnel their excess milk through to manufacture and sell as long-life products (through the New Zealand Dairy Board at the time).

The important point is that participants in the New Zealand dairy industry can have an ingredients business without a domestic business but it is difficult to have a domestic business without an ingredients business (or access to one).

Goodman Fielder does not have an ingredients business and does not have any capacity to manage this excess milk.

Within that annual milk production pattern, there is a need to match supply and demand on a daily basis. In round numbers, Goodman Fielder needs on average approximately 685,000 litres of milk per day. The daily variation is plus or minus 200,000 litres per day (almost 30%) across its three delivery sites. This daily variation is currently absorbed by Fonterra, which has a processing capacity of almost 100,000,000 litres per day.

If Fonterra was unable to absorb this variation, Goodman Fielder would either have to build its own long-life manufacturing plant or rent capacity from another independent processor (or equivalently negotiate a supply agreement with an independent processor in which the independent processor absorbed the variation with that cost being reflected in the price under the agreement).

3 Current structure of the retail market

Fresh white milk, cheese, yoghurt and butter account for approximately 80% of the volume in the New Zealand consumer dairy market. The balance of the market is comprised of products such as flavoured milks, dairy desserts, cream cheese, sour cream and specialty cheese.

The three key channels to market are grocery (supermarkets), route (petrol stations, dairies, small convenience stores) and food service (cafés, catering companies, hotels, restaurants, institutions and the like). Grocery is the largest of these channels with sales through grocery estimated at approximately 60% of the total volume. Market share data is only available for the grocery channel.

FBNZ is the dominant player in the New Zealand consumer dairy market with a full range of dairy products and market leadership across all channels. Goodman Fielder is number two. The rest of the consumer dairy market is comprised of smaller players such as Fresha Valley and Green Valley (milk), Dairyworks (cheese), Lion (yoghurt), The Collective (yoghurt), and Lewis Road (milk, butter, and ice-cream) along with a number of players importing specialty dairy products.

It is important to note that while FBNZ, Goodman Fielder and others manufacture a wide range of dairy products using raw milk, block cheese and butter is manufactured for the entire New Zealand domestic consumer market by Fonterra, who on-sell these products to FBNZ, Goodman Fielder and others, either in bulk form or ready packed into consumer formats.

FBNZ has around 25% by volume of branded dairy market share in the grocery channel and Goodman Fielder has around 11.5%. The smaller players combined have about 12%. The balance is made up of supermarket house branded fresh white milk, cheese and butter - around 50% of the total dairy

market – with Fonterra/FBNZ being the largest manufacturer of supermarket house branded dairy product in New Zealand.

FBNZ, Goodman Fielder, and Fresha Valley are the largest manufacturers of supermarket house brand fresh white milk. Fonterra/FBNZ and Dairyworks dominate the supply of supermarket brand cheese (Dairyworks buys cheddar cheese from Fonterra, which it then cuts/wraps/grates and markets under its own brands, while FBNZ and Goodman Fielder purchase cheese from Fonterra that has already undergone secondary processing into consumer formats). Fonterra is practically the only manufacturer of supermarket house brand butter. Overall, Fonterra/FBNZ holds well over 50% of the share of the New Zealand supermarket house branded dairy manufacturing business.

FBNZ holds the branded and supermarket house brand milk contract for [REDACTED]. Goodman Fielder holds the supermarket house brand contract for [REDACTED]. The [REDACTED] supermarket house brand milk contract is held by Goodman Fielder and Fresha Valley (a smaller player in the market).

FBNZ holds an estimated [REDACTED]% share by volume of the Route business with Goodman Fielder at [REDACTED]% share and the balance being made up by Green Valley and others.¹¹

FBNZ holds an estimated [REDACTED]% share by volume of the Foodservice business with Goodman Fielder sitting at about [REDACTED]% and the balance held by other players.¹²

FBNZ has been more successful than Goodman Fielder in the dairy market in recent years. Since 2008 FBNZ has maintained a 25% share by volume of the branded dairy market through the grocery channel, while Goodman Fielder has dropped from 16% to 11.5% over the same time period. This fall in market share has largely been due to a reduction in share of consumer block cheese and butter, which are sourced from Fonterra at a non-regulated price.

The lack of market share data for any channel other than the grocery sector limits the ability to draw firm conclusions with respect to how the retail market for dairy in New Zealand has developed since the establishment of Fonterra.

In the grocery sector the market share data indicates that the combined share of the private label brands, FBNZ, and Goodman Fielder has decreased from 95.3% to 87.3% in the last 16 years. The market share of the private label brands has increased from 32.4% to 52.7% at the expense of both FBNZ and Goodman Fielder.

The combined market share of all the other participants in the grocery sector has increased from 4.7% to 12.7%.

If the grocery sector can be used as a proxy for the total market, we would conclude that there is more competition in the sector and therefore that DIRA has been successful in preventing FBNZ from exercising its market dominance for its own purpose.

¹¹ Data from [REDACTED].

¹² Internal Goodman Fielder market analysis.

4 The current DIRA regulations

In June 2015, the Minister for Primary Industries commissioned the Commerce Commission to report on the state of competition in the New Zealand dairy industry. The terms of reference for that report helpfully describe the purpose of the DIRA, from the perspective of policy makers, and the description is summarised below.

The creation of Fonterra resulted in a lessening of competition in the New Zealand dairy industry. As a result, DIRA imposed regulatory requirements on Fonterra to promote contestability and efficiency in New Zealand dairy markets. Specifically, s4(f) of DIRA stipulates the purpose of the DIRA regulatory requirements is to *“promote the efficient operation of dairy markets in New Zealand by regulating the activities of Fonterra to ensure New Zealand markets for dairy goods and services are contestable”*. The DIRA regulatory requirements are aimed at the following two dairy markets:

- the market for milk at the farm gate, which is a market for the purchase of raw milk from farmers. Dairy processors compete with each other to purchase raw milk from farmers and this rivalry is beneficial to dairy farmers; and
- the factory gate milk market, which is a wholesale market where dairy processors potentially trade raw milk among themselves prior to processing. There is demand at the wholesale level for unprocessed raw milk, from:
 - dairy processors who are in the early stages of their operations looking to supplement their own inputs of raw milk to improve the capacity utilisation of their processing plants; and
 - food and beverage manufacturers, which require unprocessed raw milk as an input for their manufacturing processes.

To ensure the contestability of the farm gate milk market, the DIRA contains ‘open entry and exit’ provisions, as well as the farm gate milk price monitoring regime (as set out in Subparts 5 and 5A of Part 2 of DIRA).

The requirement for Fonterra to on sell a small proportion of its raw milk to other dairy processors (as specified in the Raw Milk Regulations) further promotes the contestability of the farm gate milk market by providing newly established dairy processors with temporary access to wholesale raw milk supply. The Raw Milk Regulations also provide access to wholesale raw milk for food and beverage manufacturers that choose not to have access to their own farm gate milk supply.

The DIRA regulatory requirements were designed to be transitional in nature. The regulatory regime is designed to expire if and when the New Zealand dairy markets are considered to be sufficiently competitive, so that industry-specific regulation is no longer required over and above the normal application of general competition law.

5 Effects of DIRA regulations to date

The Commerce Commission published its review of the state of competition in the dairy industry in March 2016.

The Commission reports that it considers competition in the factory gate market is very limited. In the Commission's view, without DIRA and the Raw Milk Regulations, Fonterra would be able to increase the price of raw milk it sells to other domestic processors, referred to in the Commission and this report as independent processors (IPs). This increase in the price of raw milk would likely result in higher prices for dairy products in downstream domestic markets.

The Commission also considers that Fonterra has buyer-side market power in the purchase of raw milk at the farm gate. Buyer-side market power gives Fonterra the ability to depress the price paid to farmer suppliers for raw milk below competitive levels. However, the Commission does not think that Fonterra would exercise this market power against its farmers despite its ability to do so because Fonterra is a predominantly supplier-owned co-operative.

The Commission further considers that Fonterra may have incentives to restrict exit and re-entry of farmer suppliers without DIRA. Any such restriction of farmer suppliers may increase the barriers to entry to the farm gate market by new IPs or restrict expansion by existing IPs seeking to obtain raw milk from those farmer suppliers. The Commission considers that entry and expansion of IPs in the farm gate market may assist with the development of competition in the factory gate market. Given its concern with the lack of competition in the factory gate market, the Commission does not recommend removing the open entry and exit provisions at this time.

The factory gate market is defined by the Commission as the market in which Fonterra (and occasionally others including other processors) supply raw milk they have collected from farmers to other processors and some food and beverage manufacturers. Obviously a processor can do this economically only if it already collects milk in the zone around the purchaser's plant.

As factory gate raw milk is supplied directly from farms, not from the suppliers' processing plants, a processor supplies raw milk to other processors that it already collects in that milk catchment zone.

The Commission comments that *"Factory gate raw milk supply is therefore similar to a collection service as this milk is not processed by the supplier."*¹³ This Commission comment does not, however, acknowledge that, in addition to collection as such, a processor supplying the factory gate market must contract with farmers for additional supply or divert milk that would otherwise be processed in its own plants. This aspect is important in analysing the prospects for a deep factory gate market to develop. That issue is considered in depth in the next section of this report.

The Commission reports that *"the factory gate market is very small compared with the farm gate market"*¹⁴ but the Commission's data on the actual size of the market is redacted.

Given the current state of the factory gate market the Commission concludes that without the raw milk regulations, the price that Fonterra charges for DIRA milk would be likely to rise significantly. The Commission's overall analysis is usefully summarised in footnote 226 of its report, which reads:

¹³ Commerce Commission (2016) para 4.125.

¹⁴ Ibid para 4.126.

“NERA contends that Fonterra is unlikely to exercise market power at the factory gate because the volumes sold at the factory gate are small relative to the total capacity of [own-source] IPs. As such, it would be easy for own-source IPs to undermine an exercise of market power by Fonterra by selling the milk themselves. (NERA Economic Consulting for Fonterra "Assessment of Competition in Raw Milk Markets and Costs and Benefits of the DIRA provisions" 17 August 2015, p.9.) This, however, does not mesh with our view that the current market price for non-DIRA milk reflects market power and that this has not resulted in IPs competing the price down to competitive levels despite the fact that volumes of non-DIRA factory gate sales are small. Moreover, IPs have generally indicated that they are unwilling to supply small volumes and their willingness to supply at all will depend on price.”

Thus the Commission concludes that without the Raw Milk Regulations, Fonterra would likely be able to exercise market power at the factory gate, raising prices above competitive levels. The Commission comments early in its report that a likely indication of that price is the price at which non-DIRA milk is currently sold at the factory gate. Later in its report the Commission undertakes a fuller analysis of the likely price increase, part of which is redacted.

The Commission indicates that its central estimate of the effect of the removal of the Raw Milk Regulations is that the factory gate price would increase by 25%.¹⁵

The Commission estimated that this 25% increase in the factory gate price would be likely to translate into an average 6.25% increase in the retail price for fresh milk based on its estimate that raw milk contributes to a quarter of the retail price of a 2 litre bottle of processed milk and assuming Goodman Fielder fully passes on the factory gate price increase.¹⁶

The Commission analyses the effects of these price increases in terms of standard analysis of monopoly pricing. That analysis is illustrated in Figure 3 below.

In the diagram, price/cost (per unit) is on the vertical axis and quantity is on the horizontal axis. The line marked AC is the average cost for different quantities of production, including in cost a normal rate of return on capital employed. The line marked MC is the marginal cost – the cost of producing one more unit. The line marked D reflects the quantity that consumers will purchase for each price level. The line marked MR is the marginal revenue – the additional revenue earned by selling one more unit.

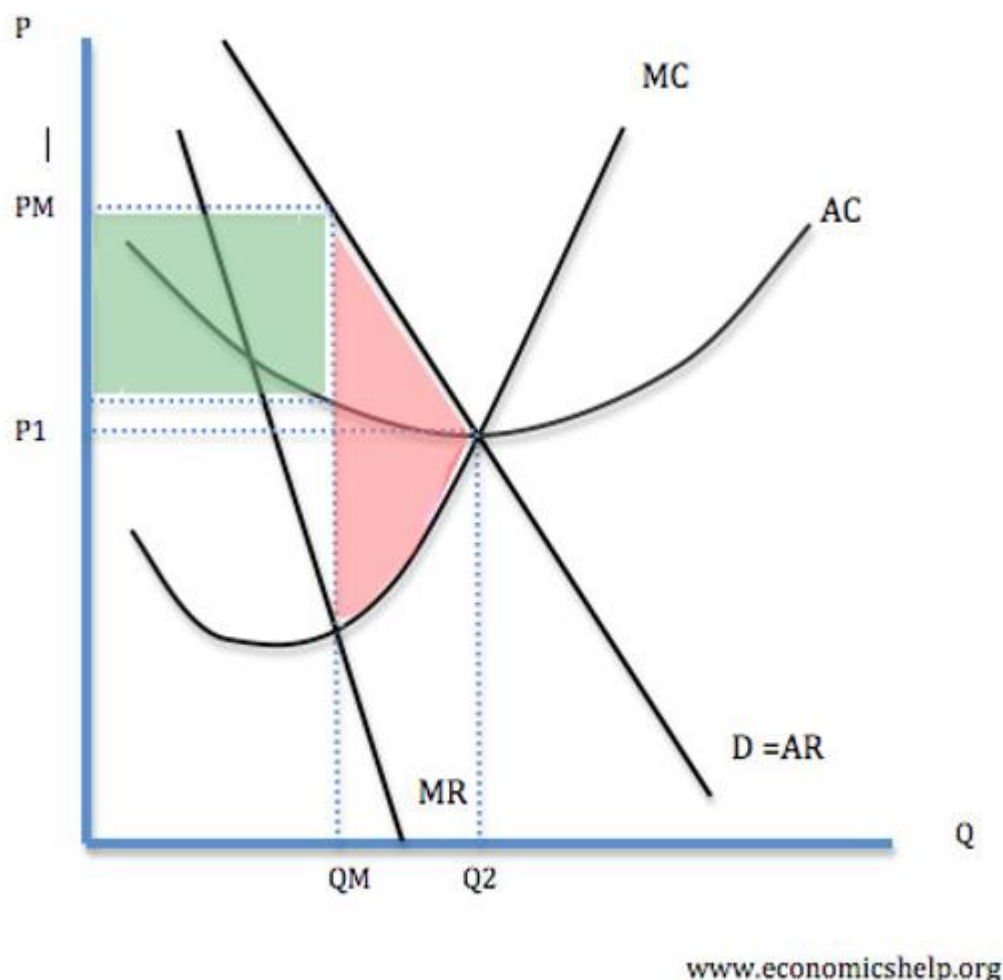
Efficiency is maximised when the price is P1. The quantity consumers will purchase at that price is Q2. This is the maximum efficiency point since with price at P1 and quantity at Q2, marginal cost and average cost are both equal to price. The producer is earning just a normal rate of return. If the market is perfectly competitive the price will settle at P1 with the competing producers all earning just a normal rate of return.

¹⁵ Ibid para 6.52.2.

¹⁶ Ibid para 6.55.1.

If there is only one producer – a monopolist in other words – they can set the price without anyone being in a position to undercut them. A monopoly will choose to operate at the point at which marginal revenue equals marginal cost. In other words, for quantities up to this point the cost of each additional unit of production is outweighed by an increase in total revenue. Beyond this point a monopoly has a disincentive to increase output as the additional cost of each unit outweighs the gain in revenue. The profit maximising price in the diagram is PM. At that price consumers will purchase only quantity QM.

Figure 3: Economic framework for monopoly pricing



The red area is the loss of efficiency when the competitive market outcome, price P1 and quantity Q2, is compared with the monopoly outcome, price PM and quantity QM. The green area is the transfer of wealth from consumers to the monopoly producer, again when the competitive market outcome is compared with the monopoly outcome. The loss of welfare by consumers is the sum of the two areas red plus green. Based on a 25% price increase in the factory gate price, the Commission found that the efficiency benefits attributable to DIRA preventing a factory gate price increase (or put another way, the efficiency cost of removing DIRA) range from \$3.5 million to over \$13 million a year depending on assumptions. The Commission stresses that its estimates are very sensitive to its

underlying assumptions (including the DIRA milk price, which can vary significantly). As such, it is a very rough guide to the efficiency benefits of DIRA.

The Commission advises that factors that could significantly affect its estimate include:

- *“Opportunity costs: The analysis assumes that the DIRA milk price includes all opportunity costs of the on-sale of raw milk. As discussed in chapter 5, State of competition without the DIRA Regulation, we consider on average that the DIRA price reflect opportunity cost but there will be times where it may not.*
- *Uncertainty around the magnitude of the price increase. The increase is based on a price mark-up of 25%. It is possible that this may under or overestimate the actual mark-up that would occur.*
 - *Underestimate: If other large IPs did not prove to be an effective constraint, including if they have higher opportunity costs than Fonterra, then this may lead to higher prices than currently observed in the non-regulated factory gate.*
 - *Overestimate: If other IPs prove to be a more effective constraint than assumed, then this may lead to lower prices than currently observed through increased competition at the non-regulated factory gate.”¹⁷*
- *The price mark-up has a non-linear impact on the estimated deadweight loss. If we doubled the price mark-up, the estimated deadweight loss increases to the range of \$14 to \$50 million”.*¹⁸

The Commission also estimated the associated consumer welfare lost through a factory gate price increase (which can be interpreted as the consumer welfare gained due to the DIRA regulations). The Commission estimates this consumer welfare loss from not having DIRA regulations (gain from having DIRA) to be in the range of \$51.9 million to over \$92.4 million per annum. This estimate is subject to the same sensitive assumptions as the estimated efficiency cost noted above. The consumer welfare estimates did not form part of the Commission’s balancing of efficiency costs and benefits because the Commission is concerned with overall efficiency rather than how the benefits and costs are distributed.

The Commission notes that its estimate of the efficiency benefits of having the Raw Milk Regulations includes only “static” efficiency benefits and comments:

“This means [the estimate] does not capture the full efficiencies and benefits that competitive rivalry can bring over time. Typically, more weight is attached to dynamic efficiencies as they bring important benefits that often outweigh static measures of efficiency—for example, more efficient investment. The dynamic efficiency benefits of the Raw Milk Regulations could be significant. In chapter 5, State of competition without the DIRA Regulation, we noted that a price increase could particularly impact on smaller producers who cumulatively represent a material competitive constraint on

¹⁷ Commerce Commission (2016) para 6.54.

¹⁸ Ibid footnote 328 p.129.

*Fonterra. Such benefits, while very difficult to estimate, can be significant over the long run”.*¹⁹

The Commission also considered the various potential efficiency costs that arise from the requirement on Fonterra to supply raw milk. The Commission’s summary of possible efficiency costs is as follows:

- *Excess capacity: Fonterra must hold excess capacity to manage the milk volume risk created by DIRA milk. We found this resulted in a direct cost to Fonterra in the region of \$6 million per annum;*
- *Recovery of opportunity cost: There may be times that the DIRA milk price under or over recovers Fonterra’s opportunity costs. We have no reason to believe that this has caused any material cost to efficiency; and*
- *Hampering the development of the factory gate market for non-DIRA milk: Access to DIRA milk may be hampering the development of the non-DIRA milk factory gate market. This includes preventing IPs from competing to supply Goodman Fielder.*²⁰

The third concern above is the basis for the proposal by MPI to reduce Goodman Fielder’s entitlement to DIRA milk.

Section 7 of this report analyses the proposed changes in terms of the likely effects on the factory gate market, consumers and efficiency. As discussed in that section the chain of logic whereby the proposal to reduce Goodman Fielder’s entitlement to DIRA milk is expected to improve efficiency is quite indirect.

5.1 How has the industry developed since the establishment of Fonterra?

According to Fonterra’s Annual Report 2003, it collected 1,148 million kgMS in that season. Fonterra’s share of the farm gate market at the time was considered to be 95%, which implies total New Zealand milk production of 1,195 million kgMS.

According to Fonterra’s Annual Report 2015, it collected 1,614 kgMS in that season. According to DCANZ²¹, total milk collected in New Zealand in that season was 1,890 million kgMS, which implies that Fonterra’s share of the farm gate market was 85%.

In the 2015 season, Fonterra collected 40% more milk than it did in its first year of existence. Over the 12 years of Fonterra’s existence, the amount of milk it has collected has increased at an annual compound growth rate of 2.9%.

In the 2015 season, there was 58% more milk produced in New Zealand than in 2003, which equates to annual compound growth of 3.9%.

¹⁹ Ibid (2016) para 6.54.

²⁰ Commerce Commission (2016) para 6.48.

²¹ Dairy Companies Association of New Zealand.

5.2 What has happened in terms of the farm gate market?

Since Fonterra was formed and DIRA introduced, there have been six new entrants in the farm gate market with five remaining and only four still effectively competing at the farm gate.

5.2.1 *Open Country Dairy*

Open Country Dairy (OCD) was originally Open Country Cheese Company Limited, which originally raised equity from many small investors to build a cheese factory in Waharoa in the Waikato. The Talley family are now the majority owner.

The Talley family joined the shareholders' register as a consequence of the then directors needing a cornerstone shareholder to help fund future growth.

Its first expansion beyond Waharoa was the construction of a WMP plant in Southland. OCD used DIRA milk in conjunction with the milk supplied by a single very large dairy farmer to mitigate its milk supply risk on its expansion into Southland.

It subsequently used DIRA milk to mitigate its milk supply risk as it expanded into Whanganui.

Open Country Dairy is now the second largest dairy company in New Zealand with processing capacity of approximately 1.3 billion litres of milk. 100% of its product is exported. It is focused on commodity or near-commodity markets.

It is no longer able to access DIRA milk.

5.2.2 *Synlait Milk Limited*

Synlait was founded originally in 2000 by three shareholders who established and managed various dairy farm companies and dairy farm conversions. Synlait Milk was incorporated in 2005 to undertake processing of the milk provided by Synlait Limited's farms and other third party suppliers.

The Synlait farms have now been sold and Synlait Milk is now listed on the New Zealand Stock Exchange. Its major shareholder is Bright Dairy Holding Limited.

Synlait Milk has processing capacity of approximately 650 million litres of milk. 100% of its production is exported. Its focus is the business-to-business market for formulated powders. It is located on a single site in Dunsandel, Canterbury.

It has its own milk supply but used DIRA milk extensively and well to mitigate the risk of its growth strategy. It is no longer able to access DIRA milk.

5.2.3 *Miraka Limited*

Similar to Synlait, Miraka started with a milk supply partially underwritten by its shareholders. It is located on a single site approximately 30 kilometres north west of Taupo.

It has processing capacity of approximately 250 million litres of milk, from which it produces WMP and UHT milk. 100% of its production is exported.

It has its own milk supply but used DIRA milk as well. It is no longer able to access DIRA milk.

5.2.4 Oceania Dairy Limited

Oceania is owned by Chinese company Yili. It is located on a single site at Glenavy in North Otago. The plant is capable of producing a range of powders. Its output is exported to its parent company. The parent company is China's largest dairy company.

It has processing capacity of 235 million litres of milk. The processing factory was opened in time for the 2014/15 season. It has its own supply but uses DIRA milk as well. It loses its access to DIRA milk on 1 June 2017.

5.2.5 Gardians Limited

The Gardians plant was commissioned in 2012 with a single supplier being one of the joint venture owners. The plant produces infant formula. It is a 3 ½ tonnes / hour plant that has a processing capacity of approximately 80 million litres of milk. This company is now owned by French dairy company Danone. While this company has its own milk supply, it gets it all from a single supplier and therefore is not competing in the farm gate market. This company does not use DIRA milk.

5.2.6 New Zealand Dairies Limited (in receivership)

New Zealand Dairies was originally owned by New Zealanders including local farmers. The Russian company Nutritek got involved with the company as a consequence of the original owners running into financial difficulties. The plant has the capacity to process 200 million litres of milk per annum. After it was placed in receivership, Fonterra bought its assets.

5.2.7 Yashili NZ Limited

Yashili is a Chinese company with a manufacturing site in Pokeno. It does not compete in the farm gate market as it does not process raw milk.

6 Changes proposed by MPI

MPI has considered:

- if the default expiry should progress in the South Island or if the current sunset provisions in the DIRA should be amended;
- the options for amending the Raw Milk Regulations to facilitate the development of a factory gate market for non-DIRA milk; and
- the options for amendments to the open entry requirement as they relate to new dairy conversions.

6.1 Sunset provisions

Subparts 5 and 5A of the DIRA were always intended to be temporary until Fonterra faces sufficient competitive pressure from existing and potential future competitors in the domestic markets, supported by the general provisions of the Commerce Act. At that time, competitive pressure, rather than the regulation in Subparts 5 and 5A of the DIRA, would drive the long term growth and efficiency of the dairy industry.

MPI's preferred option is to amend the sunset provisions preventing the default expiry in the South Island. Instead, new market share thresholds in the DIRA would trigger another report on the state of competition in the New Zealand dairy industry and further consideration of whether regulation is still required.

6.2 Raw Milk Regulations

The objectives of the Raw Milk Regulations 2012 are to:

- provide an entrance pathway for independent processors into the farm gate milk market; and
- support competition in downstream domestic markets for dairy products.

The Raw Milk Regulations aim to do this by requiring Fonterra to supply, at a regulated price:

- up to 50 million litres of raw milk in a season to any independent processor; and
- up to 250 million litres of raw milk to Goodman Fielder in a season.

The maximum total volume of regulated milk that Fonterra must supply is 795 million litres.

The price of this regulated milk is prescribed as the farm gate base milk price for that season plus reasonable transport costs.

From 1 June 2016, an independent processor ceases to be eligible for regulated milk once its own supply has reached 30 million litres for three consecutive seasons.

The Commerce Commission report found that:

- competition in the factory gate market is very limited;
- without the Raw Milk Regulations, Fonterra would be able to increase the price of raw milk it sells to other domestic processors²²; and
- this would likely result in higher prices for dairy products in downstream domestic retail markets.

The Commerce Commission considers the pathway to deregulation would be smoothed by facilitating the development of a functioning factory gate market for non-DIRA milk. It recommended that the Government considers options for changes to the Raw Milk Regulations to facilitate such development, including:

- remove DIRA entitlements;
- investigate the price of regulated raw milk;
- reduce the entitlements of processors (including Goodman Fielder) to regulated milk; and
- tighten the forecast tolerances allowed for in the Raw Milk Regulations.

²² The Commission's detailed findings regarding the effects of removing the Raw Milk Regulations are discussed in section 7 below.

MPI's preferred options are to amend the regulations so that Fonterra no longer needs to sell regulated raw milk to large, export-focused processors (as defined by MPI) and to reduce the volumes of regulated raw milk available to other processors by 60 percent over three years.

The regulated volumes would adjust as follows:

Table 1: Proposed regulated raw milk volume adjustments

Season	Regulated volumes
Up to and including 2017/18	The existing volumes per season: 50 million litres 250 million litres for Goodman Fielder
2018/19	40 million litres 200 million litres for Goodman Fielder
2019/20	30 million litres 150 million litres for Goodman Fielder
2020/21 and all following seasons	20 million litres 100 million litres for Goodman Fielder

6.3 Open entry for new dairy conversions

The open entry provisions aim to reduce farmers' switching costs, lower barriers to entry for independent processors, and provide Fonterra with an incentive to set an efficient farm gate base milk price.

The Commerce Commission recommended that the Government keep the open entry and exit provisions in place during any reforms to the Raw Milk Regulations, as they may help ensure the development of a factory gate market by facilitating further entry into, or expansion in, the farm gate market by independent processors that could then enter the factory gate market. They may also allow for independent processors to increase their own-sourcing of raw milk direct from farmers.

The Commerce Commission further recommended that the Government explore the option of removing open entry for new conversions because open entry for new conversions contributes little to promoting efficiency in the farm gate market and potentially imposes costs on Fonterra. However, the Commerce Commission did not find evidence to suggest that these provisions currently impose material costs.

MPI's preferred option is to amend the regulations so that Fonterra would no longer have to accept an application to become a shareholding farmer where the application was in relation to a new dairy conversion.

7 Assessment of the proposed changes as they relate to the domestic dairy products market

The proposed changes in the Raw Milk Regulations detailed in section 6 are aimed at increasing the volume of milk traded and the number of IPs participating in the factory gate market.

This section examines whether the proposed reduction in Goodman Fielder's access to DIRA milk would in fact increase the depth of the factory gate market.

7.1 Analysis of the factory gate market

As noted, the factory gate market is the market in which Fonterra and others supply raw milk they have contracted for farmers to supply and have collected to other processors and some food and beverage manufacturers. The milk is delivered straight from the supplying farms to the processing facilities not owned by the party that has contracted with farmers and arranged transport.

The Commission's report does not discuss the factors observed to determine the depth of analogous markets in other industries. The timber and meat industries are interesting in this regard. The factory gate market equivalent for the timber industry would be a mill gate market in which timber processors which had contracted with forest owners for a supply of logs and arranged transport sell those logs to another timber mill with the logs being delivered to the other mill²³. The factory gate market equivalent in the meat industry would be a meat works gate market in which meat processors such as Silver Fern or Affco, having bought livestock from a farmer and arranged transport sell the livestock to another meat processor and arranged for the livestock to be delivered to the other processor's works.

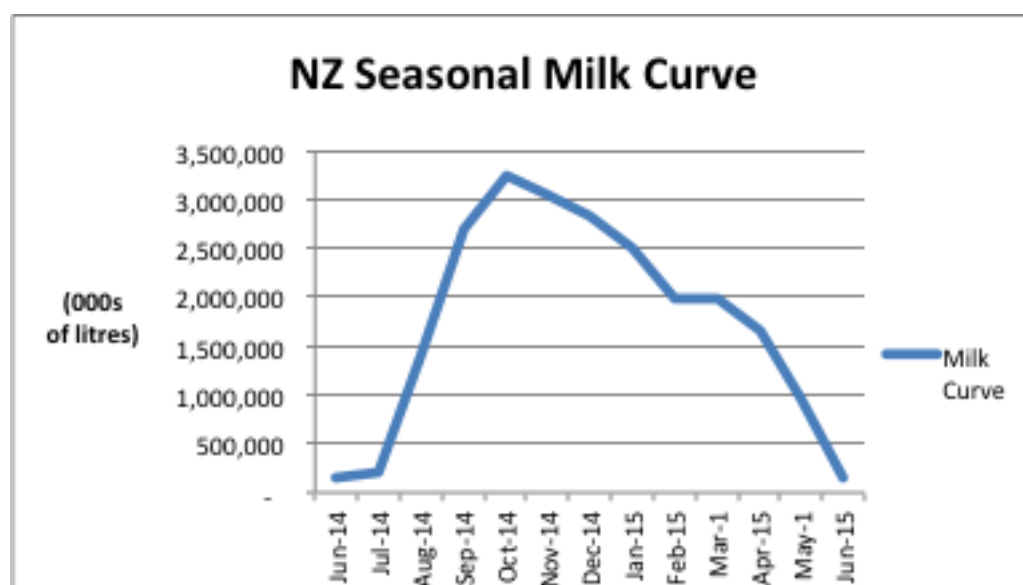
It is not at all obvious that a deep, i.e. sizeable and reliable, mill gate or meat works gate market exists or is likely to ever exist. A deep market would require that a timber or meat processor would systematically contract to obtain a greater supply of their raw material than they need in order to sell the excess to other timber mills or meat works. Temporary arrangements to adapt to equipment breakdowns or other reasons for plant closures seem likely and some supply of transport might be expected. A deep on-going factory gate market is not at all an obvious feature of the competitive landscape however.

²³ The timber mill analysis relates to pinus radiata. There may be a small mill gate trade of specialty timbers.

In the case of New Zealand's dairy industry, the milk curve and in particular the issue of winter milk, and fresh milk's very short shelf life are major obstacles blocking development of a deep factory gate market that would meet the requirements of domestic fresh dairy product suppliers.

The discussion in section 2.3 traverses the challenges of the domestic fresh milk market and Figure 1 (the NZ Seasonal Milk Curve) is reproduced below.

Figure 4: New Zealand seasonal milk curve



In explanation of the challenges from a seasonal milk curve perspective, in 2014, in the month with the highest milk production, October, New Zealand produced 271 million kgMS. That means that there needs to be processing capacity of at least that amount (minus the milk going to the domestic fresh milk market) to process the milk. But it also means that there is excess capacity for every month other than October.

The economics of manufacturing dictate that a flat “curve” is the most efficient, which means that the less flat the curve is (or the more “peakier” the curve is), the more inefficient the manufacturing.

A functioning factory gate market implies either:

- a number of processors have deliberately recruited more milk than they have capacity to process (unlikely given the risk of not being able to sell it and therefore having to dump it because of its very short shelf life – unlike the mill gate or meat works gate markets); or
- the demand for milk at the factory gate is such that the processors can sell milk at the factory gate at a price that at least offsets the inefficiency in their plants that the decrease in milk volume has created.

As discussed in Annex 1, arrangement of a minimum-cost supply of winter milk is a specialised task requiring sophisticated transport modelling and application of carefully calibrated incentives to obtain the optimum structuring of individual herd management.

Drawing on the dairy industry experience of its personnel, TDB assesses that from the perspective of an export-orientated processor the development of a winter milk supply is likely to be viewed as an unattractive diversion of limited management resources from the central tasks of operating an efficient plant and successful overseas marketing.

The first point is that New Zealand's winter milk is not required in international markets because milk is produced in both the northern and southern hemispheres, which have offsetting seasons.

The second point is that export orientated processors have the ability to effectively flex the milk curve to a certain extent because they are processing raw milk into a longer shelf-life product. In other words, their sale phasing need not match the milk curve.

The third point is that we can observe that winter milk premiums are \$3.80 / kgMS in the South Island and \$1.55 - \$1.80 / kgMS in the North Island (less transport costs that we estimate to be \$[REDACTED]/ kgMS – see section 7.7). The milk price statement indicates that the fair value of EBIT for ingredients businesses is \$0.43 / kgMS. The combined average EBIT of Open Country Dairy, Westland, and Synlait over the last five years has been \$0.35 / kgMS. It is therefore somewhat self-evident that the economics of winter milk for export orientated processors are unattractive.

Nevertheless, if ensured of a high enough price, a large processor with their own milk supply will be willing to set about developing a winter milk supply.

Since Fonterra currently has contracted all the supply from herds set up to provide winter milk, a processor would need to recruit existing winter milk suppliers to transfer from Fonterra. Worse still the processor would find that the Fonterra winter milk herds are not optimal from its perspective and would need to set about persuading other farmers to switch to winter milk production.

The existing winter milk suppliers are optimised by Fonterra to meet the raw milk requirements of the plants of FBNZ and Goodman Fielder based on Fonterra's optimised transport arrangements (Fonterra inherited winter milk arrangements optimised for these plants and probably has improved on this as it has improved on transport optimisation overall). An IP seeking to develop a winter milk supply would not be able to achieve the cost efficiency Fonterra achieves except in circumstance where the IP's plant is ideally located (eg, alongside the Goodman Fielder plants) and all or nearly all of the existing winter milk suppliers can be recruited.

An IP considering developing a winter milk supply to then contract to provide Goodman Fielder with winter milk will recognise Fonterra is able to resist its recruitment of winter milk suppliers. If the IP fails to recruit sufficient winter milk suppliers from Fonterra it will have to abandon the project or accept at least an opportunity cost and quite possibly a cash loss given it would be competing with Fonterra to supply Goodman Fielder. Thus any IP is likely to consider entering the winter milk supply market an unattractive project.

We conclude that as regards the winter milk supply, the only realistic alternatives are that Fonterra continues to manage the national supply of winter milk or that Goodman Fielder sets about developing its own supply of winter milk, which would be fraught with the same difficulties that makes that approach unattractive to IPs.

The next section of this report assesses the price implication of a reduction in Goodman Fielder's access to DIRA milk.

7.2 The price implications of a reduction in Goodman Fielder's access to DIRA milk

As discussed in section 5 the Commission estimates that if Goodman Fielder had to purchase all of its milk requirements in the unregulated market, the price would be 25% higher than the DIRA milk price on average.

Under the proposed changes to the Raw Milk regulations Goodman Fielder's would have to purchase all its milk requirements above 100 million litres in the unregulated market or organise own supply.

As regards the first of these two options, it is reasonable, at least as a first approximation, to assume the price of Goodman Fielder milk purchases in the unregulated market would be the same as under the Commission's scenario, namely 25% higher than the DIRA price on average.

On this assumption, the cost for Goodman Fielder to acquire its milk requirements would be the weighted average of the DIRA price for 100 million litres and the DIRA price plus 25% for the rest. If Goodman Fielder needed to purchase 150 million litres in the unregulated market the weighted average price would be the DIRA price plus 15%. Goodman Fielder's purchases currently run at less than 250 million litres in total so the price at current purchase levels would be less than the DIRA price plus 15%. However, given the growth in population (currently over 2% per annum) Goodman Fielder's requirement would climb above the 250 million litres in due course.

An average raw milk price of DIRA plus 15% would, under the Commission's assumptions, translate to an increase in retail prices of 3.75% compared to a situation in which Goodman Fielder acquires all of its milk at the prices specified in the DIRA regulations (including the price premium formula specified for winter milk).

[REDACTED

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As an alternative check on the estimate derived as above from the Commission's assessment the increased cost can be assessed by analysing the economics of Goodman Fielder managing its milk supply itself.

As the MPI discussion document concludes, should it decide to proceed with its preferred options, Goodman Fielder would have to either:

- go to the factory gate market; or
- develop its own supply.

Given the preceding discussion, we can add that, should MPI decide to proceed with its preferred options, Goodman Fielder would have to:

- go to the factory gate market and rent milk processing capacity; or

- go to the factory gate market and build milk processing capacity; or
- develop its own supply and rent milk processing capacity; or
- develop its own supply and build milk processing capacity.

The word “rent” in this context is defined in its broadest sense. That is, renting in the traditional sense of paying a third party to manage excess milk.

As there is no surplus milk in the industry currently (other than DIRA milk) that is available to be traded at the factory gate, all of Goodman Fielder’s options require the recruitment of new milk. The only difference is who does it: another independent processor on behalf of Goodman Fielder (the factory gate) or Goodman Fielder itself (own supply). Because of the established relationships that the independent processors have with suppliers, we assume that it would be easier for an independent processor to recruit new milk than Goodman Fielder but we assume the cost of the milk at the farm gate would be the same.

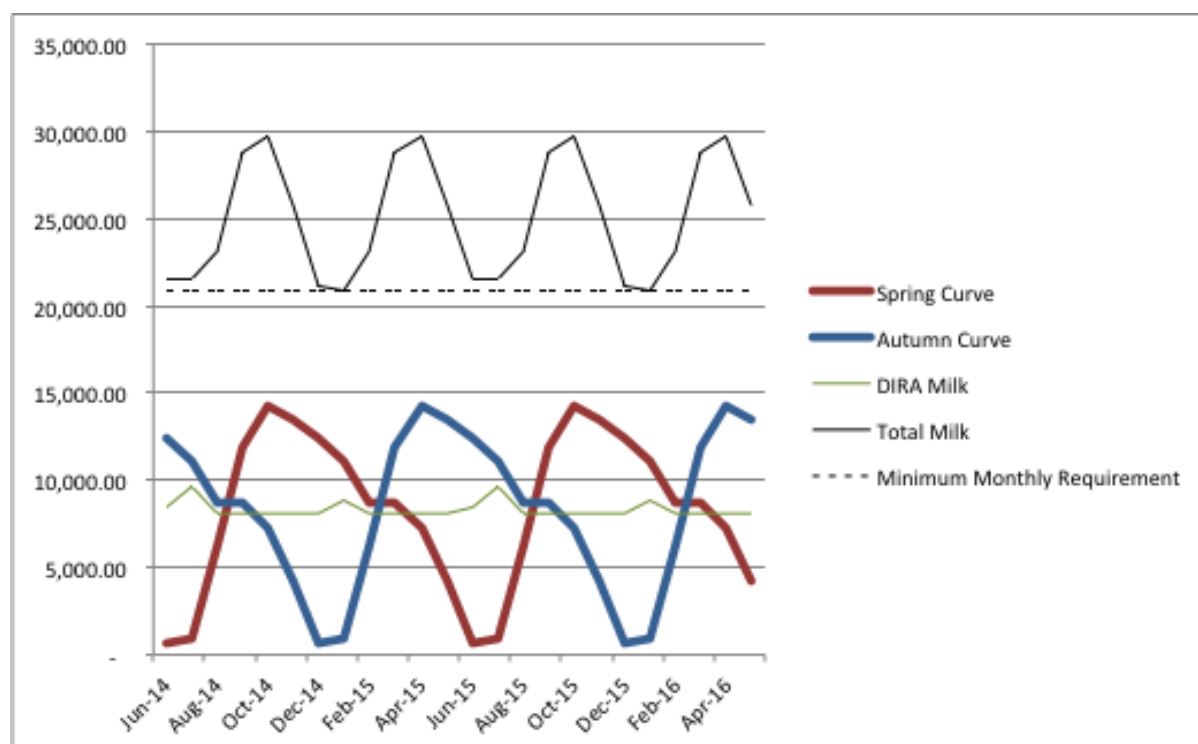
As discussed above, it is possible to have an ingredients business without a domestic consumer business but it not possible to have a domestic consumer business without an ingredients business because of the requirement to recruit excess milk and because of the requirement to manage the daily variations in demand and supply.

As discussed above, Goodman Fielder needs 250 million litres of milk per year evenly spread over the course of the year. Of that 250 million litres, the MPI proposal is that 100 million litres of DIRA milk continues to be available to Goodman Fielder.²⁴ Because of the seasonal milk curve, even with the 100 million litres of DIRA milk, Goodman Fielder will need to incentivise farmers to supply winter milk and it will need to recruit 200 million litres of milk. In the peak months, Goodman Fielder will have almost 300,000 litres per day more than it needs, split between the North and South Islands (say, 150,000 litres per day excess in each island).²⁵

²⁴ We assume that Goodman Fielder must use the 100 million litres according to the current milk price regulations. Those regulations essentially state that Goodman Fielder can access as much winter milk as it requires and that the maximum allocation of milk in any of the other 10 months is 110% of the amount taken in October. We have modelled the possibility of Goodman Fielder using DIRA milk to satisfy just its winter milk requirements and recruiting new milk to satisfy the demand requirements associated with the other 10 months and our preliminary conclusion is that the profile in Figure 5 is the most efficient in terms of total milk required.

²⁵ See Goodman Fielder’s monthly milk profile data in Annex 2.

Figure 5: Goodman Fielder's estimated raw milk supply profile



In addition to this excess milk, Goodman Fielder has the daily milk volume variation to contend with. Goodman Fielder has an average daily intake of 685,000 litres with an actual intake of between 485,000 to 885,000 litres per day (+/- 200,000 litres per day or 100,000 litres per day in each island).

To cope with this excess milk, Goodman Fielder would need to either build two powder plants (one in Christchurch and one in Longburn) each with a daily capacity of 250,000 litres or rent capacity from another independent processor.

If Goodman Fielder built two powder plants, they would be very small powder plants by today's standards at about 2 tonne / hour each versus what is assumed in the milk price model for Fonterra as efficient at about 16 tonnes / hour. The independent processors have built 8 ½ tonnes / hour plants.

The 8 ½ tonnes / hour plants that the independent processors have built have a processing capacity of 1 million litres per day and so if Goodman Fielder was renting capacity it would require 25% of their capacity.

To estimate the cost of the alternatives available to Goodman Fielder, we first estimate the cost of renting milk processing capacity and then estimate the cost of building milk processing capacity.

We then examine the costs of the factory gate and own supply that are costs that Goodman Fielder does not currently pay.

We then look at the cost of winter milk.

Finally we look at the costs associated with a milk collection solution that is less optimal than Fonterra's.

7.3 Renting milk processing capacity

The standard powder plant built by the independent processors is an 8 ½ tonnes / hour plant with a daily processing capacity of 1,000,000 litres. Given the milk curve, these plants process 200 million litres of milk or 17 million kgMS per annum. If the independent processor was processing milk from winter milk suppliers (and assuming the raw milk supply profile in Figure 5 above), it would have an annual capacity of 22.1 million kgMS. The daily processing capacity, however, would not change.

If we assume that Goodman Fielder needs the same amount of milk in each island, it has a maximum processing capacity requirement of 150,000 litres²⁶ per day, being 15% of the independent processor's daily capacity.

We know that Goodman Fielder has a daily variation of 200,000 litres per day, or 100,000 litres per day in each island. That increases Goodman Fielder's peak requirement to 25% of the independent processor's daily capacity.

We assume that surplus milk is sold to the independent processor at the FGMP. We also assume that Goodman Fielder will have 50,000 litres per day more than it requires²⁷ caused by daily variations and that this milk is also sold to the independent processor at the FGMP.

All of the above means that the independent processor's plant runs at 91% capacity.²⁸

For simplicity, we also assume that weighted average cost of capital for an independent processor is the same as Fonterra's.

Working from the 2015 milk price statement as detailed in Table 2 below, we can estimate the cost of renting milk processing capacity as follows:

- Running at 100% capacity on a seasonal milk curve basis means that the plant generates an operating profit after tax of \$5.44 million, being equal to (Fonterra's) weighted average cost of capital (as per the "100% Full" column in Table 2).
- Running at 100% capacity on a winter milk profile means that the plant runs for more days and that fixed costs get spread across higher volume, which means that the plant generates an additional operating profit after tax of \$1.275 million²⁹ (as per the "100% Full Winter Milk Profile" column in Table 2).
- Running at 91% capacity results in a profit of \$180,125 ("91% Full" column in Table 2), which costs the business \$1.1 million (as per the "GF Milk Collection" column in Table 2).

²⁶ In April and October each year Goodman Fielder will have over 9 million litres of excess milk, or about 300,000 litres per day, split between the two islands.

²⁷ Half of the daily variation.

²⁸ $25\% \times 22.1 \text{ million kgMS} = 5.525 \text{ million kgMS}$. Surplus milk per island = 25 million litres or 2.1 million kgMS. Daily variation = 50,000 litres / day $\times$ 365 days = 18.25 million litres or 1.5 million kgMS. $5.525 - 2.1 - 1.5 = 1.9$. $1.9 / 22.1 = 8.7\%$ unutilized.

²⁹ The capital allocation increases because the plant is being used for more days and therefore its life decreases.

Table 2: Cost of “renting” capacity

[REDACTED]

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Spreading that cost over 125 million litres (in each island) results in a marginal cost to Goodman Fielder of \$[REDACTED]/ kgMS (\$[REDACTED]per litre).

This is the point at which the independent processor is no worse off. However, it is also no better off. We can assume therefore that the marginal cost to Goodman Fielder would be at least \$[REDACTED]/ kgMS.

The marginal cost to Goodman Fielder would be higher if it didn’t have continuing access to 100 million litres of DIRA milk.

7.4 Building milk processing capacity

Putting aside for the time being the challenges of building additional capacity at the Christchurch location (height, noise, and emission restrictions in an urban centre) and the Longburn location (no land available), we estimate the minimum additional cost of milk for Goodman Fielder associated with it having to build its own daily variation capacity.

The only change we have made to the numbers used in the milk price statement is to spread the fixed costs over much less volume remembering that:

- the milk price statement is based on Fonterra’s standard plant being 16 tonnes / hour. We have assumed that the independent processors are equally as efficient even though we know that their actual five-year average EBIT / kgMS is less than what is implied in the milk price statement; and
- there are scale efficiencies associated with building 16 tonnes / hour plants versus 2 tonnes / hour plants. We have not, however, made any adjustment to the cost of capital.

There is also an implicit assumption that the same technology and efficiency with respect to losses and quality can be achieved on a 2 tonnes / hour plant as an 8 ½ tonnes / hour plant.

Table 3: Cost of building processing capacity

[REDACTED]

Running a 2 tonnes / hour plant versus an 8 ½ tonnes / hour costs \$3.25 million. Spreading that cost over all the milk collected by or for Goodman Fielder results in a marginal cost to Goodman Fielder of \$[REDACTED] / kgMS (\$[REDACTED]/ litre).

The marginal cost to Goodman Fielder would be higher if it didn't have continuing access to 100 million litres of DIRA milk.

7.5 Factory gate versus own supply

Our analysis clearly indicates that it is more cost effective for Goodman Fielder to rent milk processing capacity than it is to build its own but that ignores the relative negotiating power of the potential parties to the contract. Taking into consideration that processing plants must be shut down for maintenance once a year while Goodman Fielder requires milk to be processed 365 days of the year means that only those processors with at least two plants have sufficient capacity available for rent. In the North Island, the only candidate is Open Country Dairy. In the South Island, the only candidate is Synlait Milk. Those two companies will know that they are the only processing capacity alternative that Goodman Fielder has in each island and they will know what the cost for Goodman Fielder will be of building its own plant in each island and will use that knowledge to negotiate a rental outcome close to FGMP plus 31 cents.

The other option that MPI has proposed that will restrict the access rights of large export-focussed processors to DIRA milk will effectively increase the barriers to entry for new processors that might otherwise provide an alternative source of available capacity, which means that Goodman Fielder will remain a weak negotiator.

There is a cost associated with recruiting and managing milk supply. We understand that Fonterra estimates this to be the equivalent of \$0.08 / kgMS³⁰. It is likely that it would be more cost-effective for this service to be provided by an independent processor than for Goodman Fielder to do it itself.

7.6 Winter milk³¹

Fonterra currently recruits winter milk to supply the domestic market in June and July. It pays a premium to suppliers for this milk. Fonterra does not appear to disclose contracted winter milk premiums but we know that some South Island farmers in the mid-Canterbury area are receiving a winter milk premium of \$3.80 / kgMS and some North Island farmers with winter milk going into Longburn are receiving a winter milk premium of \$1.55 / kgMS. Goodman Fielder's North Island / South Island split is two thirds / one third. The average winter premium is \$2.30 for two months. Farmers pay the transport costs for this winter milk. If we assume that the average transport cost is

³⁰ We have been unable to substantiate this number.

³¹ Goodman Fielder currently has access to DIRA milk but is currently supplied by Fonterra under contract. DIRA allows Fonterra to pass on the additional costs of winter milk but the additional costs of winter milk are not passed on under the terms of Goodman Fielder's current contract.

\$[REDACTED]/ kgMS (see the next section) then the additional cost of winter milk for Goodman Fielder would be \$1.84 / kgMS for two months or \$0.30 / kgMS for the entire the year.

The additional challenge for Goodman Fielder is that all of its suppliers must be winter milkers and all must be milking their entire herds. Because Fonterra has got an enormous pool of milk, it only needs some of its suppliers to milk a portion of their herds through winter. For example, a Fonterra supplier in Mid Canterbury might have a winter milk contract for 250 kgMS / day. Budgeting on 1.5 kgMS / day from the herd, the farmer is milking 170 cows. However, the farmer might actually have a herd of 1,100 cows with the other 930 dried off for the winter.³² It is likely therefore that Goodman Fielder will need to pay higher winter milk premiums than Fonterra to secure winter milk but it is impossible to estimate the magnitude of the increase.

7.7 Optimisation problem

Fonterra processes raw milk for the fresh milk market at Takanini in Auckland and in Palmerston North for the North Island and in Christchurch (in Goodman Fielder's plant) for the South Island. For ten months of the year for these three plants, Fonterra's optimisation model has it collecting the milk from the farms closest to these processing plants regardless of whether or not they are winter milkers. It is only in June and July that the milk has to be collected from the winter milkers, wherever they are, and delivered to Takanini and Christchurch. We don't know where all these winter milkers are but if we assume that they are evenly spread within a radius of 150 km of the plants the average distance travelled to collect milk is 200 km (100 km each way). This travel distance compares with 100 km for Fonterra³³ (50 km each way). Fonterra's average collection costs are \$[REDACTED]/ kgMS, which would make Goodman Fielder's \$[REDACTED]/ kgMS³⁴. As all of Goodman Fielder's suppliers must be winter milkers, it is unable to optimise its collections as Fonterra does, which makes these additional costs year-long costs that translate into marginal collection costs for Goodman Fielder of \$[REDACTED]/ kgMS.

7.8 Optimal solution

On the basis of the above discussion, the optimal solution would be for Goodman Fielder to rent milk processing capacity.

The problem with the optimal solution is that practically speaking OCD is the only alternative processor that could possibly rent Goodman Fielder capacity in the North Island. That puts Goodman Fielder in a very weak negotiating position and OCD would probably calculate the cost of Goodman Fielder's next best alternative (being building its own processing capacity) and negotiate with Goodman Fielder at a price just below that. The situation would be similar in the South Island but not as severe.

³² This is an actual example.

³³ We have been unable to substantiate this number.

³⁴ This cost is a 10-month cost for Goodman Fielder as it is for Fonterra as farmers pay the cost of winter collection. Therefore, the marginal cost is \$[REDACTED] / kgMS.

Goodman Fielder's marginal costs therefore would be between \$[REDACTED]/ kgMS and \$[REDACTED]/ kgMS or between \$[REDACTED]and \$[REDACTED]/ litre as seen in Table 4 below.

Table 4: Goodman Fielder's marginal costs

[REDACTED]

]

The EBIT figure used in Table 5 below is the average EBIT earned by Fonterra's consumer and food service business over the last two financial years on a kgMS basis. It has been used below as a proxy for the required rate of return of a competing consumer and food service business.

The impact of the marginal costs shown in Table 5 on a consumer and food service business's earnings are approximated as follows:

Table 5: Impact of marginal costs on earnings

[REDACTED]

]

Without FBNZ being similarly faced with these increased costs, Goodman Fielder would not be able to pass the increases on to domestic consumers. FBNZ would be able to exercise the power of its dominant position and restrict Goodman Fielder's participation in the dairy market in New Zealand.

The Commerce Commission concluded that the main efficiency cost of the DIRA regulations was the cost imposed on Fonterra by the need to maintain capacity greater than would be required in the absence of the regulations. The Commission noted that even in the absence of regulation, processors as a group would need to maintain a margin of capacity to absorb daily and longer term uncertainty, i.e. variations in the supply of milk.

The Commission assessed the per annum cost of the need to maintain excess capacity but stressed it was not able to pin down how much of this cost would remain even in the absence of the regulations. Therefore the Commission provided only an estimate that the efficiency cost of the DIRA regulations in terms of excess capacity could be up to \$6 million per annum.

This section assesses the extent if any that this excess capacity cost would be reduced by reducing Goodman Fielder's access to DIRA milk as proposed in the MPI paper.

Firstly, the variation in Goodman Fielder's milk requirements of around 200,000 litres on a daily basis (as noted in section 7.2 above), while substantial relative to Goodman Fielder's average requirement of 685,000 litres per day, is very small relative to Fonterra-installed capacity which is capable of processing 100,000,000 litres per day. Thus, Goodman Fielder's access to DIRA milk is not responsible for the excess capacity requirement for Fonterra that the Commission identifies as the only material efficiency cost. That capacity buffer is determined by longer term uncertainties in the quantity of raw milk IPs will take under the DIRA regulations.

It is notable that the aim of the proposal to reduce Goodman Fielder's access to DIRA is that Goodman Fielder would take milk from IPs. This aim assumes that Goodman Fielder's lowest cost alternative to DIRA would be to purchase milk from IP's rather than to set about contracting its own milk supply. That assumption is discussed in the next section.

If, however, for the sake of the analysis, it is assumed Goodman Fielder would replace DIRA milk with milk purchases from an IP, the question is whether that would reduce the need for Fonterra to maintain excess capacity to manage the milk volume risk created by DIRA milk.

The milk volume risk that Fonterra has to manage would be reduced only if the variation in Goodman Fielder's take-up of DIRA milk was reduced. It is quite possible that the variation in Goodman Fielder's take-up of DIRA milk would instead be higher if it was taking milk from IPs. The reason is that Goodman Fielder's bargaining position with IPs would be strengthened if it was to show that it could, if it wished, reduce its need for IP milk. That would require that Goodman Fielder was at any time able to cease to take milk from an IP by resorting to DIRA milk. Demonstration of this capability would logically require Goodman Fielder to vary the amount of milk it took from IPs periodically. Thus it is possible that a reduction in Goodman Fielder's access to DIRA milk will increase the variation in DIRA milk take-up that Fonterra has to manage, i.e. increase the efficiency cost of the Raw Milk Regulations.

Thus, the proposed measure aimed at increasing the volume of milk traded and the number of IPs participating in the factory gate market could quite possibly increase rather than reduce the efficiency cost incurred.

As noted the Commission estimates the loss of consumer welfare from removal of the DIRA regulations to be in the range of \$51.9 million to over \$92.4 million. Thus the reduction in the supply of DIRA milk to Goodman Fielder would likely inflict a wealth transfer of some part of \$51.9 to over \$92.4 million on consumers without any assurance of a net national efficiency gain.

8 Alternative regulatory options

This section of the report considers alternative regulatory regimes that will allow Fonterra and other processors to capture the economies of scale in collecting and processing milk necessary to compete on the international market while not penalising domestic consumers by allowing Fonterra or others to raise domestic dairy prices above their competitive levels. All the options require Fonterra, given the dominant position it has been granted by the government, to supply raw milk for the domestic dairy products market at a regulated milk price.

8.1 The options

Option 1: Retain the status quo (ie, up to and post 2021)

The current regulatory requirements pertaining to the domestic dairy products market remain regardless of any changes in other parts of the Raw Milk Regulations: ie, the regulations requiring Fonterra to supply Goodman Fielder 250 million litres of raw milk at the regulated raw milk price remain in place. Additional regulation may be required to ensure Fonterra does not supply the Fonterra-owned FBNZ with milk at less than the regulated price.

Option 2: Cater for the growth in the domestic dairy market

The regulations are changed so that the obligation on Fonterra to supply raw milk at the regulated milk price to Goodman Fielder are not fixed in volumetric terms (at 250 million litres) but instead are linked to the overall size of the domestic dairy products market. Goodman Fielder's current regulatory entitlement equates to around 50% of the milk required for the domestic dairy products market and Goodman Fielder's entitlement could be linked to this current market share (ie, 50%). Additional regulation may be required to ensure Fonterra does not supply the Fonterra-owned Fonterra FBNZ with milk at less than the regulated price.

Option 3: Require Fonterra to supply raw milk for 100% of the domestic market

The regulations are changed so that Fonterra is required to supply raw milk at the regulated milk price on an on-going basis sufficient to meet 100% of the requirements of the domestic dairy products market. All-comers, including Fonterra-owned FBNZ, would be entitled to take raw milk. Restrictions or on-going audits may be required to ensure takers are supplying the domestic market only, rather than using this milk for export. As under the present regulations, if total applications for milk exceeded aggregate domestic demand, all applications would be pro-rated down. As with option 2, additional regulation may be required to ensure Fonterra does not supply the Fonterra-owned FBNZ with milk at less than the regulated price.

Option 4: Require Fonterra to supply raw milk to independent parties for 100% of the domestic market

The regulations are changed so that Fonterra is required to supply raw milk at the regulated milk price to independent parties on an on-going basis sufficient to meet 100% of the requirements of the domestic dairy products market, with Fonterra required to divest FBNZ. Restrictions or on-going audits may be required to ensure that takers are supplying the domestic market only. As with option 3, if

total applications for milk exceeded aggregate domestic demand, all applications would be pro-rated down.

8.2 Assessment of the options

In this section we provide our initial views on the pros and cons of the above four options.

Option 1: Status Quo

Pros

- Keeps the prices of domestic dairy products at their competitive levels (ie, it avoids the price increase that would be expected if Fonterra was not required to supply the domestic market at the regulated price).
- Ensures FBNZ faces at least some competition in the domestic market.

Cons

- Does not assist in developing the factory or farm-gate markets (as domestic suppliers have reduced incentives to seek alternative sources of supply).
- Potential for cross-subsidisation by Fonterra of FBNZ. This potential arises at present and would be limited, at least to some extent, by the disciplines imposed on the regulated milk price by Trading Amongst Farmers and by the general application of the Commerce Act.
- Likely to lead to the market share of Goodman Fielder diminishing over time (and FBNZ's market share increasing) as the domestic market grows.

Option 2: Cater for the growth in the domestic dairy market

Pros

- Keeps the prices of domestic dairy products at their competitive levels.
- Ensures FBNZ faces at least some competition in the domestic market.
- Allows Goodman Fielder and potentially other competitors to FBNZ to at least maintain their market share.

Cons

- Does not assist in developing the factory or farm-gate markets.
- Potential for cross-subsidisation by Fonterra of FBNZ.

Option 3: Require Fonterra to supply raw milk for 100% of the domestic market

Pros

- Keeps the prices of domestic dairy products at their competitive levels.
- Provides a reasonably level playing field for all current and potential suppliers to the domestic market.
- Removes Goodman Fielder's current privileged position in the regulations.

Cons

- Does not assist in developing the factory or farm-gate markets (as suppliers to the domestic dairy products market have no incentive to seek alternative sources of supply).
- Potential for cross-subsidisation by Fonterra of FBNZ.

Option 4: Require Fonterra to supply raw milk to independent parties for 100% of the domestic market

Pros

- Keeps the price of domestic dairy products at their competitive levels.
- Provides a level playing field for all potential suppliers to the domestic market.
- Avoids potential cross-subsidisation by Fonterra of FBNZ.
- Facilitates development of a competitive domestic dairy products market.

Cons

- Does not assist in developing the factory or farm-gate markets (as domestic suppliers have no incentive to seek alternative sources of supply).
- Disruptive to Fonterra and likely to be opposed by Fonterra farmers.

8.3 Overall assessment of the options

In TDB's view the third option, requiring Fonterra to supply raw milk for 100% of the domestic market to all domestic market suppliers at a regulated price may be the best option. It allows Fonterra to capture the economies of scale in collecting and processing milk for the international market while not penalising domestic consumers of dairy products. It provides close to competitive neutrality amongst current and potential buyers of raw milk at the factory gate and has the potential to lead over time to a more innovative and competitive dairy products market. It allows successful niche participants to grow to scale without the associated costs of an ingredient business to balance milk supply. Careful evaluation of all the options will be required to minimise the potential for unintended consequences from changes to the DIRA regulations and to foster a market that is in the best long term interests of New Zealand consumers and the economy as a whole.

9 Conclusions

The conclusions to this report are contained in Section 1.

10 Annex One: Winter milk

10.1 Introduction

This Annex provides a high level summary outlining the background to winter milk production including information on aspects that make New Zealand's position unique, the incentive system for winter milk and the resulting milk curve.

10.2 The need for winter milk

New Zealand is unique in the world in having its milk supply geared towards the production of milk suitable for the manufacture of long life products, sometimes referred to as ingredient milk.

New Zealand, with its favourable climate suitable for milk production and yet with a very small domestic market, exports the majority of its milk to international markets. New Zealand exports about 95% of its milk production, while by comparison Australia exports about 35% of its milk production. New Zealand's export focus further contrasts with the international position, where typically countries are very focussed on domestic consumption. The total world traded volume of milk represents only about 7% of that which is produced.

Current technology and supply chain costs invariably mean that the bulk of these products for export are long-life products such as whole milk powder, butter, cheese, and some skim milk powder and largely commodity (or sometimes referred to as weakly-differentiated) products.

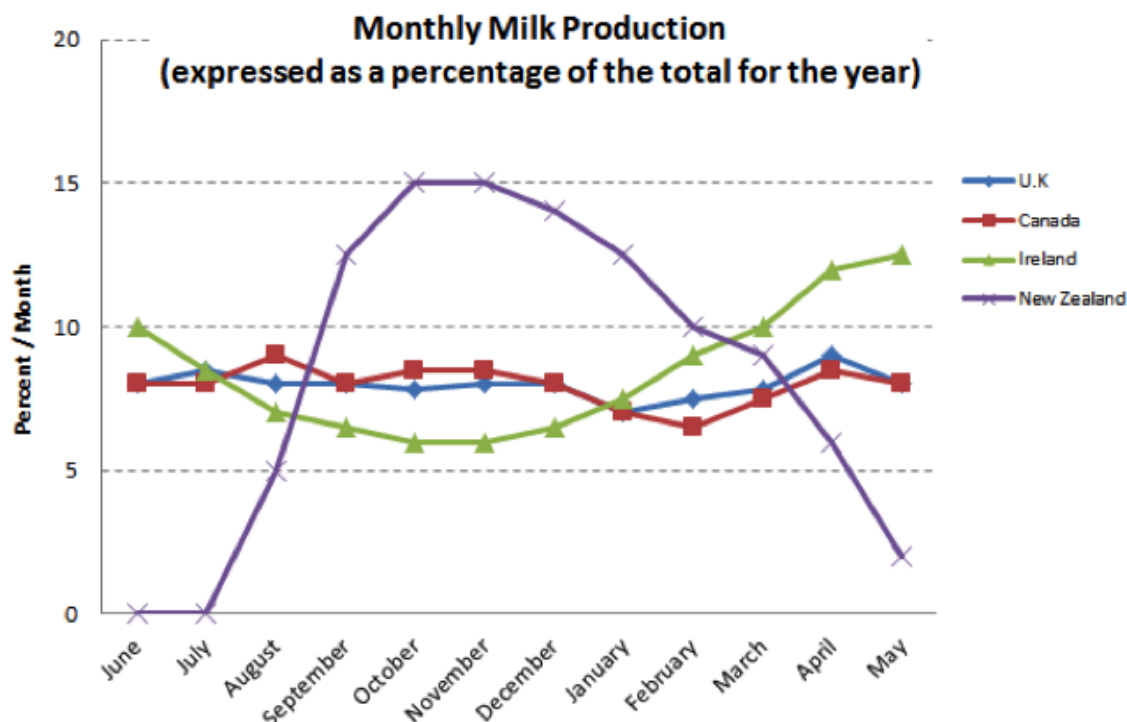
Such export driven commodity manufacture into world markets has meant that the dairy industry in New Zealand has focussed on low cost manufacture at all parts of the dairy supply chain. Fonterra has for example the largest and most efficient assets in the world for the production of milk powders.

The production system on farm, assisted by incentive systems developed firstly by the New Zealand Dairy Board and then by Fonterra, has also been focussed on achieving the lowest possible cost. Unlike dairy farmers in other countries who must supply to the demands of domestic consumers (and hence incur greater costs), the New Zealand dairy farmer has been relatively unconstrained on both the quantity and timing of milk production. With an annual milk price calculated in arrears, there has not been a significant incentive that has diverted the dairy farmer from maximising production (through efficient grass production) and at a time when that grass is available.

The result has been that the milk curve in New Zealand is similar to the grass growth curve, which in turn is related to the rainfall curve. Such a pasture-based curve with no other interference sees milk production for New Zealand approach about 100 million litres / day at the peak in spring to virtually zero in June and July. In these latter 2 months, grass production is very low on most farms in New Zealand.

To our knowledge, this would be the "peakiest" milk curve in the world ("peakiness" is defined as the ratio of peak to trough volumes), followed by Australia. Figure 6 below shows New Zealand's milk curve versus the milk curve in the UK, Canada, and Ireland.

Figure 6: NZ, UK, Canada, and Ireland milk curves³⁵



Such a “peaky” milk curve results in very low utilisation of manufacturing and, to a lesser extent, supply chain assets. Numerous attempts have been made over the years to incentivise farmers to flatten out their milk curves to achieve manufacturing efficiencies. Such attempts have resulted in very small changes to farmer behaviour.

Such a milk production system does require some modification to produce milk for domestic consumption in June and July. Such production is incentivised by what a consumer in the domestic market is prepared to pay for fresh products.

10.3 The incentive system for winter milk

To supply the local market for fresh products, a processor needs a supply of milk all year round including in June and July.

The Fonterra system for achieving a supply during these 2 months is to first determine the quantum of milk that is required.

Fonterra organises three regions in New Zealand to be able to supply the factories that require milk in this period. The upper north island supplies Takanini, Waitoa and to a smaller extent, Puhoi Cheese and others. The lower North Island supplies the Goodman Fielder plant in Longburn and other small

³⁵ Adapted from Holmes et al. 2007. P.7.

users, while the South Island now supplies primarily the Goodman Fielder facility at Christchurch with the milk to Cadbury having been discontinued.

This price to be offered and paid is not expressed as an absolute number but rather as a premium to that paid for normal ingredient milk in the immediately prior season.

To ensure that the most likely efficient milk production occurs, Fonterra pays a winter milk premium to supply at the factory in the months of June and July, rather than at farm gate (as it is for the other 10 months of the year). Each farmer is offered the same premium but then has transport costs deducted from their farm to the nearest receiving factory.

10.4 Why is a premium required to generate winter milk

To supply milk in June and July, a farmer must do two things. First, have a food source for feeding the lactating cows during this period (whose energy requirements are significantly higher than for the non-lactating cows).

Farmers have different options for food sources for this period, depending on individual circumstances. Some may enjoy a little grass growth but typically this will not be sufficient in itself. More typically farmers will use silage made from grass or maize that has been grown, cut and stored. There are other alternative supplements such as kale and fodder beet as well. In all cases though, the feed costs are greater than a cow walking to the paddock to eat grass.

The second thing that a farmer needs to do is to change the time when cows are mated and when they hit their peak production period. This will entail having some or all of the dairy herd having calves in early April rather than August, so that peak production occurs in June and July rather than in September and October.

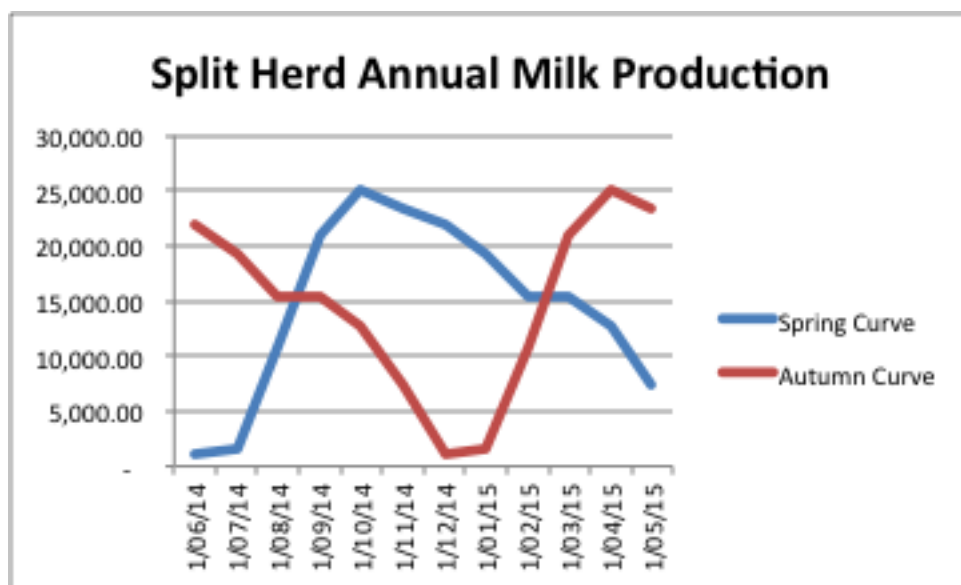
Some farmers will convert their entire herd to this Autumn calving pattern, but more typically a farmer will operate a split herd with about 60% on a normal Spring calving pattern with 40% of the herd on the Autumn calving.

Having done this conversion, farmers normally seek some security of offtake for a period of time to mitigate the risk of having created a high cost of supply. Winter milk contracts are typically three years. To split the herd and to change a calving pattern, a farmer requires a lead time of typically 18 months to implement.

10.5 What sort of a milk curve results

A farmer with a split herd will generate a milk curve that looks like two ingredient milk curves in the same season as per Figure 7 below.

Figure 7: Split herd annual milk production



It is important to note that a winter milker will not supply a flat curve. The winter milk premium paid only ensures that milk is produced in June and July. It is a necessary but insufficient requirement for the production of milk suitable for domestic consumption. A processor still needs to manage the difference between supply and demand. That is typically done by maintaining an ingredient plant open to handle any excess.

Winter milkers are required to supply milk for fresh products in the June and July period. An important point though is that their milk is interchangeable with ingredient milk in the other 10 months of the year. Milk therefore used for the production of fresh products during the 10 months of a normal dairying season is sourced from suppliers that reduce supply chain costs. In other words, the milk from winter milkers is not necessarily used to supply the local market from August to the following May. Such a synergy accrues to those that service both ingredient and consumer markets.

11 Annex Two: Goodman Fielder's milk profile

This Annex illustrates the modelled milk collection of Goodman Fielder assuming its access to 100 million litres of DIRA milk.

Table 6: Goodman Fielder's modelled milk profile

All figures millions of litres	Spring Curve	Autumn Curve	DIRA Milk	Total Milk	Minimum Monthly Requirement	Monthly Excess Milk	Daily Excess Milk
Jun-14	1	12	9	22	21	0.75	0.02
Jul-14	1	11	10	22	21	0.69	0.02
Aug-14	6	9	8	23	21	2.25	0.08
Sep-14	12	9	8	29	21	7.95	0.27
Oct-14	14	7	8	30	21	8.90	0.30
Nov-14	13	4	8	26	21	4.96	0.17
Dec-14	12	1	8	21	21	0.35	0.01
Jan-15	11	1	9	21	21	0.00	0.00
Feb-15	9	6	8	23	21	2.25	0.08
Mar-15	9	12	8	29	21	7.95	0.27
Apr-15	7	14	8	30	21	8.90	0.30
May-15	4	13	8	26	21	4.96	0.17
Jun-15	1	12	9	22	21	0.75	0.02
Jul-15	1	11	10	22	21	0.69	0.02
Aug-15	6	9	8	23	21	2.25	0.08
Sep-15	12	9	8	29	21	7.95	0.27
Oct-15	14	7	8	30	21	8.90	0.30
Nov-15	13	4	8	26	21	4.96	0.17
Dec-15	12	1	8	21	21	0.35	0.01
Jan-16	11	1	9	21	21	0.00	0.00
Feb-16	9	6	8	23	21	2.25	0.08
Mar-16	9	12	8	29	21	7.95	0.27
Apr-16	7	14	8	30	21	8.90	0.30
May-16	4	13	8	26	21	4.96	0.17
	100.00	100.00	100.00		250.00		

Goodman Fielder has an annual monthly milk requirement of 21 million litres of milk. Given the milk curve and the existing Raw Milk Regulations, the milk profile modelled above is the least amount of milk required to provide just enough milk in June and July – see Monthly Excess Milk column. The highlighted numbers represent the peak excess daily milk – peaking at 300,000 litres per day in October and April.