Review of the Regulatory Environment for Domestic Dairy Products

A report prepared for Goodman Fielder New Zealand Limited

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tdb.co.nz

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Table of contents

List of tables

List of figures

List of abbreviations

B	billion
DIRA	Dairy Industry Restructuring Act, 2001 and Dairy Industry Restructuring Amendment Act, 2012
EBIT	earnings before interest and tax
FBNZ	Fonterra Brands (NZ) Limited
FGMP	farm-gate milk price
Fonterra	Fonterra Co-operative Group Limited
FSNI	Foodstuffs North Island
FSSI	Foodstuffs South Island
GDT	Global Dairy Trade™
GF	Goodman Fielder New Zealand Limited
IP	independent processor
kgMS	kilograms of milk solids. 1 litre of milk is comprised of approximately 8.5% milk solids. To convert one kgMS to the approximately equivalent litres of milk, divide it by 0.085.
Kiwi	Kiwi Co-operative Dairies Limited
M	million
Miraka	Miraka Limited
MPI	Ministry for Primary Industries
MT	metric tonnes
NZDG	New Zealand Co-operative Dairy Group Limited
OCD	Open Country Dairy Limited
Oceania	Oceania Dairy Limited
p.a.	per annum
Synlait	Synlait Milk Limited
Tatua	Tatua Co-operative Dairy Company Limited
UHT milk	ultra-heat treatment milk
Westland	Westland Co-operative Dairy Company Limited
WMP	whole-milk powder

Glossary

Allocative efficiency	the efficient allocation of resources among different uses
DIRA	Dairy Industry Restructuring Act, 2001
DIRA milk price	FGMP plus reasonable transport costs
Dynamic efficiency	the efficient allocation of resources over time, as affected in particular by incentives to invest and innovate
Factory-gate milk market	the market for raw milk where milk processors are the vendors
Farm-gate milk market	the market for raw milk where farmers are the vendors
Food service sales	sales to and by cafés, catering companies, hotels, restaurants, institutions and the like
Grocery sales	sales to and by supermarkets
Milk curve	the seasonal pattern of milk production
Monopsony	a single purchaser in a market. Akin to a monopoly which is a single supplier to a market
Normative analysis	a subjective, value-based assessment of "what should be"
Positive analysis	an objective, fact-based description or analysis of "what is"
Productive efficiency	the efficient choice of production and supply methods
Raw-Milk Regulations	Dairy Industry Restructuring (Raw Milk) Regulations, 2001 and Dairy Industry Restructuring (Raw Milk) Regulations, 2012
Route sales	sales to and by petrol stations, dairies and small convenience stores
2012 Regulations	Dairy Industry Restructuring (Raw Milk) Regulations, 2012

1. Summary

TDB Advisory Ltd (TDB), assisted by Pat Duignan, has been commissioned by Goodman Fielder New Zealand Limited (GF) to provide an independent review of the regulations surrounding New Zealand's domestic dairy products markets.

The domestic dairy markets we focus on in this report are:

- the consumer market for dairy products like fresh milk, cheese, butter and yoghurt. Supply of products to the consumer market is dominated by Fonterra Brands NZ (FBNZ) and GF; and

- the farm-gate market for raw milk, where around 11,600 dairy farmers supply milk to six main milk processors. The six processors are dominated by Fonterra, which collects 82% of the milk produced in New Zealand.

There are a number of characteristics of liquid milk that differentiate it, to varying degrees, from other commodities. In particular, milk is perishable and transport costs for milk are high relative to the value of the product. There are also some particular features of New Zealand's dairy market that should be taken into account when considering the appropriate regulatory regime for dairy products. In particular, New Zealand's domestic market is very small relative to the level of production, with domestic sales comprising only 4.5% of total output. In addition, New Zealand's production is pasture-based, meaning milk production is highly seasonal, with production in the peak month (October each year) being typically 20 times as large as production in the lowest producing month (June each year).

The way the regulatory regime and market structure has developed in New Zealand is important to understanding the industry. The merger that created Fonterra in 2001 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 case for the merger depended on the achievement of major efficiencies from New Zealand having a unified dairy exporter, Fonterra Co-operative Group Limited (Fonterra), competing in international markets. The merger resulted in Fonterra having, at least initially, a near monopsony (single buyer) position when purchasing milk from farmers and a dominant position in the domestic consumer market for dairy products.

Fonterra's dominant position in domestic markets was ameliorated somewhat by regulations that gave GF guaranteed access to 250M litres of raw milk p.a. from Fonterra at a regulated price while DIRA remains in place.

In 2015, the thresholds triggering a review of the state of competition in the domestic dairy markets were met in the South Island. In its March 2016 report[1], the Commerce Commission concluded that competition was not sufficient to ensure the efficient and contestable operation of the relevant dairy markets if the DIRA Regulations were removed.

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

[1]Commerce Commission, "Review of the state of competition in the New Zealand Dairy Industry", March 2016 ("Commerce Commission (2016)"). http://www.comcom.govt.nz/regulated-industries/dairy-industry/report-on-the-state-of-competition-in-the-new-zealand-dairy-industry/

the factory-gate raw-milk price by around 25%. This would lead to an estimated transfer of wealth from New Zealand consumers of dairy products to suppliers of between $51M and $92M p.a. and an efficiency (deadweight) loss to the economy as a whole of around $6M p.a.[2] The Commission noted that these estimates were probably conservative.

As a consequence of the recommendations made by the Commerce Commission and a subsequent review led by the Ministry of Primary Industries (MPI)[3], the then Minister introduced into the House in March 2017 the Dairy Industry Restructuring Amendment Bill. The new Government subsequently altered the Bill. The major features in the new Bill, which was passed into law in early 2018, were to remove the DIRA expiry provisions and to remove periodic reviews of DIRA. Absent this law change the DIRA provisions would have terminated in respect of the South Island in May 2018.

With regard to the ongoing state of the regulatory regime, the Government has outlined its intention to undertake a comprehensive review of DIRA beginning in 2018. The purpose of this report is to inform that work by officials and the Government, with a particular focus on understanding the complexities surrounding the regulatory environment for domestic dairy markets.

Our analysis of the domestic dairy market indicates that the DIRA Regulations have worked well in many ways in ameliorating the monopsony power of Fonterra in regard to dairy farmers and its monopoly power in the domestic dairy product market. Competition in the farm-gate and consumer markets has increased since Fonterra was created. In the segment of the consumer market for which market share data are available[4], the market share of the two largest players, FBNZ and GF, has decreased from around 95% in 2002 to around 87% in 2016. In the farm-gate market, Fonterra's share of the milk produced in New Zealand has declined from 96% to 82% in the period to 2017.

While the degree of competition in the domestic dairy markets has increased, we consider that there are opportunities for the Government to improve the current situation and to achieve better-functioning markets. In particular, there are opportunities for the Government to: strengthen the degree of competition in domestic dairy markets; reduce regulatory uncertainty; improve incentives on market participants to innovate; and improve the market behaviour of Fonterra.

In our view, the potential for market-based solutions to improve the situation is limited. In particular, a well-functioning factory-gate market in liquid milk is unlikely to emerge because any milk processor that supplied the market would have to be compensated for the resulting under-utilisation of its own factory. We estimate that the compensation would have to be approximately [Redacted] above the farm-gate milk price (FGMP)[5], making factory-gate milk uncompetitive. Furthermore, independent milk processors are highly unlikely to be able to match the cost efficiency of Fonterra's optimised arrangements for winter-milk supply.

There are a number of other market-based solutions to DIRA that might emerge over time. These options include: GF securing the supply of raw milk directly from farmers; GF extending its contract with Fonterra beyond 2021; the integration of GF with an NZ-based processing exporter; GF undertaking greenfield investments to reach a competitive scale; and the entry of other major independent processors (IPs) to the domestic dairy products market.

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[2] Commerce Commission (2016), p.129, footnote 327.
[3] MPI, Discussion Document, "Proposed changes to the Dairy Industry Restructuring Act 2001 and Dairy Industry Restructuring (Raw Milk) Regulations 2012", Paper No: 2016/05 ("MPI (2016)").
[4] Market-share data for the consumer market is only available for the "grocery" (supermarket) part of the market. Supermarkets account for around 60% of dairy-product sales in New Zealand.
[5] Equivalent to a 17% premium on the average FMGP since Fonterra was established of $5.40. Refer Annex 7.

However, given New Zealand's current market structure and regulatory environment, all of these market-based possibilities face significant obstacles. The most likely market-based option to emerge is the entry of another major IP. Synlait has recently announced its intention to enter the South Island market in 2019 and in doing so will supply (under Foodstuffs South Island house brand) approximately 5% of domestic dairy consumption with its own independent milk supply.[6]

The entry of Synlait highlights the potential for competitive entry, which should benefit consumers (via downward price pressure in the wholesale and retail markets). However, it is not clear that Synlait's entry into the South Island domestic market is easily replicable. Further, none of the market-based options can be guaranteed to emerge to a significant degree and none are within the direct control of the Government. In our assessment, the only option that would unequivocally increase the efficiency of the industry is the extension of GF's contract with Fonterra and then only if the contract is extended on improved terms so that GF becomes a more effective competitor. There could be efficiency gains over time from the other options by increasing the degree of competition in the farm-gate and consumer-products markets. However, it is difficult to assess the magnitude of these gains and there would be some offsetting efficiency losses, as it would mean having more (overlapping) collectors of winter milk.

There is a range of regulatory options for improving the functioning of domestic dairy markets. The regulatory options considered in this report are:

- announcing that the DIRA Regulations requiring Fonterra to supply raw milk to processors that supply dairy products to the domestic market will be abolished from a fixed date;
- phasing down, over time, GF's current entitlement to access DIRA milk from Fonterra;
- extending the DIRA domestic market regulations to, say, 2030, on some combination of the following bases:
    i. the status quo;
    ii. catering for growth in the domestic dairy market;
    iii. requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor for dairy products supplied to the domestic market;
    iv. requiring Fonterra to publish accounts for FBNZ as a separate entity; or
    v. requiring Fonterra to divest FBNZ;
- extending the scope of the DIRA requirements to non-raw milk domestic dairy products (especially butter and cheese); and
- changing the dairy sector regulations so they operate on a basis similar to the Commerce Act Pt 4 as it applies to electricity line businesses and gas pipeline businesses or a basis similar to the proposed regulatory framework for fixed-line telecommunications networks.

Of these regulatory options, in TDB's view the greatest improvement in competition, and thereby allocative and dynamic efficiency, would be achieved by a combination of requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor for dairy products supplied to the domestic market (with no special regulatory entitlement or limit for GF or any other participant) and requiring Fonterra to separately account for FBNZ.

[6] It is not clear yet how Synlait will address the winter milk issue.

Requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor for dairy products supplied to the domestic market would reduce the restrictions on GF's ability to compete with FBNZ (by removing the 250M litre cap on GF) and create a more level playing field between FBNZ, GF and other current and potential domestic market participants. Requiring Fonterra to publish separate audited financial statements for FBNZ would reduce the potential for Fonterra to cross-subsidise FBNZ in a way that is detrimental to its competitors and the long-term interests of consumers.

We do not consider it desirable for the Government to simply remove or reduce GF's or other domestic market suppliers' entitlements to Fonterra milk without putting other offsetting measures in place. Our conclusions reflect our assessment that there would be a loss of allocative efficiency under any option where GF is required to develop its own farm-gate supply or to contract with an established IP. This assessment, in turn, reflects an analysis that Fonterra has achieved economies of scale and scope in milk collection, including, but not confined to, winter-milk procurement that could not be matched by either GF or any other IP[7].

The overall implication is the provision of milk for the domestic dairy products market exhibits a high degree of market power and high barriers to entry. It might be the case that, if Fonterra had a competitor with a market share in the farm-gate market above, say, 25% in either island, then that competitor could access economies of scale of the same order as Fonterra. However, no competitor is likely to reach that scale in the foreseeable future. This conclusion applies to the supply of milk for the domestic dairy products market – it does not apply to production for export. However, the entry of Synlait to the domestic market should be followed closely to analyse its effect. Synlait's domestic market volumes will be approximately 5% of its total milk volumes (a similar ratio to Fonterra's), which reinforces that while it is possible for an IP with independent milk supply to have an export business without a domestic business it is difficult (if not impossible) to have a domestic business without an export business.

Overall, the best option is likely to be to amend and extend the DIRA regulations governing the domestic dairy products market in the manner suggested, that is, requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor for dairy products supplied to the domestic market and requiring Fonterra to separately account for FBNZ, until sufficient competition has emerged.

[7] We estimate that if GF had to source its milk directly from farmers, the additional collection costs would increase GF's milk costs by [redacted]. Refer Annex 5.

2. Introduction

This report reviews the regulatory environment for domestic dairy products in New Zealand. Following the summary (Section 1) and this introduction (Section 2), we outline in the methodology section (Section 3) the framework followed for our analysis, the processes followed in preparing the report and the scope of the review.

The following three sections of the report provide a positive analysis of the domestic dairy products market. Section 4 provides the historical context for this review, including the establishment of Fonterra, the development of the DIRA and subsequent amendments to the legislation and regulations. The following section, Section 5, discusses the particular features of dairy products and the dairy sector in New Zealand that matter when considering the appropriate regulatory regime. Section 6 then outlines the current structure of the domestic dairy products market.

Sections 7 to 10 provide a normative analysis of the current regime and alternative regulatory and non-regulatory (market-based) institutional arrangements for the future. Section 7 discusses the problems with the current regulatory regime and the opportunities for achieving a better-functioning domestic dairy products market. Section 8 considers the potential for a factory-gate raw-milk market to develop in New Zealand while Section 9 identifies and assesses a range of other potential market solutions. Section 10 then identifies and discusses a number of regulatory options, ranging from removing the current regulations to structural solutions that improve the efficiency and effectiveness of New Zealand's domestic dairy products market. Finally, Section 11 provides our conclusions.

Annexes to the report provide: a discussion of the relationship between the Commerce Act and the dairy sector in New Zealand (Annex 1); a description of the FGMP (Annex 2); details of the Commerce Commission's 2016 dairy competition review (Annex 3); an outline and analysis of the original Dairy Industry Restructuring Amendment Bill 2017 (Annex 4); an analysis of the natural monopoly characteristics of the domestic fresh-milk market (Annex 5); an analysis of the implications of seasonal milk supply for GF (Annex 6); a detailed estimation of a factory-gate milk price (Annex 7); and an analysis of the Synlait-FSSI agreement and the seasonal milk supply for Synlait (Annex 8).

3. Methodology

3.1 Framework for the analysis

The methodology adopted in this report is a conventional welfare-economics approach. We assume the Government's objective is to maximise the welfare of all New Zealanders (that is, a national-welfare perspective).

In the first instance, our focus is on assessing the net benefits of the different regulatory and non-regulatory options to the New Zealand economy as a whole without regard to the distribution among different sectors (eg consumers vs. producers) of possible gains and losses. Our focus, therefore, is on economic efficiency and the impact of different market and regulatory options on the overall efficiency of the economy.

We then consider the impact on consumers and the possible wealth transfers from consumers to milk suppliers under the different options. As is discussed in more detail in Section 4, the merger that led to the establishment of Fonterra was permitted, under special legislation, to bypass the Commerce Act and thus bypass the protections afforded to consumers by the Commerce Act. As part of the deal made to gain the expected benefits for the dairy industry from the merger, protections were put in place to shield consumers from the detrimental effects of the domestic market becoming a near-monopoly[8]. These protections were:

- to require one of the two founding companies of Fonterra, the New Zealand Dairy Group (NZDG), to divest its domestic consumer business, New Zealand Dairy Foods (NZDF); and

- to give NZDF's (eventual) new owner, GF, guaranteed access to 250M litres of raw milk p.a. from Fonterra at a regulated price while DIRA remained in place.

We therefore consider carefully the impact of possible regulatory changes on consumers as well as the rest of the economy.

Our approach is consistent with the conceptual framework of the Commerce Act that focuses, in the first instance, on the state of competition in the domestic market. In that regard, the assessments in the Commerce Act (Part 2) are national-welfare assessments. If, however, there is little competition and little prospect of competition then Part 4 can be invoked. Part 4 explicitly includes the objective of limiting the ability of suppliers to earn excess profits. In other words, there is a switch from a national welfare analysis to an analysis explicitly concerned with wealth transfers affecting consumers if there is little competition in a market.

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[8] As then opposition MP Bill English said, in Parliament, at the time of the First Reading of the Dairy Industry Restructuring Bill:

> "… this bill (that established Fonterra) is the product of a political deal between the Government and the dairy industry, and part of that deal is that the industry accepts a degree of regulation to mitigate the effective monopoly with which it sets out.
>
> …..Parliament now has a public interest job to do, and that job is to ensure that a regulatory regime comes into place that protects consumers and protects suppliers."

Refer Hansard, 26 June 2001, p 10059.

In assessing the options considered in this report, if the option has a good prospect of achieving workable competition (which would limit wealth transfers from consumers to suppliers), our focus will be on conducting national-welfare analysis. However, where an option is likely to fail to achieve competition, it is appropriate that the assessment should fully consider, and give weight to, wealth transfers. Thus, for example, when considering the phased reduction in GF's milk entitlement, if there is doubt that the reduction will achieve a workably competitive factory-gate market, then the assessment of that option should give prominence to the wealth transfer. On the other hand, if the option is assessed to have good prospects of achieving a competitive outcome, the focus will be on the national-welfare assessment.

Our analysis follows the standard framework for public policy analysis and design, as outlined in the Treasury's "Regulatory Impact Analysis Handbook"[9]. These guidelines state that a Regulatory Impact Analysis (RIA) should:

- explain the current situation and the nature and size of the problem;
- set out the policy objectives;
- identify the range of feasible options (both market and non-market options);
- provide an analysis of the costs, benefits and risks of these options; and
- provide an indication as to how the options would be implemented, monitored and reviewed.

The RIA seeks to ensure that private and non-regulatory arrangements are considered and that particular regulatory solutions have been demonstrated to enhance the public interest.

3.2 Process followed

In preparing this report, we reviewed numerous documents and consulted with a variety of market participants and regulators.

We also consulted with the following government agencies:

- the Ministry of Primary Industries (MPI); and
- the Ministry of Business, Innovation and Employment (MBIE).

Beyond this, our study was primarily desktop-based, relying on our extensive dairy and public-policy experience and the range of previous studies and reviews of the dairy industry.

3.3 Scope of the review

The focus of this review is on the regulatory regime for New Zealand's domestic dairy products market. As well as standard raw milk (as currently regulated by DIRA), we consider other important products in the domestic dairy products market such as organic milk, butter and cheese products. The relative size and structure of the markets for these different products are discussed in Section 6, below.

[9] http://www.treasury.govt.nz/regulation/regulatoryproposal/ria/handbook/ria-handbk-jul13.pdf

4. Background

4.1 Development of the DIRA

New Zealand's largest dairy processor, the co-operative company Fonterra, was established in 2001 from an amalgamation of the then two largest dairy co-operatives (New Zealand Co-operative Dairy Group Limited (NZDG) and Kiwi Co-operative Dairies Limited (Kiwi)) with the New Zealand Dairy Board. In forming Fonterra, participants sought to realise efficiencies of scale and scope in the collection and processing of farmers' milk so as to better compete in international dairy markets, to the overall benefit of New Zealand.

At the time, the value of the benefits to New Zealand farmers was estimated to be $310M[10] p.a. or almost $4 billion on a capitalised present value basis[11].

On 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 to farmers 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.

The Dairy Industry Restructuring Act, 2001 (DIRA) authorised the amalgamation after the Commerce Commission's draft determination that the merger would result in a strengthening of a dominant position in each of the relevant markets[12].

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

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[10] "The Quigley report on dairy megamerger", 24 January 2001. Section 4.1 of the Quigley report refers to the "Business Case for Global Dairy Co Ltd: Executive Summary" that outlines the sources of the $310M in benefits that were claimed to be associated with the merger.

[11] Using Fonterra's FY16 pre-tax WACC of 7.9% to capitalise a benefit expressed in 2001 dollar values.

[12] The Commerce Commission had reached the preliminary conclusion, in 1999, that the merger that formed Fonterra could not be authorised under the Commerce Act. The Commission's preliminary estimate was that the merger would result in a price rise in domestic dairy products markets (other than spreads) of between 10% and 20%. This translates to a wealth transfer from domestic consumers to the merged entity (Fonterra) of between $75M and $146M p.a., and a net deadweight welfare loss in the domestic dairy production and supply markets of up to $4M p.a. This deadweight loss included both allocative losses in the domestic dairy products-market and dynamic efficiency concerns.

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 IPs to New Zealand dairy markets and enable them to obtain the raw milk necessary to compete in dairy markets.

The original regulations required Fonterra to supply, at a regulated price, up to 50M litres of raw milk p.a. to any IP and up to 250M litres p.a. to GF. The price of regulated raw milk was the farm-gate milk price (FGMP)[13] for that season plus reasonable transport costs.

An IP is defined in DIRA as:

- a processor of milk, milk solids or dairy products that is not associated with Fonterra; and
- includes NZDF (GF) and any associated person of that company other than Fonterra.

IPs, therefore, include the obvious companies such as Tatua and Westland, but also the less obvious companies like GF and Cadbury[14]. The latter IPs choose to outsource their raw milk supply to vertically integrated dairy processors rather than sourcing it directly from farmers.

The default price specified in the Regulations is a calculated price that is meant to ensure the following outcomes:

- Fonterra is constrained from offering farmers a higher price for their milk. This reduces the risk of Fonterra being able to offer a higher FGMP to limit the ability of competing processors to persuade farmers to switch to supplying them; and
- from a domestic consumer perspective, competition in the domestic market between wholesale companies is sufficient to ensure that Fonterra does not have the power to charge prices in excess of what is required to generate an adequate return on capital employed.

Thus, the DIRA pro-competition provisions were designed to ensure that milk flows to the highest-value user (whether the user is a producer of dairy commodities, ingredients or consumer products) and to avoid wealth transfers from domestic consumers to Fonterra. The provisions work in parallel with, and are supplementary to, the general competition provisions of the Commerce Act, 1986 (refer to Annex 1).

The reference to a substantial degree of market power in many key domestic markets was a reference to the fact that both NZDG and Kiwi had sizeable domestic consumer businesses that would no longer be competing against each other (due to Fonterra's creation). Consequently, a condition of the amalgamation was that the domestic business of NZDG (being NZDF, which is now owned by GF, albeit with some material changes over the years) had to be divested.

NZDF was a small part of the substantial dairy exporting co-operative business that was originally created to collect its supplier/shareholders' milk for processing and sale. As such, NZDF effectively had its own direct milk supply. The requirement for NZDG to divest NZDF excluded a requirement that NZDF retained its own milk supply. Instead, the requirement for NZDF to have access to milk was covered by the regulation that required Fonterra to supply 250M litres of raw milk p.a. to NZDF/GF.

That 250M litre annual supply requirement was enacted for at least two reasons:

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[13] The FGMP is a notional calculation of the cost of milk supplied to Fonterra on the basis that Fonterra is an efficient processor. Annex 2 provides a detailed breakdown of the FGMP calculation and history.
[14] Supermarkets do not meet the definition of an IP under DIRA and do not have any direct access to DIRA market.

- without the supply requirement, GF would probably have been forced to expand into and compete against Fonterra in export markets[15]; and
- if GF had to collect the raw milk directly from farmers it would have been at a competitive disadvantage to Fonterra from a collection-efficiency perspective that Fonterra could have exploited.

While GF has access to DIRA milk, the milk it obtains from Fonterra is supplied under contract. The terms and conditions of the contract are very similar to those in DIRA. The contract expires in 2021[16].

4.2 Changes to DIRA Regulations in 2012

The 2001 Regulations were revoked on 1 June 2013 and replaced by the Dairy Industry Restructuring (Raw Milk) Regulations, 2012 ("the 2012 Regulations").

Under subpart 1 of the 2012 Regulations:

- the total amount of raw milk to be supplied by Fonterra to IPs increased from 600M litres per season to 795M litres per season;
- the total amount of raw milk to be supplied by Fonterra to GF was unchanged, at 250M litres per season, but supply in the non-winter months was limited to 110% of the amount of raw milk supplied in the preceding October;
- the total amount of raw milk to be supplied by Fonterra to any one individual IP was unchanged, at 50M litres per season, but maximum monthly limits for non-winter milk were put in place; and
- the obligation on Fonterra to supply raw milk to an IP in a season beginning on or after 1 June 2016 was extinguished if that IP's own supply of raw milk in the three previous seasons was 30M litres or more.

Subpart 3 of the 2012 Regulations divided IPs into two categories:

- those with no, or less than 30M litres of, own-supply raw milk; and
- all the others: being those with more than 30M litres of own-supply raw milk, those that do not require a fixed quarterly raw-milk price from Fonterra, and GF.

For the first group, the new regulations changed the price of raw milk supplied by Fonterra from the FGMP plus $0.10 per kilogram of milk solids (plus transport costs and winter-milk premiums) to a fixed quarterly price being Fonterra's most recent forecast FGMP (plus transport costs and winter-milk premiums).

[15] As explained in Section 5, it is possible in New Zealand to have a dairy export business without a domestic business but it is very difficult, if not impossible, to have a commercially viable domestic dairy products business without an export business.
[16] The overwhelming bulk of the raw milk supplied to GF goes into fresh white milk, flavoured milk, yogurt, and other cultured products markets in New Zealand. A small proportion of it goes into the manufacture of specialty cheeses at GF's Puhoi factory north of Auckland.

For the second group, the new regulations changed the price of raw milk supplied by Fonterra from the FGMP plus $0.10 per kilogram of milk solids (plus transport costs and winter-milk premiums) to the FGMP (plus transport costs and winter-milk premiums).

4.3 The Dairy Industry Restructuring Amendment Bill (No 2) 2017

A review of the state of competition in the dairy industry was triggered in 2015 as a consequence of Fonterra collecting less than 80% of milk solids from dairy farms in the South Island in the 2014/15 season[17]. The review, undertaken by the Commerce Commission, found that the current state of competition in the dairy industry is not yet sufficient to ensure the efficient and contestable operation of dairy markets in the absence of the DIRA regulatory regime[18]. The findings of the Commerce Commissions review are summarised in Annex 3.

The Commerce Commission recommended that any transition pathway to deregulation should take a staged approach. Initially, this would involve removing elements of the regulatory regime that contribute least to efficiency and contestability.

In March 2017 as a consequence of the recommendations made by the Commerce Commission and a subsequent MPI-led review, the then Minister introduced into the House the Dairy Industry Restructuring Amendment Bill. That Bill was subsequently substantially altered by the new Government before being passed into law on February 15, 2018. (The key features of the original Bill are outlined in Annex 4.)

The changes made to the DIRA by the amendment prevent the relevant DIRA provisions from expiring in the South Island and remove the market share thresholds that would trigger the Act's expiration in the future. The other provisions that were set out by the original Bill (under the previous Government) were removed[19].

In removing the previous provisions which timetabled a further review for 2020/21 the new Government has announced its intention to "undertake a comprehensive review of the DIRA and consult fully with the dairy sector"[20], commencing in 2018. Cabinet is set to announce further details on the timing, delivery and scope of the review by the end of May 2018. It is likely that there will be additional changes to the DIRA after this comprehensive review is completed and its findings are considered.

[17] Prior to the more recent amendments, DIRA provided for the default expiry of a number of its provisions in the event that IPs collected more than 20% of milk solids from dairy farms in either the North Island or the South Island in any season. However, meeting the 20% market share threshold was not conclusive evidence of sufficient competition and efficient dairy markets. DIRA therefore required that a detailed review of the state of competition in the New Zealand dairy industry be undertaken.

[18] Commerce Commission (2016).

[19] The original Bill (among other things):

- removed the default expiry provisions and the market share thresholds in the North and South Islands that trigger a review of the state of competition;
- required a review of the state of competition to commence during the 2020/21 dairy season;
- required a review at five-year intervals thereafter if competition has not yet been considered sufficient;
- allowed Fonterra the discretion to refuse supply from new dairy conversions;
- reduced the total volume of raw milk that Fonterra must supply to IPs from 795M litres to 600M litres per season; and
- removed the requirement for Fonterra to supply DIRA milk to large export-focused processors from the beginning of the 2019/20 season. The definition of a large export-focused processor is one that has the capacity to process more than 100M litres of milk per season and exports more than 50% of its production by volume.

[20] https://www.beehive.govt.nz/release/dairy-industry-restructuring-amendment-bill-passed

5. Particular features of the domestic dairy market

5.1 Introduction

Liquid milk has certain important features that differentiate it to varying degrees from other commodities. In particular, milk is perishable, the volume and cost of supply vary on a seasonal basis, it has high transport costs because of its high water content and in New Zealand there is a very small domestic market relative to the total output of the industry. This section of the report discusses these particular features of liquid milk and dairy products and draws out some potential implications for the regulatory regime.

5.2 Context

Total global annual milk production is estimated to be around 500 billion (B) litres of milk as of 2016[21]. The size of the internationally traded dairy products market is estimated to be the equivalent of around 65B litres, which is less than 15% of total production. In other words, more than 85% of the milk produced globally is consumed within the country of production.

In contrast, New Zealand's annual milk production is estimated to be approximately 21B litres (or less than 5% of global production), of which approximately 5% is consumed domestically and 95% exported. New Zealand's share of the internationally traded dairy products market is approximately 30%, or 20B litres p.a.

The milk production statistics for selected countries or regions is illustrated in Table 1, below[22].

Table 1: Annual milk production for selected countries (2016)

Country / region	Production (billions litres)
European Union	150.0
United States of America	93.5
India	66.4
China	37.6
Russia	30.3
Brazil	34.6
New Zealand	21.3

Sources: USDA; UN FAO; TDB Advisory

Table 1 highlights the small size of New Zealand's milk production relative to the larger producing countries. The EU's production of milk is seven times as large as New Zealand's and the United States' is 4.5 times as large as New Zealand's.

The New Zealand dairy industry, however, is like no other in the world because it produces milk in huge volumes relative to the amount that is consumed domestically. While being able to produce milk at internationally competitive prices is positive, there are aspects of the New Zealand industry that are

[21] USDA, Dairy: World Markets and Trade, December 2016.
[22] The original source materials units of production were metric tonnes. We have converted those units to billion litres assuming that one litre of milk weighs one kg, which is approximately but not exactly correct.

very challenging, including the proportion of production that needs to be exported, the consequent exposure to international prices, the distance from export markets and the shape of the seasonal milk curve.

Table 2 below provides the proportions of national dairy production that are consumed domestically and exported from the major milk-producing countries.

Table 2: National production consumed domestically and exported (2016)

Country	National production (billions litres)	Domestic consumption (%)	Exported (%)
New Zealand	21.3	5%	95%
Australia	9.5	55%	45%
United States of America	93.5	85%	15%
European Union	150	89%	11%
India	66.4	96%	4%
Russia	30.3	98%	2%
China	37.6	100%	0%
Brazil	34.6	100%	0%

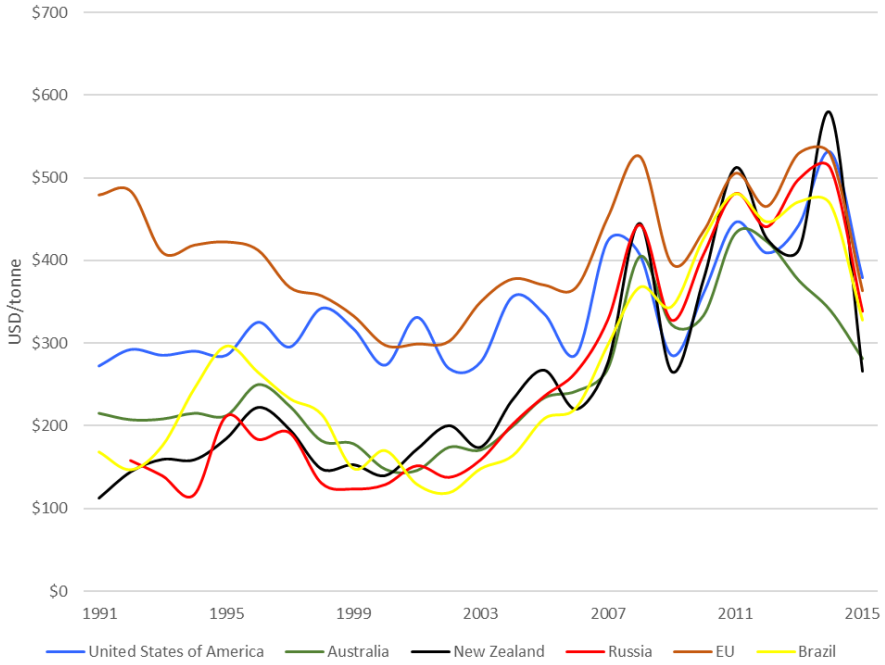
Source: USDA, 'Dairy: World Markets and Trade' Dec 2016; TDB Advisory

Table 2 illustrates two important issues:

- New Zealand's domestic market is almost insignificant compared with the volume of milk produced and exported; and
- New Zealand is more directly exposed to international dairy prices than any of the other countries/regions.

The consequences of being highly exposed to international dairy prices are significant as can be seen in Figure 1 below. The graph presents estimates of average dairy prices by country or region between 1991 and 2015.

Figure 1: Dairy-product prices per country / region



Source: UN FAO data; TDB analysis

As can be seen in Figure 1 above, New Zealand's dairy prices are more volatile than the other countries'. New Zealand's lowest price is lower than any other country's, its highest price is higher than any other country's, and the distance between the peaks and troughs moving through time is greater than any other country's. These price characteristics mean New Zealand processors (and therefore New Zealand dairy farmers) are exposed to more volatile prices than their international peers.

5.3 Size of the domestic market relative to domestic production

As noted above, New Zealand produces about twenty times more dairy products than the domestic market can consume. The fresh-milk market in New Zealand consumes approximately 600M litres of milk p.a. compared to annual production of 20.7B litres of milk. The relative size of the domestic market and the absolute requirement to be an efficient processor via scale forces new IPs to focus on export markets.

As an example, given today's technology, an efficient table-cheese plant is one that has the capacity to produce 25,000 metric tonnes (MT) of cheese p.a. at a cost of around $180M (including the ability to manage by-product, effluent and storage). New Zealand's total domestic consumption of table cheese is 21,000 MT p.a. Therefore, in order to be able to produce cheese efficiently, an IP would have to build a plant with the capacity to service close to 120% of the domestic market.

For the New Zealand grocery-channel market for dairy products, Fonterra Brands New Zealand (FBNZ) has a branded marker share of around [Redacted] by volume and GF has around [Redacted]. The smaller players combined have about [Redacted]. The balance is made up of supermarket house-branded fresh white milk, cheese and butter – which together account for around 50% of the total dairy market. Fonterra/FBNZ is the largest manufacturer of supermarket house-branded dairy products in New Zealand.

A new table-cheese manufacturer targeting the domestic market, therefore, would be fighting for a share of the [Redacted] of the market that the supermarkets do not own. If the new manufacturer was able to [redacted], it would, given the scale needed to be efficient, be producing 25,000 MT of cheese. Of this, 2,100 MT would be sold domestically (10% of the 21,000 MT domestic market) with the remaining 22,900 MT being exported.

The above helps to explain why there are only two non-specialty cheese manufacturers in New Zealand: Fonterra and Open Country Dairy (OCD). Fonterra's annual cheese production is approximately 310,000 MT and OCD's annual cheese production is approximately 30,000 MT. Practically 100% of OCD's cheese is exported.

As well as the efficient capacity requirement forcing producers into export markets, the capital required means that new capacity is limited to large corporates.

There are a number of specialty cheese manufacturers in New Zealand of which GF's Puhoi Valley Cheese Company Limited (Puhoi) is one of the largest. [Redacted] comparable to the annual production from approximately six average-sized dairy farms. Own-supply for specialty cheese manufacturers is therefore a difficult option because the risk of supplying a small specialty manufacturer is too much for a dairy farmer[23].

The butter situation in New Zealand is similar to the table-cheese situation. Butter is made from the fat component of milk. Therefore, a processor producing butter needs to also produce skim milk powder and have two separate manufacturing processes[24]. New Zealand exported 550,000 tonnes of butter in 2016 compared to a domestic market of around 22,000 MT[25]. If a processor is running a minimum-sized efficient plant in New Zealand and processing 200M litres of milk p.a. to produce butter and skim milk powder, that processor would be producing 7,800 tonnes of butter and 18,000 tonnes of skim milk powder[26,27]. Therefore, in order to be able to produce butter efficiently, an IP would have to build a plant with the capacity to service close to 35% of the domestic market.

5.4 Seasonality and the domestic fresh-milk market

The New Zealand dairy industry is internationally cost-competitive, in part because New Zealand's temperate climate and abundant water allows the farming system to be a pasture-based system where milk production matches grass growth. The pasture-based system, however, means milk production is highly seasonal. Milk production in the peak month (October each year) is typically 20 times larger than the lowest milk-producing month (June each year).

The demand for fresh milk in the domestic market does not match the seasonal milk supply curve of the industry. The domestic demand for milk is flat over a given year meaning that approximately the same amount of milk is demanded for domestic consumption in every month of the year.

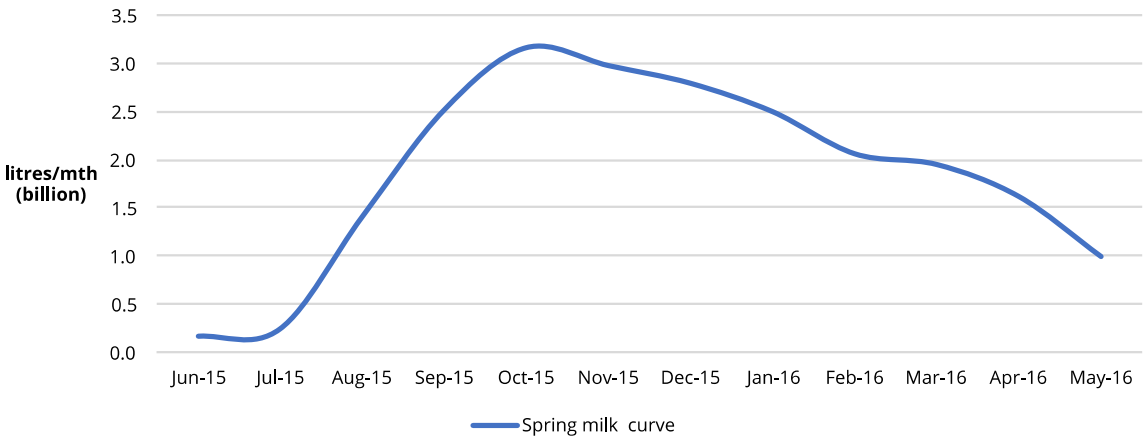
[23] A specialty cheese manufacturer might integrate backwards and buy farms, but this would require a sizeable investment; the current value of a farm or farms producing 885,000 kgMS is around $50M.
[24] But not necessarily vice versa. If a processor is producing skim milk powder, it must also produce some sort of fat product such as butter, milk powder or anhydrous milk fat.
[25] https://www.indexmundi.com/agriculture/?country=nz&commodity=butter&graph=exports.
[26] 100 litres of milk produces approximately 3.9 kgs of butter and 9.0 kgs of skim milk powder.
[27] Skim milk powder is a basic commodity with the world's big manufacturers being the EU and the USA. New Zealand is not a globally significant producer of skim milk powder in the same way as it is a globally significant producer of whole milk powder.

The multiple between the highest and lowest milk-producing months would be more than twenty if Fonterra did not specifically incentivise farmers to produce winter milk for the domestic market by paying them a margin over the FGMP.

For the winter of 2017, the contracted winter-milk premium for the North Island was $3.17 and for the South Island it was $3.92. The contract premium reduced by 2.5 cents for every 10 kilometres (in travel distance) the supplying farm was from the designated factory. In the North Island, there are four designated factories: Kauri in Northland, Takanini in Auckland, Waitoa in Waikato, and Longburn in Manawatu. In the South Island, there is one designated factory located in Christchurch. The winter-milk premiums are designed to compensate farmers for the additional costs associated with feeding their herds when there isn't any grass growth and therefore are a good indicator of the costs of deviating from a pasture-based system. The contract design also means that farmers effectively pay the winter-milk transport costs.

Figure 2 below shows the seasonal milk supply curve[28].

Figure 2: New Zealand milk curve



Source: Dairy Companies Association of New Zealand (DCANZ), 2016 milk collections data.

The area under the curve presented in Figure 2 equals New Zealand's total milk production in the 12 months ended 31 May 2016 – approximately 21.3 billion litres of milk. The seasonal curve is based predominantly on a spring calving regime (to match grass growth). Seasonal milk curves vary throughout the country because of, amongst other things, different climatic conditions and different farming practices.

The seasonal pattern of milk production and the large excess supply of milk in the domestic market[29] is managed by creating extended shelf-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 and the non-seasonal nature of domestic demand, it is no surprise that the original two large pre-merger domestic businesses were subsidiaries of very large export businesses (NZDG and Kiwi). Both NZDG and Kiwi had large ingredient businesses to funnel their excess milk

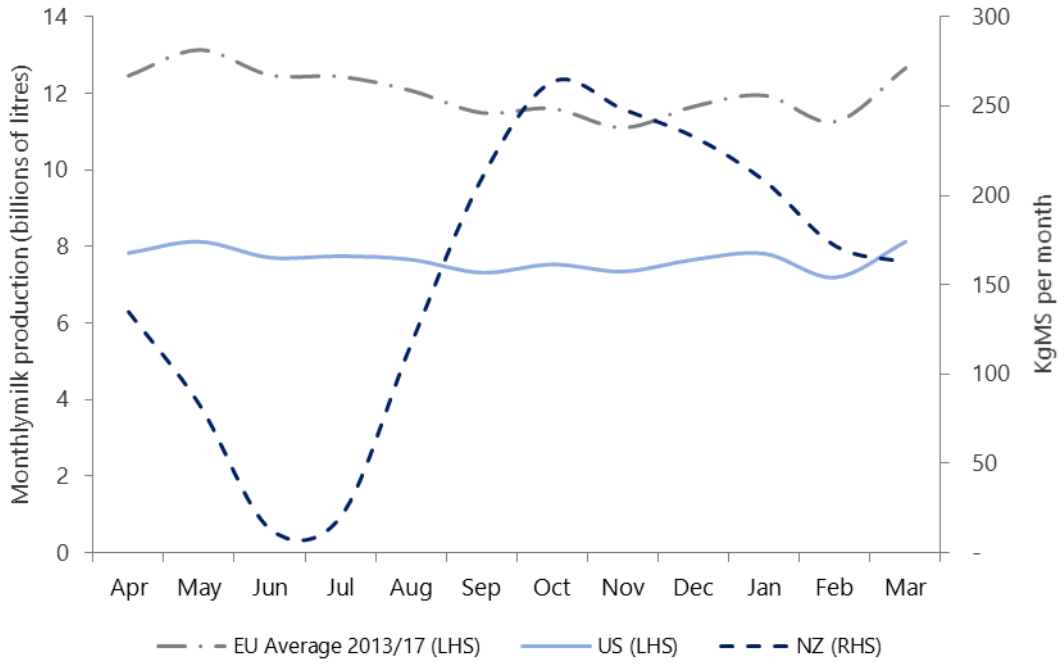
[28] Figure 2 includes Fonterra's winter-milk collections and it uses monthly data (rather than daily data). Therefore, it is a flatter curve than GF would expect to face if it sourced its milk directly from farmers.
[29] Annex 6 analyses more closely the seasonality effects on GF's business operations.

through to manufacture and export 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 that have their own milk supply from farmers can have an export ingredients business without a domestic business. However, these participants are unlikely to have a domestic business without an export ingredients business (or access to one).

As Figure 3, below, illustrates, the shape of the seasonal milk curve in New Zealand is much more extreme than in the US or EU.

Figure 3: Milk curves – international comparison



As noted above, New Zealand produces 20 times as much milk in October as it does in June each year. The EU's peak month is May and its trough month is November. The EU produces 1.2 times as much milk in May than it does in November each year. The United States' peak month is also May and its trough month is February. The US produces 1.1 times as much milk in May than it does in February each year[30].

These peak to trough variations graphically illustrate the difficulty the New Zealand milk curve causes New Zealand processors, especially those who are focused on the domestic market.

The combination of the size of the domestic fresh-milk market relative to the volume of output and the seasonal variation in milk production results in the New Zealand domestic fresh milk market having many of the characteristics of a natural monopoly. Capital costs and economies of scale are large relative to the size of the domestic market, making barriers to entry relatively high. Annex 5 explores in more detail the natural monopoly characteristics of the New Zealand fresh-milk market.

[30] While not shown in the graph above, the approximate peak to trough measurements for Argentina (as a proxy for Brazil) and Australia are 1.6 and 1.8 times respectively.

It has always been well known that the New Zealand dairy industry is more exposed to international dairy prices than other countries and that New Zealand's milk curve is "peakier" than others. This section adds context to the discussion and quantifies the magnitudes of these features. The magnitude of the differences needs to be taken into account when looking offshore for examples of how to manage the market dominance of an entity such as Fonterra or to encourage competition.

6. Current market structure: the farm-gate and consumer markets

6.1 Introduction

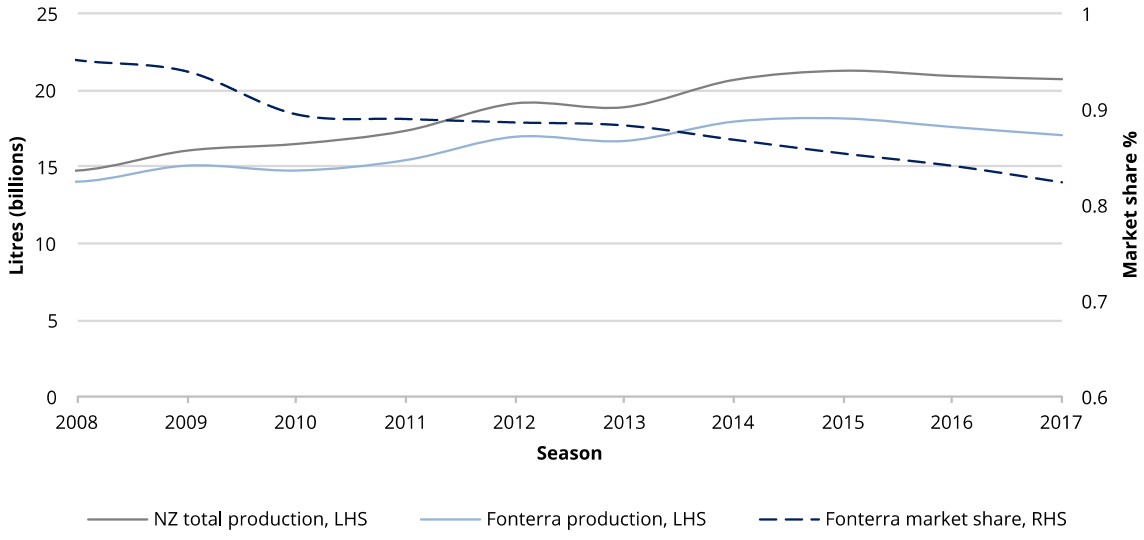
This section discusses the current structure of the dairy markets in New Zealand. The markets are segmented into the farm-gate market and the consumer market. The factory-gate market (where processors trade collected raw milk with other processors) is almost non-existent except for the regulated supply of milk by Fonterra to GF. The potential for an unregulated factory-gate market for milk to develop is discussed in Section 8.

6.2 The farm-gate market

The farm-gate market is the market for the collection and purchase of raw milk from farmers.

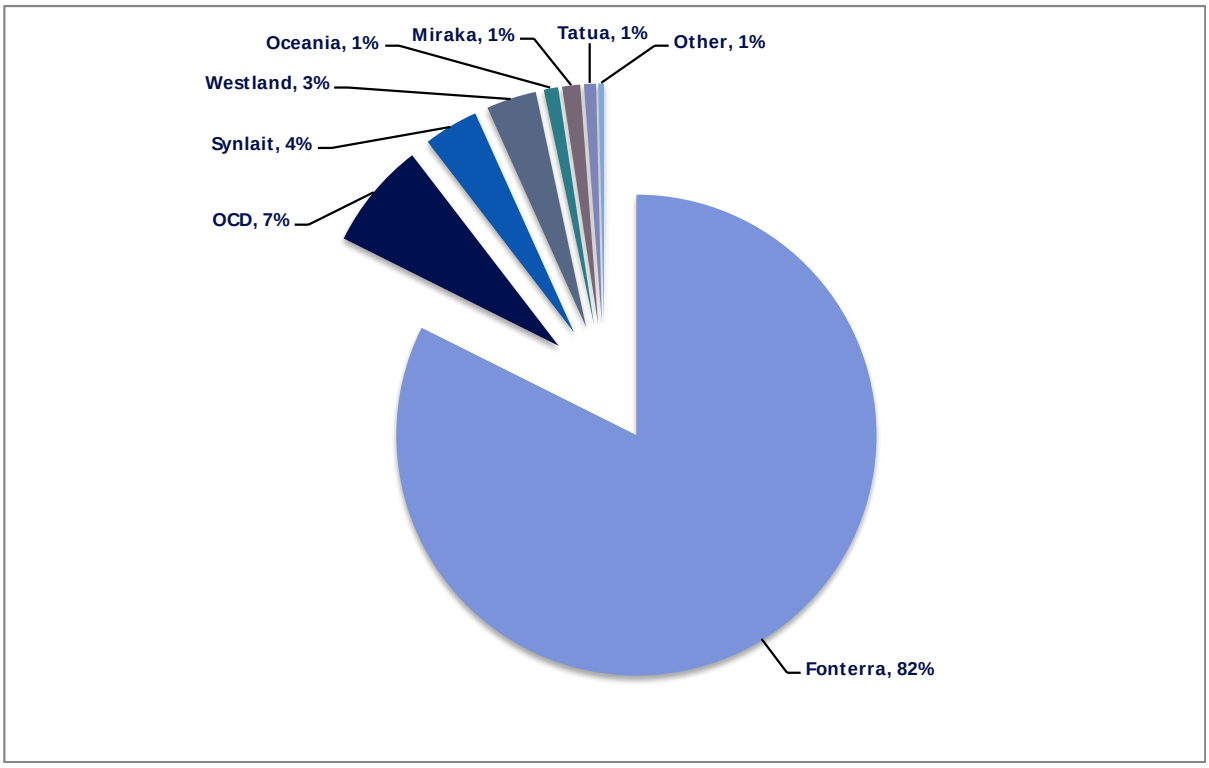
On the supply side, there are over 11,650 dairy farms supplying milk in New Zealand. Fonterra dominates the demand side of the market. On its formation, Fonterra collected around 96% of the milk produced in NZ. Since then, there have been six new entrants in the farm-gate market, with five of the new entrants continuing to operate and four effectively competing at the farm gate. Fonterra's share of the farm-gate market has declined steadily over the last fifteen years since Fonterra was established from 96% in 2002 to 82% in 2017. The trend in Fonterra's market share over the last ten years is shown in Figure 4 below.

Figure 4: Total NZ milk production and Fonterra's market share



The current market shares of the main NZ milk-processing companies are shown in Figure 5 below.

Figure 5: Market shares of milk collections in NZ (2017)



Each of the main dairy processors is described below.

Open Country Dairy Limited

Open Country Dairy (OCD) was originally established as Open Country Cheese Company Limited, which originally raised equity from a large number of small investors to build a cheese factory in Waharoa, in Waikato. OCD used DIRA milk to provide base volume for the cheese factory.

OCD's first expansion beyond Waharoa was the construction of a whole milk powder (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. OCD subsequently used DIRA milk to mitigate its milk supply risk as it expanded into Whanganui. OCD is now the second largest dairy company in New Zealand with a 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.

OCD is no longer able to access DIRA milk.

Synlait Milk Limited

Synlait Ltd was founded in 2000 by three shareholders who established and managed various dairy farms and dairy farm conversions. Synlait Milk Ltd was incorporated in 2005 to process the milk provided by Synlait Ltd's farms and other third-party suppliers. The Synlait farms have now been sold and Synlait Milk is now jointly listed on the New Zealand Stock Exchange and Australian Securities Exchange. Its largest shareholder is Bright Dairy Holding Limited.

Synlait Milk (Synlait) has a current processing capacity of approximately 700M litres of milk. 100% of its production is exported. Its focus has traditionally been the business-to-business market for formulated powders although it has recently announced an intention to invest in a new $125M advanced

liquid dairy packaging facility[31] on its site in Dunsandel, Canterbury. It has also recently announced the purchase of 28 ha of land in Pokeno, North Waikato, to establish a second $260M powder manufacturing site[32].

Synlait has its own milk supply contracts with farmers. It previously used DIRA milk to mitigate the risks of its growth strategy. It is also no longer able to access DIRA milk.

Miraka Limited

Similar to Synlait, Miraka Ltd (Miraka) started with a milk supply partially underwritten by its shareholders. It is located on a single site approximately 30 km north-west of Taupo. Miraka has a milk processing capacity of approximately 250M litres from which it produces WMP and UHT milk. 100% of its production is exported.

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

Oceania Dairy Limited

Oceania is owned by Inner Mongolia Yili Industrial Group Company Limited. 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 (China's largest dairy company).

Oceania has an estimated processing capacity of 420M litres of milk. The processing factory was opened in time for the 2014/15 season. It has its own supply but originally used DIRA milk as well. It lost its access to DIRA milk on 1 June 2017.

Gardians Limited

The Gardians plant was commissioned in 2012 with its 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 80M litres of milk. This company is now owned by French dairy company Danone. While this company has its own milk supply, it gets all its milk from a single supplier and therefore is not competing in the farm-gate market.

Gardians does not use DIRA milk.

New Zealand Dairies Limited (in receivership)

New Zealand Dairies was originally owned by New Zealanders that included local farmers. The Russian company Nutritek got involved with the company as a consequence of the original owners running into financial difficulties. New Zealand Dairies was eventually placed in receivership and Fonterra bought the assets. The plant (located in Studholme, Otago) has the capacity to process 200M litres of milk p.a.

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.

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[31] Synlait's new facility will have a minimum capacity of 110M litres p.a. and be capable of producing high-specification pasteurised milk and cream (for domestic consumption); extended shelf life dairy products; long-life milk and cream (for the export market); ready-to-drink (RTD) liquid infant milk formula; and other blended dairy-based beverage products.
[32] https://www.nbr.co.nz/article/synlait-milk-buys-pokeno-site-new-factory-flags-260m-investment-b-213139

Outlook for farm-gate market

Milk volumes have increased significantly since Fonterra was established. However, a number of industry commentators are now suggesting that New Zealand has reached or passed peak cows. If that is the case, any future milk volume growth will be dependent on increased productivity and it seems reasonable to argue therefore that any new processing facilities will have to compete harder for milk supply.

Fonterra's competitors now have profitable operations and well-established relationships with farmer-suppliers and offshore customers. Based on their current announced plans and assuming that a) New Zealand's total milk volumes are static at 20.7B litres (equating to actual production last season), b) Fonterra's competitors successfully recruit all the milk they need to fully utilise their additional capacity, and c) all of that extra milk is recruited from Fonterra suppliers, Fonterra's market share will fall from 82% to 78% by the end of the 2020 season.

6.3 The consumer market

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

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 of approximately 60% of the total volume.

Figure 6 below provides a high-level depiction of the structure of the New Zealand consumer dairy products market.

Figure 6: [Redacted]

FBNZ is the dominant player in the New Zealand consumer dairy products market, supplying a full range of dairy products and having market leadership across all channels. GF is number two[33]. The rest of the consumer dairy market is supplied by 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 companies importing specialty dairy products.

Figure 7 below presents some of the leading brands of FBNZ and GF in the retail market.

Figure 7: Brands of FBNZ and GF

[33] GF has three milk-processing sites – in the North Island one at Longburn and one in Puhoi; in the South Island, one in Christchurch. As well as producing fresh milk for sale under its own brands, GF 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 IP under DIRA and therefore do not have any access to DIRA milk.

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

FBNZ has around [Redacted] by volume of the branded-dairy market share in the grocery channel and GF has around [Redacted]. The smaller players combined have about [Redacted]. The balance is made up of supermarket house-branded fresh white milk, cheese and butter with Fonterra/FBNZ being the largest manufacturer of supermarket house-branded dairy products in New Zealand.

FBNZ, GF and Fresha Valley are the largest manufacturers of supermarket house-branded fresh white milk. Fonterra/FBNZ and Dairyworks dominate the supply of supermarket house-branded cheese. Dairyworks buys cheddar cheese from Fonterra, which it then cuts/wraps/grates and markets under its own brands while FBNZ and GF purchase cheese from Fonterra that has already undergone secondary processing into consumer formats. Fonterra is practically the only manufacturer of supermarket house-branded butter in New Zealand.

FBNZ holds the branded and supermarket house-branded milk contract for Foodstuffs North Island (FSNI). GF currently holds the supermarket house-branded contract for Foodstuffs South Island (FSSI); however, Synlait has recently won that contract beginning in 2019 (see Annex 8 for a full description and analysis of the agreement). The Countdown/Progressive supermarket house-branded milk contract is held by GF and Fresha Valley (a smaller player in the market).

FBNZ holds an estimated [Redacted] share by volume of the route business with GF at [Redacted] and the balance being made up by Green Valley and others[34].

FBNZ holds an estimated [Redacted] share, by volume, of the food-service business, with GF sitting at about [Redacted] and the balance being held by other competitors[35].

The lack of comprehensive 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 products 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 held by FBNZ and GF has decreased from [Redacted] over the last 16 years. The combined market share of all the other participants in the grocery sector has increased from [Redacted].

FBNZ has been more successful than GF in the dairy products market in recent years. Since 2008, FBNZ has maintained a [Redacted] share by volume of the branded-dairy market through the grocery channel while GF has dropped from [Redacted] over the same period. This fall in market share for GF is due largely to a reduction in its share of consumer block cheese and butter, which are sourced from Fonterra at a non-regulated price.

Overall, if the grocery sector can be used as a proxy for the total consumer market, we would conclude that competition in the sector has increased since Fonterra was created and therefore that DIRA has been successful in preventing FBNZ from exercising its market dominance. The entry of Synlait to the domestic dairy products market is also a sign of increasing competition in the market.

[34] Data from Aztec route retail database which samples around 200 stores.
[35] Internal GF market analysis.

Finally, it is worth highlighting a recent development in Fonterra's business strategy. In February 2018, Fonterra and the a2 Milk Company announced that they would be forming a partnership whereby Fonterra will begin to develop an A2 milk pool to help meet the growing global demand for A2 milk products. The partnership will also encompass[36]: a nutritional products manufacturing and supply agreement[37]; distribution and sales arrangements; an exclusive period for Fonterra to explore a2 Milk Company branded butter and cheese and China sourced liquid milk; the exploration of a jointly owned packaging facility; and an exclusive license for Fonterra to produce, distribute, sale and market a2 MilkTM fresh milk in New Zealand.

[36] https://www.fonterra.com/nz/en/our-stories/media/fonterra-and-the-a2-milk-company-form-comprehensive-strategic-relationship.html

[37] The nutritional products manufacturing and supply agreement involves Fonterra having exclusive supply of nutritional milk powder products intended for sale in South East Asia and the Middle East.

7. Opportunities to achieve better-functioning markets

7.1 Introduction

As noted in the Treasury's guidelines[38], the first step in public-policy analysis is to identify clearly the problem or problems that need to be addressed. Putting the task more positively, the challenge is to identify the opportunities for improving the current situation. In New Zealand's domestic dairy markets, the main opportunities are likely to arise from improving the DIRA to offset Fonterra's dominant position in the farm-gate, factory-gate and wholesale domestic markets. The opportunities include:

- strengthening competition in the domestic markets;
- reducing regulatory uncertainty;
- improving incentives to innovate; and
- improving the market behaviour of Fonterra.

This section presents and discusses each of the options above[39].

7.2 Strengthening competition in the domestic markets

As noted in Section 4.3, the Commerce Commission reviewed the state of competition in New Zealand's dairy markets and found the level of competition at the farm-gate and factory-gate markets is not yet sufficient to warrant deregulation at this time[40]. This lack of competition penalises farmers who have limited choice over whom they supply their milk to and domestic consumers of dairy products who face potentially higher prices.

In the domestic wholesale dairy products market there is competition between FBNZ, GF and a number of other smaller competitors. To the extent that the wholesalers have market power, this is offset by the countervailing power of the two major retailers, Progressive Enterprises and Foodstuffs.

DIRA itself, however, imposes constraints on the competition with GF's access to DIRA milk limited to 250M litres p.a. and other potential entrants limited to 50M litres p.a. The cap on GF's DIRA milk supply means it is not able to compete for new high-volume contracts without switching product from an existing customer or sourcing milk directly.

GF currently accesses approximately 220M litres of the 250M litres it is contractually entitled to. However, having a maximum entitlement under DIRA hampers GF's business in two ways:

1. it restricts the growth of the business to an additional 30M litres and therefore dilutes GF's ability to compete on large milk-supply tenders. GF was unable to submit a tender for the

[38] Treasury, op cit.
[39] There are other challenges facing the sector, such as the dominance of the grocery trade in New Zealand by two companies, Progressive Enterprises and Foodstuffs, but the issues listed above are, in our view, the key ones that sit squarely within the scope of the current review.
[40] http://www.comcom.govt.nz/regulated-industries/dairy-industry/report-on-the-state-of-competition-in-the-new-zealand-dairy-industry/

supply of milk to Foodstuffs (NI) Ltd because the required volume of 100M litres p.a. was more than GF could supply without moving milk from another customer; and

2. it provides a certain inevitability about a declining market share for GF. New Zealand's population grew in the year to 30 June 2015 by 1.9%. At this rate of population growth, if milk consumption per capita is reasonably static and GF maintains its current market share, GF will exhaust its entitlement to DIRA milk in seven years and, from that point on, start losing market share.

7.3 Reducing regulatory uncertainty

The previous situation was that participants and potential participants in the domestic dairy markets would have had little certainty about regulation of the industry until completion of the review timetabled for 2020/21. This uncertainty about the regulatory environment would have reduced incentives to invest and innovate in the industry in the period until completion of the 2020/21 review and potentially beyond that since further reviews were anticipated. The new Government has removed the provisions for regular reviews of DIRA and thereby indicated an objective of determining the long-term future regulatory regime in the 2018 review. Thus on the current timetable for the new review the uncertainty should be resolved relatively soon and for the long term provided the results of the comprehensive review are determined and implemented expeditiously.

7.4 Improving incentives to innovate

While there is some innovation in products, the limited state of competition in the market combined with the regulatory uncertainty is likely to reduce incentives for industry participants to invest in research and development and to innovate new products, processes and distribution channels.

[redacted] If the extra cost of producing milk over the winter period were passed-on to consumers, the retail price of milk would rise by around 30c/litre (or approximately 15%) on average over the winter months. While such an increase may be politically unattractive, the higher prices would give consumers better signals about the true cost of supply and encourage them to economise on milk consumption over this high-cost period.

7.5 Improving the market behaviour of Fonterra

On several occasions in the past, Fonterra has used its dominant position in a way that has disadvantaged its competitors. Perhaps the most significant occasion was in 2011 when the global price of milk - and therefore also the FGMP - was at close to record high levels. With consumers facing high prices, there was considerable public angst that led to Fonterra putting a freeze on the wholesale price charged to the retailers by FBNZ but not the price at which it supplied milk to GF. GF's margins were squeezed as a result. Similar behaviour was experienced in 2013/14 when the FGMP rose by 48%, but FBNZ did not move its sales prices in line with commodity-price movements.

This concern Fonterra has with maintaining public goodwill in New Zealand can result in Fonterra applying margin squeezes to GF. Capping wholesale prices while allowing the increases in world prices to affect GF is detrimental to GF's operations. In such circumstances, Fonterra may inflict financial damage on GF even if that is not Fonterra's main objective.

The situation described above, whereby Fonterra has reason, due to its dependence on popular goodwill, to occasionally require FBNZ to set prices that will not yield a normal return given the FGMP, will also tend to inhibit any new processor from entering the domestic dairy products market.

GF has documented a number of other examples it has experienced of Fonterra using its dominant position to the detriment of other suppliers, in GF's submission to officials.

The potential cross-subsidisation of FBNZ by Fonterra is an ongoing issue. It is, however, difficult to assess the extent to which such cross-subsidisation is occurring because Fonterra does not publish separate financial statements for FBNZ. We discuss the potential for requiring greater disclosure by Fonterra of its internal pricing, and in particular the option of requiring Fonterra to publish segmented accounts for FBNZ, in Section 10.5.

7.6 Conclusions

The regulatory regime provided by DIRA has been important in allowing competition to emerge and in dampening Fonterra's ability to use its dominant position in domestic dairy markets. However, there are various opportunities to improve the regulatory regime.

The previous Government clearly signalled its desire to exit the special regulatory regime for the dairy industry. The problem is it did not find a credible exit pathway that would not risk imposing substantial costs on domestic consumers and so proposed to under a review in 2020/21. The new Government has removed the provisions for regular reviews of DIRA and thereby indicated an objective of determining the long-term future regulatory regime in the 2018 review.

In its May 2016 Discussion Document, MPI stated that the Government's objectives for any amendments to the DIRA and Raw-Milk Regulations are to:

- promote the efficient operation of dairy markets in New Zealand;
- ensure that New Zealand markets for dairy goods and services are contestable through a credible threat of IP entry and expansion;
- enable IPs to obtain raw milk and other dairy goods and services, necessary for them to compete in New Zealand dairy markets; and
- enable deregulation of New Zealand dairy markets if, and when, competitive pressure on Fonterra is sufficient to drive the efficient operation of dairy markets in New Zealand[41].

In Sections 8, 9 and 10 of this report, we assess the options – both market-based and regulatory – for improving the current situation in domestic dairy markets against these objectives.

[41] MPI, Discussion Document, "Proposed changes to the Dairy Industry Restructuring Act 2001 and Dairy Industry Restructuring (Raw Milk) Regulations 2012", Paper No: 2016/05, p.6.

8. Feasibility of a factory-gate market

8.1 Introduction

The factory-gate market refers to the hypothetical market where processors could, instead of processing all the raw milk they collect from farmers, sell some or all of the raw milk to other processors.

If DIRA was repealed, a factory-gate market for raw milk could, in principle, be one way for dairy processors or food and beverage manufacturers to source unprocessed raw milk as an input for their manufacturing processes, either as a supplement to or instead of obtaining raw milk directly from farmers.

This section considers the feasibility of a sustainable and competitive factory-gate market for raw milk developing in New Zealand in the absence of specific government intervention.

8.2 The factory-gate market for raw milk

At present, there is no functioning unregulated factory-gate market for raw milk in New Zealand[42]. The Commerce Commission notes[43] that "the factory gate market is very small compared with the farm gate market". The Commission's data on the actual size of the market is redacted, but we agree with the Commission that the market, to the extent it exists at all, is very small.

The absence of a functioning farm-gate market in New Zealand may be in part because the DIRA regulations have reduced the incentive for a factory-gate market to develop. It may well also be because the factory-gate milk price would have to be materially higher than the FGMP.

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. As noted in Section 5.4, above, milk processors must build enough capacity to process all of the milk supplied on the peak day (they cannot store it, and they cannot dump it). Their first objective is to have their factories operating as efficiently as possible and therefore as close as possible to capacity. To encourage them to take raw milk out of their factories to sell at the factory gate, they would need to earn at least as much from the sale of that raw milk as they would earn from the alternative. That is, they would need to earn a return on the capital employed in the under-utilised factory, and they would need to be compensated for having less volume to spread their fixed costs over.

Using the information provided in the 2016 Milk Price Statement and assuming a single efficient processing plant provides half of GF's domestic-milk requirements (assuming half in each island), we estimate the point of indifference for a processor would be achieved at a raw-milk cost to GF of the FGMP + [Redacted]. That is, GF would have to pay [Redacted] than FBNZ's cost of milk (which is the FGMP). To put the price of indifference in context, the average FGMP since the establishment of Fonterra has been $5.40, so the margin over the average FGMP would be around [Redacted]. Annex 7 provides the detailed calculations behind this estimate.

[42] The supply of up to 250M litres of raw milk by Fonterra to GF is a factory-gate level transaction but it is the result of the DIRA regulations requiring Fonterra to supply GF.
[43] Commerce Commission (2016), para 4.126.

The conditions that would need to exist in order for the factory-gate milk price to be close to, or the same as, the FGMP (and therefore producing a sustainable market environment) are:

1. the processor would need to have excess milk – that is, not to have committed capital to processing all the milk being collected and therefore not having any capital return requirement; and

2. the customer at the factory-gate would have to guarantee to take all milk in excess of the volume the processor could process.

We consider it unlikely that these conditions will be met in the foreseeable future.

8.3 Other factory-gate markets

We are not aware of a functioning factory-gate market for raw milk in other OECD countries. Nor are factory-gate markets common in New Zealand for other (non-milk) commodities.

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, having 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 mill[44]. The factory-gate market equivalent in the meat industry would be a meatworks-gate market in which a meat processor such as Silver Fern or Affco, having bought livestock from a farmer and arranged transport, sells the livestock to another meat processor and arranges 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 meatworks-gate market exists or is likely to ever exist. A deep market would require that a timber or meat processor systematically contract to obtain a greater supply of its raw material than it needs in order to sell the excess to other timber mills or meat works. Temporary arrangements to sell excesses to competitors – eg, to adapt to equipment breakdowns or other reasons for plant closures - might be expected. However, a deep and on-going factory-gate-style market is not at all an obvious feature of the competitive landscape for these commodities.

8.4 Conclusions

There is a good theoretical basis to assume a factory-gate market for raw milk is unlikely to develop on its own. In addition, we are unable to find clear examples of functioning factory-gate markets for raw milk in other countries and factory-gate markets do not appear to be a common feature for other commodities in New Zealand. We therefore conclude that there is a low likelihood that a factory-gate market for raw milk will develop, or would be sustainable, without special legislative backing.

There are, however, several other potential market-based alternatives to DIRA. These options are considered in Section 9, below.

[44] The timber mill analysis relates to pinus radiata. There may be a small mill-gate trade of specialty timbers.

9. Other potential market solutions

9.1 Introduction

This section considers a range of market-based solutions (other than a factory-gate market) that could address the issues with and opportunities to improve the function of the dairy products market noted in Section 8 above. In particular, we consider whether any of the market-based options are feasible alternatives to DIRA in the short or medium term.

We consider five possible market-based options:

- GF securing a direct supply of raw milk from farmers;
- GF extending its contract with Fonterra beyond 2021;
- the integration of GF with an NZ-based processing exporter;
- GF undertaking greenfield investment to reach a competitive scale; and
- the entry of a major IP or multiple smaller IPs to the domestic dairy products market.

The options are considered in terms of their impact on overall economic efficiency. The efficiency analysis considers the impact of each option on productive, allocative and dynamic efficiency. Productive efficiency relates to the choice of production methods. Allocative efficiency relates to the allocation of resources among different uses and in particular whether prices reflect costs. Dynamic efficiency relates to the incentives for investment and innovation. The key issue regarding productive efficiency is whether the incentives for the supplier to achieve the lowest cost production method is lost or distorted. The key issue regarding allocative efficiency is that, where prices exceed marginal cost, the result will be a deadweight welfare loss to society. The key issue regarding dynamic efficiency is whether incentives provided by competitive rivalry, particularly for efficient investment, are lost or distorted. We also consider the likely impact of each option on domestic consumers, the suppliers of dairy products (GF, IPs, FBNZ and Fonterra) and the farm-gate and factory-gate markets.

9.2 GF secures own-supply

Given the seasonal nature of milk supply (as discussed in Section 5.4), if GF was to secure direct supply of milk from farmers, GF would need to invest in additional manufacturing capacity to process the excess milk needed to meet its minimum monthly requirement.

The investment in additional manufacturing capacity by GF would have to be of a scale that the processing of the excess milk was cost-competitive. All the new IPs in New Zealand have built plants with the capacity to process between 200M and 250M litres of milk p.a. We estimate that GF would need to recruit [Redacted] litres of milk in each island in order to be efficient and have sufficient fresh milk for that island.

Our estimate of the resultant milk cost for GF under this option is presented in Annex 5. We estimate the cost of milk would be the FGMP plus [Redacted] (additional costs of collection) plus [Redacted] (capacity charge) plus the winter-milk premium. That is a best-case scenario because it assumes that all supplying farmers have split their herd's 60:40 into spring and autumn calving. That assumption is overly optimistic because we know that the milk Fonterra currently collects for domestic supply equates to less than 4.5% of its total milk supply, meaning collection costs are going to be higher than estimated in Annex 5.

9.2.1 Impact on economic efficiency

The increased costs associated with the collection of milk and unutilised capacity indicates that this option would reduce the productive efficiency of the industry somewhat. To the extent that this option increased excess capacity in the industry, it would reduce allocative efficiency. On the other hand, the increased competition in the farm-gate milk market would be likely to increase dynamic efficiency.

9.2.2 Impact on domestic consumers

The implications for domestic consumers of this option are likely to be either neutral or negative in the short term and negative in the medium term. Whether they are neutral or negative in the short term depends on FBNZ's pricing response to GF's increased costs. FBNZ could choose to not change its prices, which would be neutral for domestic consumers in the short term but ultimately would deplete GF's market share, which could be negative for domestic consumers in the medium term. Alternatively, FBNZ could choose to increase its prices by almost as much as GF would have to. This would maintain GF's market share, but the higher prices would be negative for domestic consumers in the short and medium term. In the longer term, there could be benefits to consumers from having two or more fully independent processors competing in the dairy products market.

This option could also lead to seasonal pricing of fresh milk in the retail market. This would tend to be positive from an economic efficiency perspective and possibly negative for consumers (depending on whether prices in the non-winter period fell by a corresponding amount).

9.2.3 Impact on suppliers

The likely impacts on suppliers of GF securing direct-supply of milk are:

- for GF, there are opposing forces. On the one hand, its costs would increase. On the other hand, it would have independent supply;
- for IPs, the impact would likely be negative to the extent that this option increased excess capacity in the industry;
- for FBNZ, the impact would be positive as FBNZ would achieve a cost advantage that it could exploit; and
- [redacted]

9.2.4 Impact on farm-gate and factory-gate markets

GF competing for milk would add a participant (GF) to the farm-gate market and thus would be positive for that market but the increased competition would be limited to the two specific regions close to GF's milk plants.

Regarding the implications for the potential development of a factory-gate market, this option would take the one large potential factory-gate participant out of that market and on that basis would be negative for its development.

9.3 GF extends contract with Fonterra

GF's supply contract with Fonterra expires in 2021. Extending the contract[45] could be beneficial under three conditions:

- the length of the extension was such that GF was confident that it had sufficient time to generate an adequate return on new investment;
- the volume supplied was not limited to 250M litres p.a. but at least increased in line with the size of the domestic market; and
- the contract included some sort of "most-favoured-nation" clause whereby the price of product supplied by Fonterra to FBNZ was no less than the price of product supplied to GF.

9.3.1 Impact on economic efficiency

GF's contract has been suboptimal to date because the capped supply has limited GF's ability to compete in a number of areas. If the above three conditions are met, the contract extension will increase dynamic efficiency because it will allow GF to be a more effective competitor.

There would not be any productive efficiencies gained or lost as a consequence of the altered supply contract. The size of the domestic market would not change, and therefore there would be no overall change to the amount of milk being processed.

9.3.2 Impact on domestic consumers

To the extent that the contract extension increases efficiency, domestic consumers should benefit over time. However, the level of competition amongst retailers will influence the extent to which domestic consumers benefit.

9.3.3 Impact on suppliers

The likely impacts on suppliers of extending the GF contract are:

- GF would benefit under the three conditions noted above. An extension of the current contract without these criteria met may not be beneficial.
- for the IPs, this option will have minimal effect because the IPs either do not currently compete in the domestic market or their access to DIRA milk is unaffected;
- for FBNZ, it is negative to the extent that this option is positive for GF; and
- for Fonterra, there is no impact (other than through its ownership of FBNZ).

9.3.4 Impact on farm-gate and factory-gate markets

This option will have no impact on the farm-gate or potential factory-gate markets.

[45] TDB understands that the parties have not been able to agree an extended contract to date, largely on the basis of differences in price.

9.4 Integration of GF with an NZ-based processing exporter

Vertical integration would involve GF merging with a New Zealand-based exporting processor to attain the economies of scale necessary to be efficient and secure direct milk supply. Without a guaranteed milk supply, GF would be a risky acquisition for any company. It therefore seems more reasonable to envisage GF as the acquirer rather than the acquiree.

The implicit assumption attached to this option is that the new integrated company could recruit all the additional milk it requires to both run its plant efficiently and supply fresh milk to the domestic market.

This option is essentially the same as the "own-supply" option outlined in Section 9.2, above. The resultant milk cost for GF, under this option, would be the same as established in the "own-supply" discussion above: ie, the FGMP plus [Redacted] (additional costs of collection, where all additional suppliers must be winter-milk suppliers) plus [Redacted] (capacity charge) plus the winter-milk premium.

The resulting integrated company would require processing operations in both the North and South Islands because GF's fresh-milk business is nation-wide, and it is not economical to transport fresh milk between the two islands (as highlighted by the fact that Fonterra uses GF's fresh-milk processing plant in Christchurch for its South Island fresh-milk business).

At present, there is currently no single IP that could meet GF's capacity demand. Open Country Dairy (OCD) is the only IP that currently has operations in both the North and South Islands, but its South Island processing plant is located south of Invercargill whereas GF's fresh-milk processing plant is in Christchurch (where the largest population is). It would be costly to transport excess milk between Christchurch and Invercargill. However, both Synlait and Westland have existing milk supply in Canterbury. Therefore, a GF-OCD combination would be possible (in theory at least) in the North Island, as would a GF-Synlait or GF-Westland combination in the South Island.

The same increased collection costs and capacity charges discussed in Section 9.2, above, apply to this option.

9.4.1 Impact on economic efficiency

The efficiency consequences of this option are the same as if GF secured its own supply (as discussed above). We would expect to see some decrease in productive efficiency from a collection-cost perspective to the extent that the processor would not have the scale to manage its winter-milk collections as efficiently as Fonterra. On the other hand, having another large-scale purchaser in the farm-gate market would tend to increase dynamic efficiency.

9.4.2 Impact on domestic consumers

In the short-term, this option would be neutral or negative for domestic consumers as discussed in 9.2.2, above. In the medium to longer term, this option could be negative for domestic consumers to the extent that FBNZ was able to continue to exploit its competitive advantage and win a dominant market share. There is also the possibility that this option would lead to seasonal pricing of milk, reflecting the increased cost of producing winter milk. Over time, though, there could be benefits to consumers from having two or more fully independent processors competing in the dairy products market.

9.4.3 Impact on suppliers

The likely impacts on suppliers are:

- for GF, some form of integration would be positive on the basis that it was no longer reliant on Fonterra for milk. However, the collection-cost inefficiency, described above, and FBNZ's ability to exploit its resulting competitive advantage would be negative;
- for other IPs, a GF-OCD combination in the North Island would have no impact as OCD does not compete for milk in Whanganui with anyone other than Fonterra. In the Waikato, OCD competes for milk with both Fonterra and Tatua but it is unlikely that Tatua suppliers would move their supply owing to the product positioning and success of Tatua. The situation in Canterbury is different. Both Synlait and Westland compete against each other and against Fonterra for milk in that catchment. Therefore, a GF-Synlait combination or a GF-Westland combination would have an impact on the IPs to the extent that competition for milk supply in the catchment would increase and therefore push up the farm-gate price;
- for FBNZ, this option would be positive to the extent that FBNZ gains a competitive advantage from the inefficiencies in winter-milk collection that it could exploit; and
- for Fonterra, this option would be negative to the extent there is increased competition in the farm-gate market.

9.4.4 Impact on farm-gate and factory-gate markets

This option is positive for the farm-gate market to the extent that there would be more competition for milk. Fonterra would be likely to try to retain its milk supply and therefore it is possible that GF would need to pay more than the FGMP in order to secure the milk.

This option is negative for the factory-gate market because it takes a potential buyer of factory-gate milk out of the market.

9.5 GF undertakes greenfield investment

Under this option, GF is assumed to make an investment large enough to permit it to efficiently process and export all raw milk collected in excess of that required by GF for the fresh-milk market in New Zealand. This option is effectively the same as GF securing its own supply as discussed in Section 9.2, above. As per the discussion in Section 9.2, there would need to be separate greenfield investments in both the North and South Islands.

9.5.1 Impact on economic efficiency

The increased costs of collection indicate that this option would reduce the productive efficiency of the industry. On the other hand, as discussed above, it would tend to increase dynamic efficiency.

9.5.2 Impact on domestic consumers

As per 9.2.2, above, in the short-term, this option would be neutral or negative for domestic consumers. In the medium term, this option could be negative for domestic consumers to the extent that FBNZ was able to continue to exploit its competitive advantage and win a dominant market share. Over time there could be dynamic efficiency gains if the domestic dairy products market can sustain two or more competing suppliers. There is also the possibility that this option would lead to seasonal pricing of milk.

9.5.3 Impact on suppliers

The likely impacts on suppliers are:

- for GF, the investment required by GF to obtain scale would increase the riskiness of its business in some regards but GF would no longer be reliant on Fonterra for milk. The collection-cost inefficiency described above and FBNZ's ability to exploit its resulting competitive advantage would be negative. [redacted];
- for IPs, the impact of this option depends on the location of the investment. In the North Island, the preference would be to invest as close to the largest market, Auckland, as possible. That would probably mean investing in the Waikato area, which would put GF in direct competition with OCD for raw-milk supply (and with Fonterra). In the South Island, GF has a fresh-milk processing plant in Christchurch, and therefore it would most likely prefer to invest in the wider Canterbury region. An investment in that region would put it in competition with Synlait and Westland for milk supply (and with Fonterra). Under both of these scenarios, an increase in competition for milk supply would lead to increased costs for IPs;
- [redacted]
- for Fonterra, this option would be marginally negative as it would end up with marginally more underutilised capacity.

9.5.4 Impact on farm-gate and factory-gate markets

This option would be positive for the farm-gate market to the extent that there would be more competition for milk in the immediate collection areas. This option would be negative for the factory-gate market because it takes a potential buyer of factory-gate milk out of the market.

9.6 Entry of a major IP or multiple smaller IPs

The main barrier to a new entrant entering the domestic dairy products market is the need to recruit enough additional milk to supply fresh milk to the domestic market year-round. Entry by another IP could come in the form of a major IP or multiple smaller IPs.

Synlait recently entered a contract to supply the house-branded fresh milk and cream for FSSI beginning in 2019 for a period of ten years[46]. The agreement is for approximately 30M litres p.a. of fresh milk and cream and is equivalent to approximately 5% of domestic dairy product consumption. The entry of Synlait to the domestic dairy market is surprising because of the assumed marginal profitability of the domestic product given the economies of scale that Fonterra (and therefore GF) has in collecting winter milk. However, Synlait's entry is relatively small (only 5% of the domestic market) and therefore its effects should be considered carefully and not be overplayed.

TDB's analysis suggests the marginal profitability of Synlait's domestic entry is likely to be low (given the likely relative collection inefficiencies) and less profitable than efficiently produced dairy commodity exports. If this is the case it may be that Synlait sees a benefit from having a domestic presence in the New Zealand market through positive reputational effects in export markets (its core business). Export markets, particularly in Asia, may view Synlait's domestic presence as a signal of quality. This reputational effect should still hold despite Synlait primarily operating at the wholesale level. If this is the rationale for Synlait's domestic entry it may be commercially rational for Synlait to enter the

[46] Refer to Annex 8 for a fuller description and analysis of the Synlait-FSSI agreement

domestic New Zealand market even if, on a stand-alone basis, it is not profit maximising. If this is the case, Synlait's entry into the New Zealand market is akin to a loss-leader strategy.

In addition, it may be that Synlait is entering the domestic dairy products market to provide some certainty of supply to underlie the development of its new $125m Dunsandel facility. FSSI will be a cornerstone customer for approximately 30 percent of the new facility's output. Having a cornerstone customer reduces Synlait's risk profile while still leaving sufficient production capacity to target higher value export markets.

The key question is whether other IP's are likely to follow Synlait and enter the domestic dairy products market, particularly in the North Island. OCD and/or Miraka may see domestic entry as worthwhile if they, like Synlait, perceive positive reputational effects. Synlait itself is currently in pursuit of a site in the North Island and it may use this export-focused site as a lever for entering the North Island domestic market. On the other hand, Synlait's entry into the South Island domestic market may be a one-off due to Synlait's unique position of having excess milk due to its focus on infant formula (infant formula uses much less milk to manufacture than whole-milk powder). No other IP in New Zealand currently has excess milk so they are therefore less likely to be in pursuit of new product markets.

TDB understands that there are two private-label contracts in the North Island and both are more than twice the size of the FSSI contract with Synlait. Therefore the likelihood of entry by one of the existing IPs appears low in the current state of the market without investing in an own brand. However, market behaviour is unpredictable and it cannot be said with certainty that further domestic entry will not occur in the future.

9.6.1 Impact on economic efficiency

As discussed in Section 9.4.3, we would expect to see a decrease in productive efficiency from a collection-cost perspective to the extent that the new entrant would not have the scale of Fonterra to manage its winter-milk collections as efficiently[47].

On the other hand, the dynamic efficiency of the consumer market may increase over time from the entry of a new competitor.

9.6.2 Impact on domestic consumers

If the entry of an IP to the domestic dairy products market occurred while GF had continuing access to milk at the FGMP then the impact would in general be expected to be positive. The exception would be if the following two conditions hold. Firstly, the wholesalers have considerable degrees of market power and don't pass on the benefits of lower wholesale prices to consumers. And secondly, if the incumbent chose to no longer supply the displaced milk to the domestic market. However, if the incumbent chose to supply (at least some of) its displaced milk to the domestic market then overall supply will have increased and there will be downward price pressure. If the displaced incumbent redirected its milk from the supermarket to the route trade then there will likely be downward price pressure in the route trade. There may also be indirect downward price pressure in the supermarket trade as there is some competition between supermarkets and the route trade (ie, petrol stations).

[47] For example, we estimate that Synlait will have to procure approximately 56.3M litres p.a. of milk to meet the daily volume requirements of the FSSI agreement and taking into account a 25% buffer for daily demand variation. This includes approximately 33.8M litres of spring milk and 22.5M litres of autumn milk (see Annex 8 for the full calculation).

However, if the entry of a major IP into the domestic market meant that GF lost its access to milk then the impact on domestic consumers could be negative in the short to medium term as FBNZ would be able to exploit its cost advantage and increase wholesale prices. Over time though, consumers would be expected to benefit from having more competing suppliers in the dairy products market.

9.6.3 Impact on suppliers

The likely impacts on suppliers are:

- for GF, this option is negative. The additional competition at the wholesale level would lead to a lower market share and lower sales volumes;
- for IPs, the impact depends on the way the option is achieved. In the case of Synlait, the investment is in the Canterbury region. It is possible that further future entry could be made by different entities. The most likely North Island investor will be OCD. Like Synlait, an investment by OCD would represent a major change in its strategy – OCD is currently focused on commodity exports and Synlait is focused primarily on high-value ingredient products on a business-to-business basis;
- in the Synlait case, the impact on Westland could be significant. It has a Canterbury supply base that could potentially be competed away. We think it is unlikely that Westland would be a new entrant into the fresh-milk wholesale market in the medium term, given its relatively recent investment in a UHT milk plant in Canterbury and its limited access to capital, given its co-operative structure. If OCD entered then the impact on other IPs would be negligible in the North Island as OCD is the only IP operating in the Waikato region (other than Tatua as discussed above);
- for FBNZ, the extra competition would be negative; and
- [redacted] It would be negative for Fonterra on the basis that it is more likely to lose its milk supply than any other milk processor because of its limited ability to compete on price at the farm-gate. The net result for Fonterra is negative.

9.6.4 Impact on farm-gate and factory-gate markets

Regardless of the way that this option is achieved, there would be more competition at the farm-gate for raw milk. That is good for farmers who supply the milk. This option is negative for the factory-gate market because it reduces the chances of such a market developing.

9.7 Summary of the market analysis

Our assessment of the likely implications of the five different potential market solutions is summarised in Table 3, below.

Table 3: Summary assessment of market solutions

	Effects on / responses of							
Potential solutions	Efficiency	Domestic consumer	GF	IPs	FBNZ	Fonterra	Farm-gate	Factory-gate
GF own-supply	o	–	o	–	+	–	+	–
Contract extension	+	+	+	o	–	o	o	o
Integration	o	–	o	–	+	–	+	–
GF greenfield investment	o	–	o	–		–	+	–
New IP	o	+	–	–	–	–	+	–
Legend	–	negative impact	+	positive impact		o	neutral impact	

The only option that is likely to unequivocally increase the efficiency of the market is the contract-extension option and only if the contract is extended on improved terms to allow GF to become a more effective competitor. There could be efficiency gains over time from the other four options, but it is difficult to assess the magnitude of the gain and there would be some-offsetting efficiency losses from having multiple collectors of winter milk.

The domestic consumer is likely to benefit from a new entrant into the wholesale market as there is likely to be downward price pressure from increased competition and from the incumbents having excess capacity. However, if the incumbent reduces its domestic milk supply and the wholesaler captures the entirety of the benefit of a better supply contract, then the consumer will at the very least be no worse off.

GF benefits if there is a contract extension, but the benefit is only derived with amended contract terms. GF may benefit in the longer term from the other options (other than a new IP) but there are risks inherent with each option.

Other than in the case of an expansion by an existing IP, none of the existing IPs are likely to benefit from any of the options. The best-case scenario for the existing IPs is a contract extension. The lack of benefit is the consequence of increased competition for their milk supply.

FBNZ would benefit from the majority of the options as a result of it being able to exploit the additional costs attached to them. FBNZ would be unlikely to benefit from the contract-extension option or a new IP entering the market.

All of the options (except contract extension) are marginally negative for Fonterra because of the increased competition it would face at the farm gate.

The farm-gate market benefits in most instances because of increased competition. We note however that Fonterra's ability to compete on price at the farm-gate is limited by regulation.

The factory-gate market does not benefit in any instance because none of the options provide any opportunity for a factory-gate market to develop.

Overall, an extension of GF's contract with Fonterra appears to be the most attractive option. It is also the only option that we find unequivocally increases the efficiency of the industry. The other four options considered may yield dynamic efficiency benefits over time (by increasing the competition in the farm-gate and consumer products market) but these dynamic efficiency gains need to be assessed against the losses in productive efficiency (from having competing collectors of raw milk).

10. Potential regulatory solutions

10.1 Introduction

This section analyses options for the future regulation of domestic dairy-product markets that ministers or officials may decide to examine. We seek to canvass a broad range of options and to assess their costs and benefits from the point of view of their impact on New Zealand's overall economic welfare, including the impact on milk suppliers and domestic consumers of dairy products.

As background to the consideration of regulatory options, it is relevant to recognise that, in 2011, the Commerce Commission undertook a consideration of whether to initiate a Commerce Act Part 4 Inquiry into milk prices, in response to a range of complaints regarding the state of competition in dairy markets.

The Commerce Act provides that the Commission may undertake such an examination of the case for considering regulation on its own initiative. The Act sets out three tests, all of which the Commission must be satisfied are met, before it can recommend that the Minister regulate goods or services:

- first, the goods or services are supplied in a market where there is little or no competition and little or no likelihood of a substantial increase in competition (the Competition Test);
- second, there must be scope for the exercise of substantial market power in relation to the goods or services, taking into account existing regulations and arrangements (the Other Constraint Test); and
- third, the benefits of regulating the goods or services in meeting the purpose of Part 4 materially exceed the costs of regulation (the Net-Benefit Test).

If these threshold tests are met, the Commission must then consider whether regulation should be imposed and, if so, in what form.

The Commission concluded that the Competition Test was met in regard to the factory-gate market and came to the same conclusion in the 2016 review. In 2011, the Commission nevertheless concluded initiating a Part 4 Inquiry was not warranted given the Raw-Milk Regulations were and are addressing the issue: ie, the Other Constraint Test was not met.

If the Raw-Milk Regulations were terminated then, on receipt of complaints, the Commission would, given its previous position, likely agree to reconsider whether to initiate a Part 4 Inquiry, with a high likelihood of concluding that such an Inquiry was warranted if no form of regulation was in force.

10.2 The regulatory options

The regulatory options we consider are the Government:

- announcing that the DIRA (Raw Milk) Regulations that require Fonterra to supply raw milk to processors that supply dairy products to the domestic market will be abolished from a fixed date;
- phasing down, over time, GF's current entitlement to access DIRA milk from Fonterra;

- extending the DIRA domestic market regulations to, say, 2030, on one or more of the following bases:
    i. status quo entitlements;
    ii. catering for growth in the domestic dairy market;
    iii. requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor for dairy products supplied to the domestic market;
    iv. requiring Fonterra to divest FBNZ;
    v. requiring Fonterra to account for FBNZ as an entirely separate entity;

- extending the scope of the DIRA requirements to non-milk domestic-dairy products (especially butter and cheese); and

- moving the dairy-sector regulation to operate on a basis similar to the Commerce Act Pt 4 as it applies to electricity line businesses and gas pipeline businesses or a basis similar to the proposed regulatory framework for fixed line telecommunications networks.

The options are assessed in terms of their effect on economic efficiency and on equity. The efficiency analysis includes allocative, dynamic and productive efficiency (as discussed in Section 9.1).

The key equity consideration in the analysis is the effect of the options in transferring wealth from domestic consumers to milk suppliers. This potential wealth transfer warrants specific consideration, given, as noted in Section 4.1, the key feature of the domestic dairy market is that Fonterra exists as a result of the 2001 overriding by legislation (ie, DIRA) of the Commerce Act 1986. More specifically, the potential for substantial wealth transfers relates to options where it is uncertain that the result will be a workably competitive market. In those cases, equity considerations are appropriately given great weight in the assessment of the options.

10.3 Abolishing the DIRA Regulations from a fixed date

The 2016 report by the Commerce Commission (summarised in Annex 3) provides an assessment of the efficiency and equity effects of abolishing the regulations that require Fonterra to supply raw milk to processors that produce dairy products to the domestic market - the first option listed above. As noted in Annex 3, the Commission estimates the abolition of the DIRA regulation would result in an allocative efficiency loss of between $3.5M p.a. to over $13M p.a. and a transfer of wealth from New Zealand consumers of dairy products to milk suppliers of between $51M and $92M p.a.

The wealth transfer of $51M to $92M p.a. would be a cost that consumers would pay attributable to the override of the Commerce Act in 2001, with the efficiency benefit assessed by Parliament as justifying that override continuing to be enjoyed by milk suppliers. Thus, milk suppliers, having already been provided the efficiency benefits of the merger, would, on the Commission's analysis, receive an additional benefit of an annual $51M to $92M wealth transfer at the expense of consumers if the regulations were removed.

This quantification, by the Commission, of the effects of abolishing the DIRA (Raw Milk) Regulations as they relate to the domestic market provides a baseline that is helpful in assessing the effects of the other options listed earlier. Each option is considered separately below.

10.4 Phasing down GF's current entitlement to Fonterra milk

As described in Annex 3, in the Commerce Commission's 2016 dairy industry competition review, it concluded that GF would need to pay a price 25% above the DIRA price to obtain milk from IPs.

It is uncertain whether a reduction in GF's DIRA milk supply would result in IPs supplying the shortfall in GF's requirement. It is possible that Fonterra would aim to be the supplier of this milk and offer milk to GF at a price just below the level at which IPs would be interested in supplying milk. One reason for Fonterra to adopt a strategy focused on retaining its role as GF's milk supplier is that its collection-system costs have economies of scale. Another long-run consideration is that Fonterra has an interest in discouraging export-orientated IPs from developing an interest in the domestic retail market. Fonterra will recognise that, at present, involvement in the domestic liquid milk market is probably viewed by IPs as a distraction. It would be in Fonterra's interest to reinforce this attitude by offering pricing to GF that undercuts, by a small margin, the price that would be break-even for IPs.

The Commission's proposal of a phased reduction in GF's entitlement to DIRA milk appears to be based on a view that the availability of DIRA milk has suppressed development of the factory-gate market. A closer analysis, however, reveals that since the contract Fonterra entered into (which GF inherited) slightly undercuts the DIRA price, there was no prospect of development of a deep factory-gate market. It is not valid to attribute the lack of development of such a market to the existence of GF's DIRA entitlement since GF is obtaining its milk independently of its DIRA entitlement[48].

For the above reasons, it is not certain that reducing GF's DIRA milk entitlement would, in practice, result in a substantial increase in competition in the factory-gate market. Arguably, Fonterra would be concerned to avoid the appearance of pricing that excluded IPs, so some increase in IP participation could be expected. Further, GF has an interest in diversifying its milk sources, and a reduction in its entitlement to DIRA milk would substantially increase this incentive. Nevertheless, competition from FBNZ limits GF's ability to take a strategic approach to diversifying its milk supply. Fonterra can pressure GF by intensifying FBNZ pricing competition with GF. So long as GF gets all its milk from Fonterra, any loss of FBNZ's market share to GF is only a loss of processing margin and is not disruptive to Fonterra's milk collection. If GF was obtaining milk from IPs, however, a loss of market share by FBNZ would be more fundamentally disruptive, and Fonterra would be expected to protect its market share more vigorously in that situation.

The most secure form of supply for GF would be contracted supply from farmers. To achieve economies of scale in regard to transport and farm contracting, however, the amount of milk contracted for would need to be substantially greater than 250M litres (as discussed in Section 9.2). Thus, developing direct supply would require GF to become an exporter or, for the domestic dairy supply business, be sold to an exporter.

As described in the 2016 TDB report, a phase down in GF's entitlement to DIRA milk on the analysis set out earlier would be expected to result in a price increase proportionate to the reduction in DIRA milk. Specifically, it is reasonable, at least as a first approximation, to assume the price GF pays for milk 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 GF to acquire its milk requirements would be the weighted average of the DIRA price for 100M litres and the DIRA price plus 25% for the rest. Thus, if GF needed to purchase 150M litres in the unregulated market, the weighted average price would be slightly less than the DIRA price plus 15%[49].

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[48] Thus, the valid analysis is that Fonterra's decision to offer such a contract ruled out the development of a deep factory-gate market. While the decision to offer such a contract may have reflected a number of considerations, the fact that the contract has served to ensure that GF's milk is supplied by Fonterra illustrates the point made above that Fonterra could continue to suppress the development of a factory-gate market to protect its position.

[49] GF currently purchases somewhat less than 250M litres in total. However, given the growth in population (currently over 2% p.a.), GF's requirement would climb above the 250M 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 GF acquires all of its milk at the prices specified in the DIRA regulations (including the price premium formula specified for winter milk).

[redacted]

The effect of a phase down of GF's DIRA milk entitlement on allocative efficiency would be a loss in allocative efficiency proportionate to the increase in price and, therefore, proportionate to the reduction in GF's DIRA milk entitlement, as discussed above. The effect on productive efficiency would be none or minimal since, as explained earlier, the need for Fonterra to maintain excess capacity that the Commission identified is not caused by the Raw-Milk Regulations as the regulations relate to the supply to domestic market processors. Therefore, there would be no or minimal reduction in the need for Fonterra to maintain the excess capacity which the Commerce Commission identified as the major efficiency cost of the DIRA regulations. The effect on dynamic efficiency depends on whether GF's need to acquire milk in the market to offset the reduction in its DIRA milk entitlement would result in development of a deeper factory-gate market on an ongoing basis and, in particular, a reduction in the premium over the DIRA price in that market. As discussed in the 2016 TDB report and explained above, only long-term contracts regarding the taking and processing of milk can reduce the need for an IP to have processing capacity to accommodate peak milk supply from its contracted farmers.

In summary, it is uncertain whether there would be a dynamic efficiency benefit if GF's entitlement to DIRA milk were phased down.

A variant of the proposal to phase down GF's DIRA entitlement would be to allow GF to utilise its remaining entitlement to fully secure its winter-milk supply. While this would, to some extent, recognise that Fonterra is best placed to optimise winter-milk collection, the result would not offer material benefits in terms of efficiency compared to the situation under full-entitlement continuation. The development of a factory-gate market for milk in peak months while dependence on DIRA continues in regard to winter milk may give the appearance of progress towards deregulation, but it does not actually represent a path to deregulation. Only a solution that resolves the issue of winter milk would represent real progress towards deregulation.

10.5 Extending the DIRA domestic market regulations in different ways

10.5.1 Status quo: ie, DIRA Regulations as they relate to milk for processors to supply the domestic market extended over time

Continuing beyond 2021, the DIRA Regulations providing GF with a guaranteed 250M litres at the DIRA FGMP would involve a moderate increase in prices if, as seems likely, Fonterra did not renew the current contract with GF. [redacted] It is not clear whether the termination of the discount and the passing on of the cost of the winter premium would be detrimental or beneficial to allocative efficiency, given that the reasons why Fonterra agreed to these terms in the contract are not certain.

As population, and thus dairy, demand increases, GF's fixed (250M litre) entitlement to DIRA milk would represent a reducing proportion of domestic demand. GF would thus provide a gradually diminishing constraint on Fonterra's pricing under these circumstances because either GF's market share would reduce or GF would have to source milk on the open market, which would cost more for the reasons discussed earlier. Unless new entrants with entitlements to DIRA milk met the gap, FBNZ would be able to increase its prices. This would result in a loss of allocative efficiency as the increases to retail prices would include monopoly rents.

Continuation of the status quo, without any provision for growth in demand, would not seem to have any short-term effects on competition and dynamic efficiency. In the long term, at some point, the rising prices could attract IPs to consider entering the domestic market. That would be beneficial for dynamic efficiency if it occurred, but Fonterra would have an interest in limiting the price increases to a level below that at which IPs would be likely to enter the domestic market.

10.5.2 Catering for growth in the domestic-dairy market

In terms of prices and allocative efficiency, catering for growth in domestic demand by progressively increasing GF's entitlement to Fonterra milk in line with the growth in the domestic dairy products market would avoid the detrimental effects described above whereby GF's market share would decline, or GF would have to source milk on the open market which would cost more for the reasons discussed earlier. Thus, catering for growth would avoid the reduction in the constraint on Fonterra's exercise of market power that GF currently provides.

Catering for growth would preserve the current situation regarding competition and dynamic efficiency whereas, otherwise, GF's ability to provide competition to Fonterra would decline as domestic demand grew.

10.5.3 Requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor (for dairy products supplied to the domestic market) with no special regulatory entitlement or limit for GF or any other participant

Under this option, the current caps on the amount of DIRA milk GF and other IPs can acquire, of 250M litres and 50M litres p.a. respectively, would be removed subject to the amount acquired being supplied to the domestic market. GF and other acquirers would be subject to audits to confirm how they used the DIRA milk supplied. A penalty, for example a higher price or some other mechanism, would be applied if the milk acquired was used to produce exports rather than to supply the domestic market.

This option has the potential to lead, over time, to a more innovative and competitive dairy products market:

- it would allow 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; and
- 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.

This option would avoid the detrimental effects of competition and allocative, dynamic and productive efficiency being harmed by the current caps.

There is a risk that this option could disincentive IPs from having an independent supply when entering the domestic dairy products market. This option could therefore partially reinforce Fonterra's dominance and discourage competition at the farm-gate. Nevertheless, because it is unlikely that a large IP would establish a presence in the domestic market without an exporting arm, this is less of an issue. As New Zealand currently exports 95% of total milk production, it is unlikely that this option (which is limited to the domestic market) will have a significant impact on the incentives of an IP considering sourcing independent milk supply. In summary, the benefits should outweigh any potential costs.

10.5.4 Requiring Fonterra to divest FBNZ

Requiring Fonterra to divest FBNZ would achieve a level competitive playing field between FBNZ and GF plus other independent suppliers to the domestic market (but with no change in Fonterra's dominance of factory-gate supply).

As discussed in section 7.5, Fonterra has in the past engaged in market behaviour that prima facie involves use of Fonterra's dominance in a way that has detrimental effects on GF's ability to compete with FBNZ. These episodes indicate that full achievement of a level playing field would involve requiring that Fonterra divest FBNZ in the same way that electricity lines companies were required to be separated from generation and retail companies in the electricity market. More recently, Telecom was required to divest Chorus in order to achieve a level playing field in the retail market for fibre broadband telecommunications services. Both of these structural ownership separations were introduced to separate out entities that had dominant near monopoly roles in the relevant markets from components of those markets where competitive provision was readily achievable.

Allocative efficiency would be improved if Fonterra were required to divest FBNZ as regards the contribution of processing costs to the overall cost of milk in the domestic market. Specifically, the divestment of FBNZ would encourage more vigorous competition (including providing better incentives for entry by new IPs) by eliminating the risk of Fonterra assisting FBNZ to retain or increase its market share by actions that apply a margin squeeze on IPs including GF.

The issue of allocative inefficiency if Fonterra was not required to supply milk at regulated prices would remain, although in the long run the entry of new IPs into the domestic market, encouraged by removal of FBNZ's privileged position, could introduce a constraint on Fonterra.

Dynamic efficiency would also be improved, probably substantially, since GF and other IPs considering entry to the domestic market would have an assurance of competitive neutrality in regard to competition. As noted, in the long run the entry of IPs into the domestic market could reduce and eventually eliminate the effect of Fonterra's dominance in the factory-gate market. Synlait's entry to the South Island market is a positive step in this regard. Time will tell whether further entry by other IPs will (or will not) take place.

One obstacle to this approach, in the case of Fonterra, is the argument that, in export markets, confidence in Fonterra's product safety and quality relies on Fonterra being able to assure overseas customers that they are receiving the same product as is sold on the New Zealand market.

Overall, in order to achieve the optimal position for Fonterra and its supplier shareholders in export markets, the "first-best" approach of requiring Fonterra to divest FBNZ may have to be foregone. The second-best alternative in that case would be to require accounting or legal separation of Fonterra and FBNZ, while leaving FBNZ as part of the Fonterra group.

10.5.5 Requiring accounting or legal separation of Fonterra and FBNZ

Requiring accounting or legal separation of Fonterra and FBNZ, while leaving FBNZ as part of the Fonterra group, would go some way towards providing a level competitive playing field between GF and FBNZ but with no change in Fonterra's dominance of factory-gate supply. Fonterra could be required to account for FBNZ as a separate entity or to legally separate FBNZ by creating a holding

company where one subsidiary was FBNZ and the other was the remainder of Fonterra's business operations[50].

Allocative efficiency would be likely to be somewhat improved under this option. If monitored appropriately by non-supplier shareholders and the Commerce Commission, this approach would reduce the risk of Fonterra assisting FBNZ to retain or increase its market share by cross-subsidising FBNZ. The issue of allocative inefficiency if Fonterra was not required to supply milk at regulated prices would remain, although in the long run the entry of IPs into the domestic market, encouraged by removal of FBNZ privileged position, could introduce a constraint on Fonterra.

Dynamic efficiency would also be improved, possibly substantially, since GF and IPs considering entry into the domestic market would have a degree of protection against competitive non-neutrality by Fonterra. As noted above, in the long run the entry of IPs into the domestic market could reduce and eventually eliminate the effect of Fonterra's dominance in the factory-gate market.

10.6 Extending the DIRA requirements to other domestic dairy products

Another option that could be considered to enhance the competitive nature of domestic dairy markets would be to extend the DIRA requirements on Fonterra to supply raw milk to GF and other competitors to other domestic dairy products like organic milk, butter and cheese.

10.6.1 Organic milk

The DIRA Regulations limit Fonterra's requirement to supply organic milk to each IP to a maximum of the quantity of organic milk supplied to that IP by The New Zealand Co-operative Dairy Company Ltd and Kiwi Co-operative Dairies in the 2000/01 season.

The consumption of organic milk has grown significantly since 2000/01, from virtually zero to approximately 7.5M to 10M litres p.a. (being approximately 3.0% of liquid fresh-milk sales).

Finding accurate information about the volume of organic milk supply in the 2000/01 season is difficult, but in any case Fonterra has alleged that GF was not supplied any organic milk during that season and therefore has zero access to organic milk from Fonterra now. This is at a time when the premium over the FGMP Fonterra pays its organic suppliers has increased from $1.75 per kgMS in the 2015/16 season to a forecast $3.20 per kgMS in the 2016/17 season on the back of increasing market demand for organic milk.

10.6.2 Butter

There are two butter manufacturers in New Zealand: Fonterra and Westland. Westland's butter is predominantly exported but it relaunched its Westgold brand into New Zealand supermarkets in 2015. All the other New Zealand-made butters that are available in New Zealand have Fonterra butter as a base product.

The DIRA Regulations do not require that Fonterra supply any butter to GF at any price. However, butter is one of the commodity products sold on the Global Dairy Trade (GDT) platform. Therefore, there is a clear factory-gate market reference price. The butter that is auctioned is butter that is frozen in 20 kg blocks.

[50] As was initially done in the case of Telecom with the 2008 operational separation of Telecom into a Wholesale Unit and a Telecom Business Unit. This operational separation preceded the 2011 required structural ownership separation of Telecom into two separately owned companies, Spark and Chorus.

10.6.3 Cheese

There are two scale cheese manufacturers in New Zealand: Fonterra and OCD. Without needing to produce exclusively table cheese, Fonterra produces more than enough to satisfy the domestic market. OCD has in the last couple of years upgraded its cheese production facility such that it is now producing table cheese. However, it is probably reasonable to say that OCD is still in the process of establishing its reputation for table cheese with companies such as GF in New Zealand.

Cheese is also one of the commodities auctioned on the GDT platform. However, the quality of that cheese is such that it is referred to as "kettle" cheese. That means that its quality is inconsistent and it is used as a base ingredient in the manufacture of "processed" cheeses such as the quick melt cheeses used in fast foods like cheese burgers and toasted sandwiches.

The standard Fonterra and GF-branded cheeses that consumers typically purchase at the supermarket (such as cheddar, colby and edam) are referred to as "table" cheeses. The GDT auction price is an important reference for the price of table cheese as the price premium for table cheese over the auction price is relatively stable.

10.6.4 Implications of extending DIRA

Extending the DIRA Regulations to require Fonterra to supply bulk butter and cheese to GF and other processors supplying the domestic market with these products would increase competition in the relevant wholesale and retail markets (but not change Fonterra's dominance of the factory-gate market).

However, the value of these products compared to their transport costs is (albeit barely) sufficient for imports to provide some competition for Fonterra, particularly in regard to higher value variants.

The analysis of Fonterra's behaviour in Section 10.5, above, is however highly relevant and modifies the conclusions that might otherwise be reached. Specifically, the concern of Fonterra to maintain the goodwill of domestic consumers in regard to environmental issues can result in Fonterra applying margin squeezes to GF and other suppliers to domestic markets, by capping retail prices while inflicting increases in world prices on GF and other suppliers, as described in Section 7.5. In these circumstances, consideration of at least backstop regulatory arrangements to ensure competition in the supply of these additional products (butter, cheese and organic milk) is preserved is warranted.

10.7 Moving the dairy-sector regulations to the Commerce Act, Part 4

As described at the beginning of this section, the Commerce Act provides that the Commission can initiate a Part 4 Inquiry and, if the specified tests are met, can recommend that the Government impose regulation under Part 4 of the Commerce Act.

Such regulations would be likely to be similar in general terms to the current DIRA regulations, but with the Commission playing a more direct role in determining the FGMP.

At present the Commerce Commission reviews the Milk Price Manual and its application to Fonterra in determining the FGMP. In its review the Commission is able to report concerns it has regarding the Manual or Fonterra's application but the expression of concerns does not necessarily result in revisions to the FGMP.

As an example, in its review of the 2015/16 FGMP the Commission expressed concerns regarding the asset beta estimate used by Fonterra. Specifically, it noted:

- Our revised view is that Fonterra and its expert have not provided information to allow us to conclude that New Zealand milk processors, including the notional producer, have sufficiently different risk exposures to those in the international sample to justify a downward beta adjustment of 0.13 from the mid-point estimate of beta from the comparator set (ie, from the 0.51 mid-point estimate to the 0.38 estimate adopted by Fonterra).

The Commission noted however:

- 4.38 We note that it is not our role to determine the estimates of the asset beta and specific risk premium. Rather, our role is to review the assumptions adopted, the inputs and processes used by Fonterra in calculating the milk price for consistency with the s150A purpose.

If the DIRA Regulations were changed to a basis similar to the Commerce Act Part 4, it would be the Commission's role to determine specific estimates of the asset beta and specific risk premium. This would result in a more definitive and independent assessment of the DIRA price.

It is not feasible to assess the scale of the change in outcome that would result from a change to a Part 4 approach, however. Thus, it is uncertain whether the benefit of the change in terms of a more definitive and independent price estimation would justify the cost of the change. There would be a benefit in terms of improved confidence of potential entrants to the market.

10.8 Summary of the regulatory analysis

In summary, in terms of the options considered above, the fullest improvement in competition and thereby allocative and dynamic efficiency would be achieved by a combination of:

- requiring Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor (for dairy products supplied to the domestic market) with no special regulatory entitlement or limit for GF or any other participant; and

- requiring Fonterra to divest FBNZ.

This conclusion reflects our assessment that economies of scale and scope would result in a substantial loss of allocative efficiency under any option whereby GF is required to develop its own farm-gate supply itself or by contracting with an established IP. This assessment in turn reflects an analysis that Fonterra has achieved economies of scale and scope in milk collection, including but not confined to winter-milk procurement, which could not be matched by either GF or any existing IP. While Synlait has entered the domestic market, it has yet to secure supply of winter milk and is likely using the domestic market as a 'loss-leader' to enhance its reputation on its core exports business. This does not therefore indicate that Synlait, or any other IP, can currently compete with Fonterra's productive efficiencies.

The overall implication is that Fonterra's optimisation of raw-milk collection in each Island and the provision of milk for the domestic fresh and chilled market exhibits a high degree of market power and high barriers to entry. It might be the case that if Fonterra had a competitor for the domestic market with a market share in the farm-gate market above (say) 25% in either Island then that competitor could access economies of scale of the same order as Fonterra. However, no competitor is likely to reach that scale in the foreseeable future. This conclusion relates to the supply of milk for the domestic fresh and chilled market – it does not apply to production for export.

While the combination of the two options noted above is likely to achieve the fullest improvement in allocative and dynamic efficiency under the options considered, continued regulation would be required since those options do not remove Fonterra's market power in the factory-gate market.

As described at the beginning of this section, a complete withdrawal of the DIRA Regulations would probably result in the Commerce Commission undertaking a consideration of whether to recommend application of Part 4 regulation to the factory-gate milk market.

11. Conclusions

The current structure and degree of competition in New Zealand's domestic dairy markets is a result of past government interventions. DIRA established Fonterra with a highly dominant position in the collection of raw milk from farmers and divided the supply of milk for the domestic dairy products market between two participants, FBNZ and GF, both of whom get their milk from Fonterra. These regulations governing the market are not easily removed without leaving Fonterra (and its 100% owned subsidiary FBNZ) in a position where it has considerable market power over New Zealand consumers.

There are a number of market solutions that have the potential to increase the competitiveness of the domestic dairy markets over the longer term. But these options almost all involve trade-offs between gains in dynamic efficiency (from having more competitors in the farm-gate and factory-gate raw-milk markets or the wholesale domestic dairy products markets) and losses in productive efficiency in the arrangement and collection of winter milk (where Fonterra has established highly efficient operations). The option that is likely to offer unequivocal gains in efficiency would be an extension of GF's contract with Fonterra on enhanced terms. However, the entry of another IP (Synlait) into the domestic dairy products market in 2019 could put some downward price pressure on the domestic market, to the benefit of consumers, as well as increase demand at the farm-gate. Any loss in productive efficiency will be borne by Synlait shareholders and not consumers, as Synlait must have had to offer better terms to FSSI than GF, which has access to DIRA milk. However, Synlait's entry represents only 5% of the domestic market so the likely effects are limited. Further entry by another IP may occur in the future however the Synlait entry does not appear to be easily replicable and therefore any future regulatory change should consider the implications of current and future competitive market entry.

It is possible that market-based solutions may evolve over time. In particular, the entry of another major IP into the domestic dairy products market in addition to Synlait's entry in 2019 could lead to benefits to consumers and farmers. In this respect, it may be prudent to wait and see whether further competition will develop on its own accord. However, in the absence of any certainty that such market-based solution will develop, there is a range of improvements to the regulatory environment for domestic dairy products that the Government should consider to improve the functioning of New Zealand's domestic dairy markets. In our assessment two options are likely to provide the greatest gains. The first would be to require Fonterra to supply 100% of the raw milk required by any domestic dairy products market competitor, not just GF, for dairy products supplied to the domestic market. Thus placing all competitors on an equal footing. This approach would reduce the restrictions on GF's ability to compete with FBNZ (by removing the 250M litre cap on GF) and create a more level "playing field" between FBNZ, GF and other current and potential domestic market participants. The second measure would be to require Fonterra to publish separate audited financial statements for FBNZ. This greater financial transparency, by reducing the potential for Fonterra to cross-subsidise FBNZ, would enhance the competitiveness of the domestic dairy products market to the long-term benefit of consumers.

Annex 1: The Commerce Act and the dairy sector

Fonterra is subject to Part 2 of the Commerce Act, 1986 (the Act) which, as well as prohibiting collusive practices that substantially lessen competition, more relevantly prohibits the taking advantage of market power by a supplier or purchaser that has market power. In particular, Section 36(2) provides that:

> "A person that has a substantial degree of power in a market must not take advantage of that power for— (a) restricting the entry of a person into that or any other market; or (b) preventing or deterring a person from engaging in competitive conduct in that or any other market; or (c) eliminating a person from that or any other market."

Section 36 was one of the subjects being considered in a Targeted Review of the Commerce Act. The Commerce Commission expressed its view regarding the efficacy of Section 36 in a letter to the Minister of Commerce on 2 June 2016:

> "As we outlined in our original submission, we believe reform is necessary because s36 is not currently effective in promoting competition in New Zealand domestic markets for the long-term interests of consumers. An effective unilateral conduct provision is especially important for a small economy with concentrated markets. Section 36 is not effective primarily because of the way the courts have interpreted the "taking advantage" part of s 36."

Nevertheless the Government decided not to, at present, change section 36 of the Commerce Act.

In the case of the domestic dairy markets, the difficulties explained by the Commerce Commission result in the Commerce Act likely being ineffectual if Fonterra exercises its market power through the pricing or other behaviour of FBNZ.

As noted in Section 7.5 of this report, Fonterra has engaged in market behaviour which prime facie involves use of Fonterra's dominance in a way that has detrimental effects on GFs ability to compete with FBNZ. For example, we detail how Fonterra decided and announced in 2012 that, despite the export price of milk powder increasing markedly, FBNZ would not let the retail price of milk go higher than $3.99 per litre. Fonterra continued however to price milk supplied to GF at the contract price which reflected the FGMP and thus the export price of milk powder. In effect, Fonterra required FBNZ to price below the level corresponding to a normal return thus creating a margin squeeze on GF.

The Commerce Commission would, however, face difficulties in winning a case regarding this example of "predatory pricing" under the current wording of s36 of the Commerce Act.

In addition to the provisions of Part 2, the Commerce Act Part 4 empowers the Commerce Commission to undertake an inquiry to determine whether to recommend to the Minister that markets with little or no competition should be regulated to mimic outcomes in competitive markets.

The Commerce Commission in 2011 considered whether to initiate an inquiry under Part 4 of the Act into milk markets given complaints it had received[51]. The report noted that the Act sets out three tests which the Commission must be satisfied are met before it can recommend that the Minister regulate goods or services:

[51] "Consideration of whether to initiate a Commerce Act Part 4 inquiry into milk prices", Commerce Commission, August 2011.

1. the goods or services are supplied in a market where there is little or no competition; and little or no likelihood of a substantial increase in competition (the Competition Test);

2. there must be scope for the exercise of substantial market power in relation to the goods or services, considering the effectiveness of existing regulation or arrangements, including ownership arrangements (the Market Power Test); and

3. the benefits of regulation must materially exceed the costs of regulation (the Net Benefit Test).

The threshold for undertaking a Part 4 inquiry is high. Part 4 regulation is only imposed on firms with a high degree of market power, usually because of the natural monopoly characteristics of the industry in question (such as electricity or gas distribution).

The Commerce Commission concluded that a full pricing inquiry into any of the milk markets considered was not warranted at the time. This decision was based on its analysis of the state of competition in the relevant markets and whether Part 4 could effectively solve any potential problems identified given the cost incurred to undertake the exercise. The conclusions were strongly influenced by the parallel ongoing interdepartmental reviews at the time of the Raw-Milk Regulations and Fonterra's FGMP.

The Commission did conclude that the Competition Test was likely to be met in the markets for the factory-gate supply of raw milk. The Commission stated:

> "There appears to be little or no competition, and little or no likelihood of a substantial increase in competition, in what is called factory-gate supply. Little raw milk is traded voluntarily. Nearly all raw milk supplied to the factory-gate is milk Fonterra must sell at a regulated price under DIRA and the Regulations. We consider it unlikely that alternative suppliers of sizeable, consistent quantities of milk throughout the year to the factory-gate will develop in the medium-term.
>
> However, given the Regulations, it is questionable whether Fonterra has scope to exercise substantial market power in relation to the supply of raw milk to other processors. The Regulations provide an access regime for raw milk and are designed to counter Fonterra's market power. It is premature for us to consider this matter further, given the uncertainty surrounding the outcome of the current interdepartmental review."

It is notable that the Commission concluded it was unlikely that competition would develop in the factory-gate market in the medium term. The Commission's 2016 report confirms that competition has not developed in the factory-gate market.

Annex 2: Farm-gate milk price

As noted in Section 4.1 of this report, the farm-gate milk price (FGMP) is a notional calculation of the cost of milk supplied to Fonterra on the basis that Fonterra is an efficient processor. This annex provides background to the calculation and history of the FGMP.

The FGMP calculation assumes that 100% of the milk supplied goes into the production of what are known as the reference commodity products – whole milk powder (WMP), skim milk powder (SMP), anhydrous milk fat (AMF), butter and butter milk powder (BMP). The calculation assumes that approximately two thirds of all milk collected goes into the production of WMP. Fonterra produces other products such as cheese and casein. The values of these other products are not taken into consideration when calculating the FGMP. Given the heavy weighting to WMP in the calculation of the FGMP – and given the values of different dairy products are not perfectly positively correlated and that IPs must be able to pay their suppliers a similar amount as Fonterra pays its suppliers each year or risk losing their supply, from a risk-management basis, IPs are effectively forced to focus their production on WMP.

OCD, Synlait and Miraka all have WMP-centric production. Table 4 below illustrates the FGMP for each processor in the market. Note the similarities between the different processors' milk prices and Fonterra's FGMP.

Table 4: FGMP

Year	2010	2011	2012	2013	2014	2015	2016	Average ($)
Fonterra	6.10	7.60	6.08	5.84	8.40	4.40	3.90	6.05
OCD	6.07	7.46	6.19	5.78	8.40	4.61	3.94	6.06
Synlait	6.21	7.66	6.14	5.81	8.31	4.48	3.91	6.07
Miraka	-	-	6.18	5.94	8.50	4.50	4.00	5.82*
Westland**	6.15	7.70	6.04	6.04	7.27	4.85	3.88***	5.99

* More recently established company. Only five years of data. Fonterra's average FGMP over the same five years was $5.72

** Westland's numbers are not directly comparable to other data in the table as its numbers include an implied dividend paid to shareholder suppliers.

*** Westland's 2016 payout included a $0.26 top-up paid out of reserves

Annex 3: The Commerce Commission's 2016 review

DIRA requires that once thresholds regarding collection of milk (independent of Fonterra) are reached the Minister must request a report on the state of competition in the New Zealand dairy industry. Upon receipt of that report the Minister must decide whether to promote legislation to reset the thresholds and/or promote the adoption of measures that provide a transition pathway to deregulation.

Following the South Island threshold being met in the 2014/15 season the Minister requested the required report from the Commerce Commission. In the resulting March 2016 review of the state of competition in the New Zealand dairy industry[52], the Commerce Commission concluded that there is insufficient competition at both the farm-gate and factory-gate markets.

The Commerce 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%. The Commerce Commission noted that:

> "If other large IPs did not prove a constraint on the ultimate factory-gate price [25%] could underestimate the price effect whereas if they are a more effective constraint the price rise may be overestimated".

The Commerce Commission concluded this increase in the factory-gate price would result in a retail price increase of up to 6.25%, when other costs contributing to the retail price are taken into account. Assuming a price elasticity of -0.5 to -1.0, the retail price increase is estimated to result in an allocative efficiency loss of between $3.5M p.a. to over $13M p.a. and a transfer of wealth from New Zealand consumers of dairy products to milk suppliers of between $51M and $92M p.a.

The Commission provides an indication of the sensitivity of its estimates. Firstly, it notes that the estimated price increase has a non-linear effect on the deadweight loss. A doubling of the price increase estimate would increase the deadweight (efficiency) loss range to $14M to $50M. Secondly the Commission advises that the estimates:

> "are based on static efficiency losses by which we mean these do not capture the full efficiencies and benefits that competitive rivalry can bring over time. Typically, we give more weight to these dynamic efficiencies as they bring important benefits such as more efficient investment, which can easily outweigh static measures of efficiency."

As indicated, the estimate of efficiency loss is sensitive to the margin (above the DIRA price) required to persuade IPs to sell milk into the factory-gate market. The DIRA price is the international price of a basket of traded commodities less processing costs including return on capital. The IPs which contract with farmers must install capacity to accept milk from their contracted farmers at peak production. Thus, IPs have spare capacity at most times of year. Therefore, for an IP considering selling liquid milk to GF versus processing that milk itself, the break-even price is the international price of a basket of traded commodities less operating costs since capital costs are sunk and will be incurred regardless of whether the IP processes milk in question or sells it to GF. The IPs save capital costs only if their agreement with GF is for a period long enough that they can reduce the need to have processing

[52] http://www.comcom.govt.nz/regulated-industries/dairy-industry/report-on-the-state-of-competition-in-the-new-zealand-dairy-industry/

capacity for that amount of milk. Thus, IPs can price at close to the DIRA price if and only if they have an agreement with GF that it will take milk at all times including at the peak[53].

The 2016 TDB report also assessed the validity of the Commerce Commission's expectation of a 25% price increase by analysing the economics of GF managing its milk supply itself. As there is no surplus milk in the industry currently (other than DIRA milk) that is available to be traded at the factory-gate, the 2016 TDB report concluded that all of GF's options require the recruitment of new milk. The only difference is who does it: another IP on behalf of GF (the factory-gate); or GF itself (own supply). Because of the established relationships that the IPs have with suppliers, the report assumed that it would be easier for an IP to recruit new milk than GF but it assumed the cost of the milk at the farm-gate would be the same.

The analysis in the 2016 TDB report demonstrated that it is possible to have an ingredients business without a domestic consumer business, but it is not possible to have a domestic consumer business without an ingredients business. This is because of the requirement to recruit excess milk and because of the requirement to manage the daily variations in demand and supply.

The analysis in the 2016 TDB report concluded that it is more cost effective for GF to rent milk-processing capacity than it is to build its own, with the build option being estimated to result in over twice the cost per kgMS of the rental option. The report noted however that the comparison ignored 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 GF 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 GF has in each island and they will know what the cost for GF will be of building its own plant in each island and will use that knowledge to negotiate a rental outcome close to FGMP plus [Redacted].

This analysis described above supports the Commerce Commission's estimate that the non-regulated price GF would have to pay is DIRA plus 25% is reasonable in the absence of long-term agreements that require GF to take milk. Fonterra can better bear the volume risk because of the processing agreements with GF and because any fall in GF market share will be accompanied by an increase in FBNZ's market share.

The Commerce Commission also assessed whether there was an efficiency cost attributable to the DIRA regulations. The Commerce Commission assessed the economic efficiency cost of Fonterra maintaining excess capacity as a result of all aspects of the DIRA regulations, including the open-access requirements and the DIRA (Raw Milk) Regulations in respect to export and domestic market orientated producers, was up to $6M p.a. The Commission notes "The direct costs to Fonterra are not the same as the cost to economic efficiency from maintaining this capacity. It is not necessarily the case that such capacity would not exist, or that the costs would not be incurred by another industry participant in some other form. There would, however, be likely to be better incentives to manage this risk and price it accordingly. As such we consider $6M as an upper bound on the costs."

The need for Fonterra to maintain excess capacity is not attributable to the requirement of supplying domestic processors with Raw Milk. The variation in GF's milk requirements of around 200,000 litres on a daily basis (as noted in Section 7.2 of the 2016 TDB report), while substantial relative to GF's average

[53] Annex 3 sets outs a fuller analysis of the economics faced by an IP that is considering entering the factory-gate market: i.e., contracting to supply milk to GF or another domestic market supplier.

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, GF's access to DIRA milk is not responsible for the excess capacity requirement for Fonterra that the Commerce 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 and the uncertainties created by the open access provisions.

The Commerce Commission review of competition in dairy markets in 2016 also concluded:

> "5.150 Fonterra remains the most significant player in domestic downstream markets, particularly for fresh milk and cream (typically supplied indirectly through private label toll manufacturing). However, smaller IPs (IPs) have made significant in-roads in certain product categories. There appears to have been some consequent price pressure on Fonterra (although this may be limited since most of the smaller IPs products are premium products), as well as a quality pressure.
>
> 5.151 We consider that Fonterra would have an incentive to foreclose smaller IPs in event of no regulations. Whether this incentive extends to Goodman Fielder is less clear given its observed ability to negotiate a discount off the DIRA price for its milk supply."

This qualification regarding GF is incorrect since the discount, and indeed all the terms of the current contract, reflect the unique circumstances of 2001. The contract was designed to allow a higher price to be paid for the processing and brand assets which Fonterra was required to divest. Fonterra wanted the assets being divested to command a higher price and provided a favourable contract as part of the package to obtain such a higher price. Thus, the discount is not at all an indicator that GF has countervailing power against Fonterra.

The more accurate observation would be that Fonterra is concerned with achieving and retaining the goodwill of domestic consumers because it and its suppliers depend on that goodwill in a variety of ways, including fending off advocates of tighter environmental regulation of dairy farming.

Annex 4: The (original) Dairy Industry Restructuring Amendment Bill 2017

The original Dairy Industry Restructuring Amendment Bill had the following key features:

The Bill (amongst other things):

- removed the default expiry provisions and the market share thresholds in the North and South Islands that trigger a review of the state of competition;
- required a review of the state of competition to commence during the 2020/21 dairy season;
- required a review at five-year intervals thereafter if competition has not yet been considered sufficient;
- allowed Fonterra the discretion to refuse supply from new dairy conversions;
- reduced the total volume of raw milk that Fonterra must supply to IPs from 795M litres to 600M litres per season; and
- removed the requirement for Fonterra to supply DIRA milk to large export-focused processors from the beginning of the 2019/20 season. The definition of a large export-focused processor is one that has the capacity to process more than 100M litres of milk per season and exports more than 50% of its production by volume.

The five-yearly reviews and the amendment with respect to large export-focused processors seemed to be the most significant changes in the original Bill from a potential competitor investment perspective. The five-yearly review intervals would have created a short investment horizon and may, therefore, established sufficient uncertainty that at least some potential investors adopted a wait-and-see approach.

The espoused key benefits of removing the requirement for Fonterra to supply DIRA milk to large export-focused processors were that:

- it would have clearly signalled to existing and future processors that the current regulatory regime is not permanent and would have encouraged them to find ways of operating without it; and
- it would have incentivised different entry points into New Zealand's factory-gate market and created a focus on higher-value products, rather than incentivising primary processing of raw milk at a time when the industry is perceived to have spare capacity.

The then Minister considered that there was little risk of the amendment preventing the entry of new competitors even though the Minister acknowledged that efficient processing requires a plant with the capacity to process at least 200M litres of milk p.a.[54]

The amendment appeared to restrict the size of small domestic-focused processors by effectively limiting them to 50M litres of milk p.a. unless the factory-gate market develops sufficiently. The risk that the factory-gate market does not develop, together with the risk that the continuing provision of DIRA milk was to be reviewed again during the 2020/21 dairy season, providing a disincentive for new competition, which would have reduced the probability of the factory-gate market developing.

Annex 5: Winter milk – is it a natural monopoly?

Section 5.3 of this report noted possible parallels between the New Zealand winter-milk market and markets that are natural monopolies. This annex explores this issue further.

A natural monopoly exists in a particular market if a single firm can serve that market at lower cost than two or more firms. In essence, natural monopolies exist because of economies of scale and economies of scope that are significant relative to market demand. Because monopolies have the ability to exert market power at the expense of consumers, natural monopolies are typically subject to government regulation. Regulations may include price, quality, and entry conditions[55].

Economies of scale in the winter-milk market come in two areas: collection costs and the ability to manage daily variations in fresh-milk demand (represented as capacity costs).

Winter milk

The milk curve in New Zealand is similar to the grass-growth curve. Such a pasture-based curve results in milk production in New Zealand varying from 100M litres per 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.

Such a milk production system requires some modification to produce milk for domestic consumption in June and July. To ensure the most efficient milk production occurs, Fonterra offers a winter-milk premium for farmers to supply at the factory gate in June and July, rather than at farm gate (as is the case for the other 10 months of the year). Farmers intending to supply winter milk apply for a contract to supply. Fonterra contracts only as much winter milk as it requires. Each contracted farmer in the North Island is offered the same premium and each contracted farmer in the South Island is offered the same premium (ie, the North and South Island premiums are different). The transport costs associated with transporting the milk from the farm to the nearest receiving factory are deducted from the winter-milk premium.

To supply milk in June and July, a farmer must have a food source for feeding the lactating cows during this period. Farmers have different options for food sources for this period, depending on their 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. In all cases though, the feed costs are greater than a cow walking to the paddock to eat grass.

In the North Island, some farmers may choose 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 and 40% of the herd on the autumn calving.

[55] https://stats.oecd.org/glossary/detail.asp?ID=3267

In the South Island, farmers supplying winter milk typically continue to milk cows that have calved in the previous spring (but have not got back in-calf for the following spring) through the winter.

North Island farmers particularly 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 for 18 months.

The New Zealand monthly milk production numbers produced by the Dairy Companies Association of New Zealand indicate that New Zealand produced 147M litres of milk in June 2016, the lowest producing month of last season. The New Zealand domestic fresh-milk market requires approximately 50M litres of milk per month. In other words, farmers produce more winter milk than is required for purely domestic purposes, which reconciles with Fonterra using more winter milk for processing into other value-add products. (The implication of Fonterra recruiting more winter milk than it needs for the domestic market is that it would be harder and therefore more expensive for GF to try and recruit its own winter milk.)

Assuming all farmers supplying winter milk have a 60/40 spring/autumn split and based on the average annual production of New Zealand dairy farms of 160,000 kgMS[56], we estimate that approximately one in eight farmers (or approximately 1,350 of Fonterra's 10,500 dairy farmers) choose to supply winter milk.

Fonterra has to date been the only processor that collects winter milk. We understand that Miraka, Synlait and Westland may now be trying to also recruit some winter milk to support their value-add products.

In contrast with Fonterra's ratio of one-in-eight farmers supplying winter milk, GF would require all its suppliers to be winter suppliers. The implications of a one-in-one requirement on collection costs are significant, as discussed below.

Collection costs

An annual domestic fresh-milk requirement of 600M litres equates to less than 3.5% of Fonterra's total annual milk collections.[57] The scale of Fonterra's total operation creates collection economies of scale for Fonterra that an IP is unlikely to be able to replicate. For ten months of the year Fonterra can go to the farms closest to its fresh-milk processing plants and pick up milk for use in the domestic fresh-milk market regardless of whether these closest farms are winter-milk suppliers or not. It is only for the remaining two months of the year that it needs to go to its winter-milk suppliers to pick up milk specifically for the domestic market and transport the milk back to a single fresh-milk plant in the South Island or to one of four plants in the North Island.

Contrast that situation with GF establishing its own milk supply (or contracting an IP for raw-milk supply) for the domestic fresh-milk market. GF needs 125M litres of milk p.a. in each island and it would need to recruit around [Redacted] litres of milk in each island (60% from spring calvers and 40% from autumn calvers) to have as much milk as it needs for every single month of the year. [Redacted] litres of milk means that 100% of GF's suppliers would need to be split calving, meaning GF would have no ability to flex its collections during the year. GF would also need to do something with the [Redacted] litres of excess milk that it would have collected across the year.

[56] DairyNZ Economic Survey 2015-16, p.30.
[57] 1.566 billion kgMS in 2015/16 equates to approximately 18.25 billion litres of milk.

According to Fonterra, its milk-tanker fleet travels 85M km per year from 16 tanker depots to collect milk from approximately 10,500 farms to deliver milk to 70 delivery locations.[58] Depending on what assumptions are made, this information suggests an average round trip of something like 78 km per farm per day, indicating that on average, farms and delivery locations are within a radius of approximately 55 km from a tanker depot. We know from Fonterra's Milk Price Statement that its collection costs average 22 cents per kgMS. Any extension of this collection radius will lead to increased collection costs per kgMS.

It is probably reasonable to assume that the IPs' collection costs per kgMS are similar to Fonterra's because they will try and locate their plants in those areas where they judge they will be able to recruit milk easiest.

A single efficient plant (assuming a 8.5 MT per hour dryer) can process 200M litres of milk p.a. (17M kgMS) assuming a standard New Zealand milk curve. Note – the standard milk curve assumption implies that the IP would not be processing any winter milk and therefore none of its suppliers would be winter-milk suppliers. The IP's collection costs would be $3.8M[59].

In order to operate as close to capacity as possible and provide enough milk for GF every month of the year (in a single island), that IP would need to collect [Redacted] litres of milk – 125M litres (10.625M kgMS) for GF and [Redacted] for the IP.

All other things being equal, an increase of [Redacted] litres would mean that an IP would need to increase its collection area by [Redacted]. However, the conclusion drawn above that only one in eight suppliers chooses to supply winter milk and the requirement for every single supplier in this case to be supplying winter milk suggests that the collection area would need to further increase by a multiple of [Redacted].

An area increase of that amount would increase the average distanced travelled from 78 km to [Redacted] km. If we assume that there is some sort of optimal transport networking solution such that the effective increase in the milk supply area is [Redacted] times rather than [Redacted] times, the average distance travelled is [Redacted] km. The IP's collection costs would increase to [Redacted] meaning that the incremental cost of collecting GF's milk would be [Redacted]. The IP would pass that incremental cost onto GF, which would increase GF's cost of milk by approximately [Redacted] per kgMS.

The detailed calculation of the above starts with Table 5 below.

Table 5: [Redacted]

In Table 5, above, we establish that the single efficient IP needs to recruit [Redacted] litres of milk across both the spring and autumn milk curves in order for GF to get as much milk as it requires for the domestic market in a single island and for the IP to stay within the bounds of its daily processing capacity constraint.

If we assume that the IP collects 200M litres of milk (17M kgMS) from an area that is within 55 km of its plant we can calculate the average round trip distance travelled to collect milk from each of its suppliers as follows:

Table 6: [Redacted]

[58] http://files.ecan.govt.nz/public/consent-projects/consent-project-hearing/Evidence_of_Alan_Maitland.pdf
[59] 17M kgMS multiplied by $0.22 per kgMS.

If the IP now needs to collect [Redacted] litres of milk [Redacted] (kgMS), that is a [Redacted]% increase in the amount of milk required and it is therefore reasonable to assume that the area that the IP collects that milk from will be [Redacted]% larger than it was.

Even if we assume that the amount of milk being collected is the same per square kilometre, this increase in area increases the average round trip distance from [Redacted] km to [Redacted] km and therefore increases collection costs from $0.22 to $[Redacted] per kgMS.

The IP requires every supplier to be a winter supplier. However, we assume that only one in eight suppliers will choose to be a winter supplier. That implies that the IP needs to extend its milk recruitment coverage by a multiple of [Redacted]. If we assume that there is some sort of optimal transport networking solution such that the effective increase in the milk supply area is [Redacted] times rather than [Redacted] times, the average distance travelled is 169 km. Using that information, we can calculate the increase in collection costs per kgMS as follows:

Table 7: [Redacted]

Capacity costs

As noted above GF requires 250M litres of milk p.a. for the domestic fresh-milk market, which equates to an average milk requirement of approximately 685,000 litres per day. However, that average milk requirement can vary by +/- 200,000 litres per day. If we assume the milk split is half to each of the North and South Islands, that variation is +/- 100,000 litres per day.

If GF contracted an IP to recruit its milk and manage its daily milk variations, the IP's peak day milk capacity would have to reduce by 100,000 litres from 1.0M litres to 0.9M litres for its own milk. The cost of that reduction in efficiency is around [Redacted] cents per kgMS.

To arrive at this conclusion we start at Table 5 above. Table 5 tells us that the IP is limited to [Redacted] litres of its own milk ([Redacted] kgMS) versus 200M litres (17M kgMS) if it didn't have to manage GF's milk requirements. That means that its plant is only operating at [Redacted]% capacity. Table 8, below, tells us that the cost of that inefficiency is [redacted] cents per kgMS.

Table 8: [Redacted]

In Table 8 above:

- column 2 is Fonterra's FGMP calculation as per the 2016 Milk Price Statement. It sets the FGMP at a level at which Fonterra is able to generate an adequate return on its capital employed;
- column 3 applies the numbers in column 2 to an efficient IP processing 17M kgMS;
- column 4 establishes the cost to the IP of being only [Redacted]% full, which means that the IP's fixed costs (including return on capital employed) are spread over fewer kgMS; and
- column 5 establishes the incremental cost passed on to GF by the IP in order to re-coup the inefficiency costs. The incremental cost is [Redacted] cents per kgMS.

Annex 6: The implications of seasonal milk supply for Goodman Fielder

This annex presents the analysis drawn on in Section 5.4 of this report and analyses the implications of the seasonality in milk supply on Goodman Fielder's business operations.

Figure 8, below, presents a variation on the information presented in Figure 2 in Section 5.4 (the NZ milk curve) of the main report to create a GF milk curve.

Figure 8: [Redacted]

In Figure 8 the dark blue curve is proportionally exactly the same as the DCANZ curve in Figure 2 except that it has been sized to fit GF's annual fresh-milk requirements. The light blue curve is the dark blue curve moved forward by eight months to create a June peak for winter milk, being an illustration of a seasonal curve based on autumn calving. The two curves together illustrate the milk production pattern of a "split calver", that is a farmer who splits the herd in two with 40% calving in autumn and 60% calving in spring[60].

The dotted line is the minimum amount of milk required by GF in any month throughout the year, being approximately 21M litres per month (depending on the number of days in the month). The orange 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 orange curve and above the dotted line is milk in excess of GF's requirements.

Figure 8 demonstrates that in order for GF to be able to supply a minimum of 21M litres per month (or 250M litres p.a.), it would need to recruit [Redacted] litres, [Redacted]% more than is actually required[61]. GF does not have an export ingredients business and therefore does not have the capacity to manage this excess milk.

Within the annual milk-production pattern, there is a need to match supply and demand on a daily basis. In round numbers, GF 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 100M litres per day.

If Fonterra was unable to absorb the variation in GF's daily milk requirements, GF would either have to build its own long-life manufacturing plant or rent capacity from another IP or (equivalently) negotiate a supply agreement with an IP in which the IP absorbed the variation, with that cost being reflected in the price under the agreement.

[60] To illustrate the seasonality point, one participant in the fresh-milk market in New Zealand is Fresha Valley Processors (Waipu) Limited. Fresha Valley is a Northland-based company selling milk under the Fresha Valley brand that was established by a few farmers to sell their own milk. Its annual production is estimated to be 15M litres p.a. Fresha Valley and GF produce house-brand fresh milk for Countdown/Progressive Enterprises. Fresha Valley's suppliers are split calvers and therefore Fresha Valley's milk supply has two peaks. During the peaks when Fresha Valley is producing more milk than the house-brand contract requires, it discounts the price of its milk significantly and markets the milk directly to smaller retailers in order to clear its daily stock. It then exits this "swing" market as milk production tails off.

[61] 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.

Annex 7: Factory-gate milk price

There is no functioning factory-gate market in New Zealand; the reason being the factory-gate milk price would have to be materially higher than the FGMP. This annex presents a theoretical estimation of what a factory-gate milk price would be if there was a functioning factory-gate market for competitors like GF to access.

Milk processors have to build enough capacity to process all of the milk supplied on the peak day: they cannot store it and they cannot dump it. Their first objective is to have their factories operating as efficiently as possible and therefore as close as possible to capacity. To encourage the processors to take raw milk out of their factories and sell at the factory-gate would require the processors to be earning at least as much from the sale of that raw milk as they would be earning from the alternative. That is, they would need to be earning a return on the capital employed in the under-utilised factory and they would need to be compensated for having less volume to spread their fixed costs over.

Using the information provided in the 2016 Milk Price Statement and assuming a single efficient plant providing half of GF's domestic-milk requirements (with half in each island), we estimate the point of indifference for a milk processor to supply into the factory-gate market would be at a raw-milk cost to GF of FGMP + [Redacted]. This cost of milk to GF compares to FBNZ's cost of milk of FGMP + 0 cents.

Our workings to derive this estimate of the premium between the FGMP and the factory-gate milk price are provided below.

The following constraints were used in the modelling to determine the point of indifference:

- the maximum amount of milk that can be processed in any one day is 1M litres of milk (being the approximate processing capacity of a 8.5 MT per hour dryer);
- the IP recruits just enough winter milk to meet GF's requirements;
- GF requires a constant amount of milk each day in each island being 342,465 litres (being 125M litres of milk p.a.);
- the IP would be operating at capacity if it didn't supply any milk to GF. That is, it does not recruit any additional milk other than winter milk; and
- the FGMP is assumed in this case to include the winter-milk premiums required to recruit sufficient winter milk.

Table 9, below, shows the maximum amount of milk that can be processed as a consequence of these constraints:

- the assumption is that the split calving regime is 60% spring and 40% autumn. That is, the winter milk collected equals 40% of the total amount of milk collected (ie. the sum of column 2 is 1.5 times the sum of column 3);
- column 1 is the month of the milk season – 1 June through to 31 May each year;
- column 2 converts the milk curve shown in Figure 2 of the report into thousands of litres of milk. The volumes shown are the maximum amount of summer milk that can be recruited, which, when combined with the winter milk recruited, would have the processing plant operating at maximum capacity on the peak milk supply day in the event that GF didn't take any milk;

- column 3 is column 2 divided by 1.5 to get a 60:40 summer:winter milk split. As per Figure 2, the winter-milk curve is the summer milk curve moved forward eight months so that the winter-milk curve has a peak in June;
- column 4 is the sum of columns 2 and 3 and shows the total amount of milk collected each month;
- column 5 is GF's monthly fresh-milk requirements for the domestic market;
- column 6 is a check column that ensures that GF has enough milk;
- column 7 is the peak-day processing that would be required in the event that GF didn't take any milk and the milk therefore needed to be processed by the IP; and
- column 8 is a check column to ensure that the peak processing constraint has not been breached.

Table 9: [Redacted]

Figure 9, below, illustrates the summer milk, winter milk and total milk curves corresponding to Table 9, above.

The dashed line is GF's monthly fresh-milk requirement for either the South or the North Islands (assuming it sells half of it fresh milk in each island). The dark blue line is the milk curve associated with a spring-calving program. The light blue line is the milk curve associated with an autumn-calving cycle. The orange line is the sum of the two blue lines.

Figure 9: [Redacted]

Table 10 calculates the cost of milk at the factory-gate:

- column 2 details the notional efficient processor's revenue and costs per kgMS as per Fonterra's Milk Price Statement 2016. Note that the notional efficient processor's earnings after tax are just sufficient to generate an adequate return on capital employed;
- column 3 converts the per kgMS numbers in column 2 into thousands of dollars assuming the efficient processor is one with a 8.5 MT per hour dryer. The efficient processor would be able to process 253M litres of milk per season with a peak milk-processing capacity of 1.0M litres of milk per day. The important numbers in column 3 are the fixed costs and the required return on capital employed;
- column 4 establishes the consequences of under-utilising the processing plant. In Table 9, above, we established that the total amount of milk required p.a. was 253M litres. GF requires 125M litres of that total, which leaves 128M litres of milk for the efficient processor to process and sell. Note that the fixed costs and required return on capital employed in column 4 are the same as they are in column 3. Depreciation is not the same however as the rate of depreciation is determined by hours of use and is therefore variable. The consequence of under-utilising the plant is a loss of $[Redacted]; and
- column 5 estimates the premium over and above the FGMP required by the efficient processor in order to offset the loss established in column 4. The premium required is [Redacted].

Table 10: [Redacted]

The premium calculated in Table 10 is a best-case outcome. It assumes that GF requires exactly the same amount of milk every single day. To the extent that there are random variations in its daily requirements, which there are, the efficient processor would need to hold processing capacity in

reserve, which in turn would mean that the amount processed in column would 4 would be less and the bottom line loss would be higher.

For the sake of this exercise, our working also assumes that collection costs would be the same as Fonterra's at 22 cents/kgMS (with GF paying collection costs for 10 months of the year and farmers paying the winter-milk collection costs for the other two months). However, this is highly unlikely as Fonterra has multiple processing sites, which means that it should be able to more efficiently configure its collection network.

Annex 8: Analysis of Synlait's entry into the domestic dairy products market

The Synlait-FSSI agreement

Synlait has recently announced that it will produce FSSI's private-label liquid milk under contract for 10 years beginning in 2019. The volume of milk to be supplied is 30M litres p.a. and Synlait's announcement confirmed that its current supply base is sufficient to supply the required milk. The FSSI contract announcement was part of a broader announcement about Synlait's intention to spend $125M to build a liquid dairy packaging plant with capacity to process 110M litres of milk. The stated intention is that new products will be developed by Synlait for sale in domestic and export markets as part of a business-to-consumer (B2C) strategy.

GF currently produces FSSI's house-brand milk. Up until the Synlait announcement the FSSI private-label contract was tendered every two years and was contested by both GF and FBNZ.

Therefore, there were three aspects of the Synlait announcement that were generally surprising:

1. that Synlait had decided to compete in the domestic market;
2. that the parties had agreed a 10-year contract; and
3. that Synlait was contemplating a B2C strategy to sit alongside its well-established and successful B2B strategy.

On the first point, the domestic liquid milk market is generally regarded as being a marginal proposition from a profitability perspective owing to the negotiating power of the two dominant retailers and to the commodity-like characteristics of liquid milk where price is the major area of competition. TDB's analysis of the domestic liquid market suggests that it is only marginally profitable and also significantly less profitable than efficiently produced dairy commodity exports. We might speculate therefore that the FSSI announcement had more to do with Synlait's export intentions than its domestic intentions. That is, in order to be a credible B2C exporter Synlait needs to have an established domestic presence.

Other details that may be relevant to the FSSI announcement are that Synlait has excess milk (and has been selling excess milk at the factory gate) and that the required FSSI volume represents approximately 5% of Synlait's total milk supply. The excess supply situation might be relevant because it can only be solved by Synlait reducing its supply base or by building additional capacity. For a company in expansion mode, exiting supply agreements could be detrimental to its expansion plans. Continuing to sell excess milk at the factory gate is likely to be unprofitable given the excess only occurs at the peak of the season being the time that all the other processors are at or near full capacity and therefore demand for the excess will be low. The 5% of total milk supply might be relevant from a winter milk supply perspective because it is approximately equal to the size of the domestic market versus total production, which suggests that winter milk supply might be economic.

The Synlait announcement raises the question of whether Synlait or another IP may supply liquid milk in the North Island. TDB understands that there are two private-label contracts in the North Island and both are more than twice the size of the FSSI contract.

The existing North Island IPs are Miraka, Open Country Dairy, Tatua, and Fresha Valley. We think it unlikely that any one of them would contract for liquid milk supply to one of the private-label contracts in the North Island for the following reasons:

1. if our analysis is correct that private-label contract fresh milk supply is less profitable than efficiently produced commodity exports then there is no incentive for either Miraka or OCD to try to compete in that market;
2. Tatua has a value-add strategy and it doesn't have any excess milk so it seems incongruous that it would contemplate shifting production from more profitable to less profitable products;
3. Fresha Valley doesn't collect enough milk to contemplate one of these contracts and, even if it did, we think it would find the winter milk requirements too difficult to meet.

The implications of seasonal milk supply for Synlait

The remainder of this annex analyses Synlait's winter milk needs to meet the volume requirements of the FSSI agreement. For Synlait to meet the FSSI volume requirements (approx. 30M litres p.a.) it must procure approximately 82,190 litres of milk per day taking into account for a 25% buffer for daily demand variation[62].

In Figure 10 below, the light blue curve is proportionally the same as the DCANZ curve in Figure 2 except that it has been sized to fit Synlait's annual fresh-milk requirements to meet the FSSI agreement. The dark blue curve is the light blue curve moved forward by eight months to create a June peak for winter milk, being an illustration of a seasonal curve based on autumn calving. The two curves together illustrate the milk production pattern of a "split calver", that is a farmer who splits the herd in two with 40% calving in autumn and 60% calving in spring.

However, there is regional variation in milk supply so the New Zealand milk supply curve may not perfectly correlate with the milk supply curve in Canterbury (where Synlait collects its milk). If the Canterbury milk supply curve is steeper then the modelled milk supply curve then our estimates will understate the volume of milk Synlait must procure year-round to meet its daily requirements (or vice versa).

Figure 10: [Redacted]

The dotted line is the minimum amount of milk required by Synlait in any month throughout the year, being approximately 3.125M litres per month[63] (depending on the number of days in the month). The red 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 red curve and above the dotted line is milk in excess of Synlait's requirements.

Figure 10 demonstrates that in order for Synlait to be able to supply a minimum of 3.125M litres per month (or 37.5m litres p.a.), it would need to recruit [Redacted] litres. This equates to [Redacted]% more than is actually required[64]. This includes [Redacted] litres of spring milk and [Redacted] litres of autumn milk.

[62] Assuming demand is linear across the year.
[63] Based on annual requirement of 30M litres plus 25% buffer for daily demand variation.
[64] Figure 10 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.