



The “Hypothetical Efficient Competitor” and Farm-gate Milk Prices

2012

Acronyms and Technical Terms

ACCC	Australian Competition and Consumer Commission
ADF	Australian Dairy Farmers
AMF	Anhydrous Milk Fat
BMP	Butter Milk Powder
CAP	European Common Agricultural Policy
CAPEX	Capital Expenditure
CCC	United States Commodity Credit Corporation
CDC	Canadian Dairy Commission
CMSMC	Canadian Milk Supply Management Committee
DIRA	Dairy Industry Restructuring Act 2001. New Zealand legislation that permitted the merger of the New Zealand Dairy Board, the Kiwi Cooperative Dairy Company, and the New Zealand Dairy Group to form Fonterra. The DIRA aims to promote the efficient operation of dairy markets in New Zealand by regulating the activities of Fonterra, and ensuring that the market for dairy goods and services is contestable.
DMF	Dutch Milk Fund
DORC	Depreciated Optimised Replacement Cost
DSAF	Australian Dairy Structural Adjustment Programme
EC	European Commission
ECPR	Efficient Component Pricing Rule, also known as the Baumol-Willig, Margin, Retail-minus, or the Imputation rule. Access pricing approach based on the premise that in a truly contestable market, an incumbent that sells essential inputs to downstream competitors would demand a price equal to the revenue the incumbent would receive if it processed the input itself.
Essential facility	A facility or service element that is not possible to either replicate or develop an alternative means of providing the good or service. In the United States, and recently in Australia, 'possible' is interpreted as being privately profitable.
EU	European Union
FERC	United States Federal Energy Regulatory Commission
FMMO	United States Federal Milk Marketing Order

HEC	Hypothetical Efficient Competitor. A theoretical construct used to model the costs of efficiently producing a particular good or service. Shared and fixed costs are optimised to the extent that the operation is assumed to be efficient.
HLG	European Commission High Level Group on Milk
IMPE	Intervention Milk Price Equivalent
IPART	Independent Pricing and Regulatory Tribunal of New South Wales
LRMC	Long Run Marginal Cost. The total fixed and variable costs of supplying an additional unit of supply. In contrast to short-run marginal cost which assumes that production capacity is constant, LRMC takes includes fixed costs, such as capital expenditure to expand capacity.
Margin squeeze	Strategic pricing by a vertically-integrated incumbent selling an essential input to downstream purchasers (or charging a high price for the input that competitors cannot match). The difference between final and wholesale prices may be so small that a hypothetical, equally efficient downstream competitor would find it impossible to remain profitable. A margin squeeze prevails if: $\text{Downstream revenue} - \text{Upstream (input) price} < \text{Downstream unit cost}$
MCVE	Milk for Cheese Equivalent
MMBs	Milk Marketing Boards
MPC	Milk Protein Concentrate
MSQ	Market-sharing Quota
Natural monopoly	A situation where it would be uneconomical for anyone to develop another facility to provide the service because total costs are lower with only one firm operating at the prevailing level of demand. A similar concept, cost sub-additivity, means there are resource savings by keeping an incumbent intact rather than breaking it up.
ODV	Optimised Deprival Value
Ofgem	UK Office of Gas and Electricity Markets
Ofwat	UK Office of Water Services
PUC	California Public Utilities Commission
RCPs	Reference Commodity Products. Products that are traded on international markets that reflect the most valuable processing option for Fonterra's marginal raw milk. RCPs are used by Fonterra to model the revenues of the notional business.

Resource rents	The returns earned through New Zealand dairy farmers having lower costs than the marginal raw milk supplier into the international market
SMP	Skim Milk Products
TFP	Total Factor Productivity
TSLRIC	Total Service Long Run Incremental Cost. Long-Run Incremental Cost (LRIC) provides a forward-looking estimate of what it would cost to produce and make available to market a product or service, using near-term, best-practice technologies and efficient engineering to calculate costs—not necessarily the technology and capital actually used by a firm. TSLRIC is the additional cost incurred when adding a new product to its existing portfolio of goods or services—holding the quantities of all other goods and services constant.
WACC	Weighted Average Cost of Capital. A firm's WACC is the overall required return on the firm as a whole, used internally by company directors to determine the feasibility of investment opportunities. It is the appropriate discount rate for cash-flows with risk that is similar to that of the overall firm.
WMP	Whole Milk Products
WMPA	Canadian Western Milk Pooling Agreement
Workable competition	A benchmark used by regulatory authorities to evaluate market outcomes, which arises from the observation that the strict conditions of perfect competition do not exist in real world markets.

Table of Contents

1	Introduction	1
2	Analytical Framework and Key Concepts	2
2.1	Markets Affected by Fonterra's Milk Price Model	2
2.2	Why Access to Raw Milk May Need to be Regulated	8
2.3	Public Policy Objectives for Raw Milk Pricing	11
2.4	Access Interventions	13
2.5	Approaches for Determining Prices	14
2.6	Pricing Approaches and the Hypothetical Efficient Competitor (HEC)	16
2.7	Summary of Pricing Approaches	18
3	Fonterra's Current Pricing Approach	19
3.1	How the <i>Milk Price Manual</i> Works	19
3.2	Is There Anything "Wrong" with the <i>Milk Price Manual</i> ?	22
4	Is there a Better Alternative to Fonterra's Current Pricing Approach?	24
4.1	Alternative Approach Using ECPR	24
4.2	Internal and External Milk Prices	26
5	Further Analysis	27

Appendices

Appendix A : Review of Access Regulation	28
Appendix B : Review of International Dairy Market Structures and Pricing Arrangements	35

Figures

Figure 2.1: The New Zealand Market for Raw Milk	3
Figure 2.2: Milk Collection Options	6
Figure 2.3: Overview of Access to Essential Facility	9
Figure 2.4: Top-down Pricing (Retail-Minus)	15
Figure 2.5: Options for Applying HEC in Bottom-up Pricing Approach	17
Figure 4.1: Comparison of Fonterra's Current Pricing Approach and ECPR	25

Executive Summary

This paper considers how a workably competitive market with a dominant cooperative could price raw milk, and how Fonterra's approach to pricing, based on modeling the costs of a 'hypothetically efficient competitor' (or 'HEC') performs against this benchmark. We find that there is an inherent tension between more pro-competitive approaches (which in theory might improve efficiency) and the potential costs associated with reduced scale and less income security for farmers.

The main conclusion of our work is that Fonterra's current approach to setting the raw milk price creates a barrier to entering the market for processing raw milk. By subtracting the costs of a hypothetical efficient competitor (HEC) that is more efficient than Fonterra from the retail price of processed milk, the current methodology prevents entry from new processors that are more efficient than Fonterra (but less efficient than the hypothetical benchmark). A pricing approach that used Fonterra's actual costs (rather than hypothetically efficient costs) would enable efficient entry and promote outcomes that are more consistent with a workably competitive market.

Moving from hypothetical to actual costs for pricing access to raw milk would not necessarily be simple. Such a change raises the prospect that a dual pricing structure will emerge—one price for internal Fonterra purposes, and another price for supply to third parties. While there is nothing inherently wrong with dual pricing, it could have the unintended consequence of entrenching Fonterra's dominance of purchasing raw milk at the farm gate. An empirical analysis of the costs and benefits of requiring Fonterra to change its pricing approach would help to inform any further policy action.

The unique characteristics of dairy markets influence competition

New Zealand's distance from global markets means that most raw milk supplied in New Zealand is traded globally in the form of basic commodity products. The global demand for food can imply volatile prices for basic commodity products. However, the supply of raw milk is relatively constant and seasonal, and cannot be varied easily in the short-term.

Although a variety of supply structures can be observed across different countries, dairy supply arrangements are typically a response to the mismatch between different concentration levels in milk supply and processing: there are many geographically dispersed farmers, while the buyers of raw milk are more concentrated. This often translates into processors having considerable bargaining power over individual farmers. In this context, there is an inherent tension between more pro-competitive approaches to raw milk pricing—which in theory can improve efficiency—and the potential costs associated with the reduction in income security for farmers.

In addition, there may be a margin between the global milk price (expressed in New Zealand as the price of the basket of basic dairy commodities minus the processing and collection cost), and the cost of raw milk supply. This raises the concern of ensuring that any such "resource rents" are shared appropriately between different market participants.

Evaluating Fonterra's approach to raw milk pricing needs to reflect these market characteristics

Fonterra's raw milk price model needs to be assessed both in terms of its effects on the efficiency of the dairy industry and in terms of its effects on income security and value capture by New Zealand dairy farmers. It is notable, in this context, that in some deregulated dairy markets—particularly in United Kingdom and Australia—the current concerns raised about raw milk pricing are the opposite of those being heard in New Zealand: in those markets, the concerns are that raw milk prices are too low, and that is

making farming unsustainable. In those markets, there are calls to re-balance bargaining power towards farmers and, in particular, away from supermarkets.

The problem with this approach is that when the internal transfer price designed for management purposes is used as an access price for third parties, it sets an artificially high benchmark: the internal transfer price is designed to be high to drive the actual costs of the business to the hypothetically efficient costs. But it also means that only super-efficient new entrants—processors that are more efficient than the optimised HEC model, rather than actually more efficient than Fonterra—can enter the market.

Competition theory provides guidance to evaluate Fonterra's raw milk pricing

This paper clarifies the key concepts involved in assessing whether the raw milk price set by Fonterra is pro-competitive. We also identify the key empirical questions that need to be answered before determining whether intervention might be warranted.

We draw on competition theory to answer two specific questions:

- What are the economic effects of a raw milk price that is administratively set using Fonterra's *Milk Price Manual*?
- If those effects are problematic for social welfare, are there better ways to set the raw milk price?

Fonterra's approach is both a barrier to entering the processing market, and an effective corporate governance tool

Fonterra's *Milk Price Manual* is designed to impose internal discipline within Fonterra on its collection and processing costs, and the raw milk price that results from applying the HEC model reflects this purpose. In other words, the raw milk price derived from the *Milk Price Manual* is best seen as a transfer price that regulates the returns to Fonterra's manufacturing and processing business (like a tolling charge) to a level that would be consistent with:

- Revenues from a reasonably efficient (although not fully optimised) bundle of commodity outputs, and
- Costs of a hypothetically efficient processing and collection operation. These costs are also partially, rather than fully, optimised.

An ECPR pricing approach would better achieve some public policy objectives

We conclude that at a conceptual level, an Efficient Component Pricing Rule (ECPR)-based pricing model that sets the raw milk price by deducting actual avoided costs from the revenues—rather than hypothetically efficient costs—would result in more efficient prices for third parties. However, within the scope of this paper, we are not able to quantify the potential gains from this efficiency. The current distortion may be quite minor.

We also find that Fonterra's existing model appears to be an effective management tool, which suggests that Fonterra should not be prevented from applying the model for internal purposes. As a result, an alternative pricing model for raw milk price supplied to third parties may need to co-exist with the internal milk pricing model. However, the internal milk pricing model will also have an external effect, since it will determine the value of Fonterra's shares, and will affect the incentives for entry and exit by members. The inter-play between the incentives associated with the two raw milk prices is complex, and may cause unexpected consequences. Our analysis suggests that the effects would not undermine efficiency, but we are conscious of the risks involved.

The paper concludes that the potential dynamic efficiency gains from innovation by niche processors and entrants would need to be quantified and assessed against potential costs and uncertainties. These are likely to include: a) lost productive efficiency, through duplication of collection facilities to enable entry or expansion by smaller processors; and b) potential risks of unintended consequences, for instance through changed incentives for Fonterra owners and management.

In our opinion, any decision to require Fonterra to change its model for setting the price of raw milk for third parties should be based on a careful empirical assessment of whether the benefits and the risks of a new approach outweigh the costs imposed by the current model.

1 Introduction

This paper considers how a workably competitive market with a dominant cooperative could price raw milk, and how Fonterra's approach to pricing, based on modeling the costs of a 'hypothetically efficient competitor' (or 'HEC') performs against this benchmark. We focus on the economic concepts that underpin expectations of workably competitive markets, as well as the regulatory approaches used in other markets and international jurisdictions to achieve various public policy objectives.

We begin this paper by describing, in Section 2, the key concepts underpinning our work. We do this by classifying the relevant markets where Fonterra's farm gate milk price has impacts on competition, and identifying what policy and regulatory concerns arise in these markets. We offer some potential public policy objectives, and we describe the pricing approaches that are typically used in other markets to achieve these objectives. Section 2 concludes by considering how the Hypothetical Efficient Competitor (HEC) concept fits into possible regulatory mechanisms.

Section 3 applies the key concepts to Fonterra's pricing approach (as set out in the *Milk Price Manual*). We also consider the implications of Fonterra's pricing approach for the potential public policy objectives.

In Section 4 we consider whether any alternative pricing approaches would better achieve these public policy objectives. We specifically review how an Efficient Component Pricing Rule (ECPR)-based pricing model could work by setting the raw milk price minus actual avoided costs (rather than hypothetically efficient costs). This leads us to consider the possible implications of such a change.

The Appendices to this paper briefly describe access pricing overseas, and review international experience with raw milk pricing and regulation.

2 Analytical Framework and Key Concepts

To understand the effects of Fonterra's milk price model on competition, we first need to develop a clear and rigorous analytical framework:

- First, we need to define the markets that may be affected by Fonterra's milk price model
- Second, we need to consider what policy concerns may arise in the different markets
- Third, we need to consider the possible policy objectives that the Government may expect to achieve from the operation of the different markets
- Fourth, we need to consider the regulatory interventions that could be used to achieve public policy objectives
- Fifth, we need to understand broad regulatory mechanisms that can be used to achieve the policy objectives, and
- Finally, we need to consider how the HEC model fits into possible regulatory mechanisms.

The following sub-sections trace through each of these analytical steps. We find that achieving public policy objectives in New Zealand's dairy markets could be prevented by horizontal and vertical restraints on competition. There are several possible regulatory interventions and pricing approaches that could help to address these restraints—and the HEC is one approach for treating costs within these pricing approaches. The logic of the HEC fits much better within an approach that builds-up an estimate of efficient costs from the bottom-up, rather than a top-down pricing approach.

2.1 Markets Affected by Fonterra's Milk Price Model

To understand the public policy concerns created by different prices within the milk supply chain (from the farm to the retail shelf), we first need to define the relevant market or markets that generate prices. Stakeholders frequently express concerns about the price of milk in New Zealand. What does this concern mean? Is it a concern about the price of milk at the farm gate, or a concern about a step in the supply chain between what the farmer gets paid and what consumers pay?

Proposed interventions, such as requiring Fonterra to supply raw milk at a regulated price, are often articulated on the basis of promoting competition. However, it is important to be clear about where the supposed competition will take place. Is it competition between farmers for the supply of milk, which would result from pricing that would encourage more farmers to exit Fonterra? Is it competition between processors that manufacture milk products from raw milk? Or is it competition elsewhere in the supply chain, such as in milk collection or transportation? Steps to promote competition in one market may lead to reduction in competition in another market, so the relationships between the relevant markets need to be clearly understood.

We think there are three relevant markets when considering raw milk pricing in New Zealand:

- The market for the **supply** of raw milk at the farm gate (the activity of dairy farming)
- The market for the **collection** of raw milk and its delivery to processing facilities. We understand that this has not traditionally been considered a

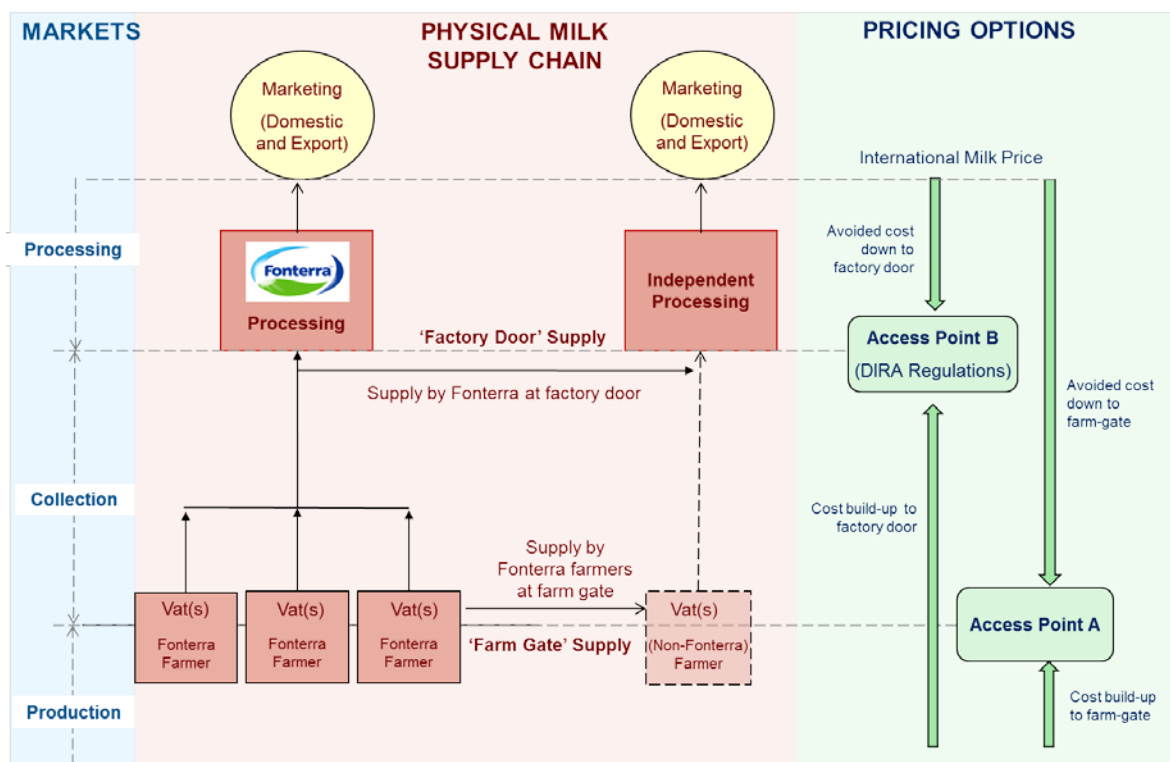
separate market. We explain why it might be useful to examine raw milk collection as a stand-alone activity

- The market for **processing** raw milk into dairy products, supplied either to food manufacturers or to final consumers in New Zealand and overseas.

We describe competition and pricing in each of these markets under the subheadings below.

Figure 2.1 presents an overview of the New Zealand dairy industry supply chain. Competitive access to raw milk could occur anywhere in the range between points A and B. Point A represents a new entrant collecting raw milk from each farmer, while point B assumes that a new entrant is delivered raw milk at some point of aggregation (such as a Fonterra processing factory).

Figure 2.1: The New Zealand Market for Raw Milk



A clear understanding of the supply chain is important for two reasons:

- Assumptions about the point at which access to raw milk occurs will determine which costs are relevant to which market, and
- Market efficiency downstream (that is, in the collection and processing markets) may be affected by the availability of access or opportunities to bypass different input options upstream.

In terms of the inputs needed to compete at the different levels of this supply chain, the sale of milk products to final consumers (such as milk powder for export and liquid milk for domestic consumption) clearly requires significant capital investment in plant and equipment, as well as skilled labour. Effective marketing and sales operations are then needed to offer processed milk to local and international consumers. The essential element, needed at every level of the supply chain, is access to raw milk.

Competition and pricing in the market for the supply of raw milk at farm gate

New Zealand has approximately 13,000 dairy farms, although there is considerable and growing cross-ownership of farms.

The opportunity to enter this market comes by changing existing land use to create new dairy farms. If there are no barriers to such entry, then we would expect the price of raw milk at the farm gate (access point A) would reflect the long-run marginal cost of production (LRMC) on the farm. Pricing at LRMC is often used as the test for workable competition because prices above this level cannot be sustained for any period of time without barriers to entry.¹ In the production market, prices that are higher than LRMC would allow a new raw milk purchaser to attract other types of farmers (such as sheep and beef farmers) to convert to dairying, and then sell their milk at a level that recovers the entrant's costs.

If the milk price equalled the LRMC of dairy farming (and assuming that farmers were able to sell or surrender their Fonterra shares at a price that reflected the discounted cash flow from expected future dividends), there would be no barriers to Fonterra members switching from supplying Fonterra to supplying other processors. This would further enhance the competitiveness of the dairy supply market, ensuring that prices remained in line with the LRMC of dairy farming.

If prices in this market approached this workably competitive level, alternative processors would not have to convince farmers that they would be more efficient than Fonterra—farmers would not care, as they would receive the same price from any processor. Farmers who exited Fonterra would receive full compensation for Fonterra's relative efficiency.

If land-use conversions into dairying are not sufficient to influence market prices (that is, if there are some barriers to entry), Fonterra's aggregation of the majority of New Zealand dairy farmers into a cooperative means two things:

- First, the internal transfer arrangements between dairy supply and processing, collectively agreed by Fonterra's members, are an administrative matter, and
- Second, Fonterra is able to influence the price of milk outside its membership.

Fonterra's market share means that the price that Fonterra uses for internal transfer purposes sets the price for raw milk in the market (rather than the other way around). Fonterra collects approximately 92 percent of the total raw milk for use in downstream markets, which includes Fonterra's own processing operations and delivery to independent processors (access point B in Figure 2.1). The remaining 8 percent of raw milk is supplied to other parties by non-Fonterra farmers (access point A in Figure 2.1) who are paid at a rate equal to Fonterra's raw milk price. If any independent party paid any less than Fonterra's administered raw milk price, then farmers would simply join Fonterra and sell their raw milk to Fonterra.

Fonterra's "open entry and exit regime" was designed to create a contestable market for farmers' raw milk by:

- Requiring Fonterra to issue and redeem shares at the same price, though the valuation methodology for those shares was left to Fonterra to determine

¹ Workable (or effective) competition is used by the Commerce Commission and regulatory authorities overseas as a benchmark for evaluating market outcomes. The concept of workable competition is distinct from the theoretical ideal of perfect competition—which has strict assumptions that mean perfect competition is very rarely observed in real world markets.

- Requiring Fonterra to accept milk from any farmer, and
- Imposing a redemption risk by requiring Fonterra to pay out a farmer that leaves the cooperative within 30 days of the end of the season.

The result is a pricing regime where Fonterra should have incentives to pay an efficient milk price—if it over-pays farmers for raw milk, it could face an over-supply of uneconomic milk. If the raw milk price is set too low, Fonterra would lose supply and face a binding redemption risk.

Although the design of the open entry and exit regime is elegant, concerns remain regarding the incentives that Fonterra may have to over-price raw milk. If the consequences of oversupply are not serious, then Fonterra can effectively “lock-in” suppliers by paying inefficiently high raw milk prices to farmers and retaining the value of any exiting supplier’s capital contributions for as long as possible after they cease to supply milk. This behaviour would create barriers to entry for competitors seeking to acquire farmers’ raw milk, and could allow Fonterra to operate inefficiently while remaining in business (and even growing its market share).

Whether a high milk price causes over-supply is an empirical issue. Over-supply is a situation where Fonterra’s shareholders as a group are worse-off if dairy supply increases. As supply grows, the average cost of processing may rise if there are diminishing returns to scale. However, it is not clear that Fonterra has already extracted all possible scale benefits. Moreover, how an increase in the average cost of processing—even if it were occurring—would affect farmers will itself depend on the economics on the dairy farm: if there are significant fixed costs on the dairy farm (such as the cost of land which needs to be amortised), and if most of the increase in supply is coming from existing farms, then farmers will be better off increasing supply even if this leads to diminishing returns from processing. Overall, Fonterra’s behaviour to date appears to demonstrate that it does not regard over-supply as a significant practical problem, even though it has exercised policy-makers as a theoretical concern.

Competition and pricing in the market for collecting raw milk

Collection of raw milk is currently undertaken by Fonterra and bundled with its processing costs to calculate the raw milk price paid to farmers. However, these activities do not need to occur together, and several independent processors use Fonterra’s collection services when accessing raw milk under the Raw Milk Regulations (access point B in Figure 2.1). In principle, it is also possible that milk collection could be undertaken by an independent organisation. Although the only parties collecting milk in New Zealand are processors, Australia has seen the emergence of milk collection agents—independent contractors who collect milk from farms and sell it to processors.

One issue in the market for the collection of raw milk is whether duplication of milk collection runs imposes significant costs. Figure 2.2 shows two possible milk collection arrangements: the first occurs if farms are aggregated around each processing facility; the second occurs if farms associated with each facility are interspersed.

The second outcome of multiple overlapping collection runs is likely to result in higher costs. In a theoretically efficient market, we should observe two possible solutions to this problem:

- Each processor pays a premium to the farms to induce an efficient aggregation of suppliers, or

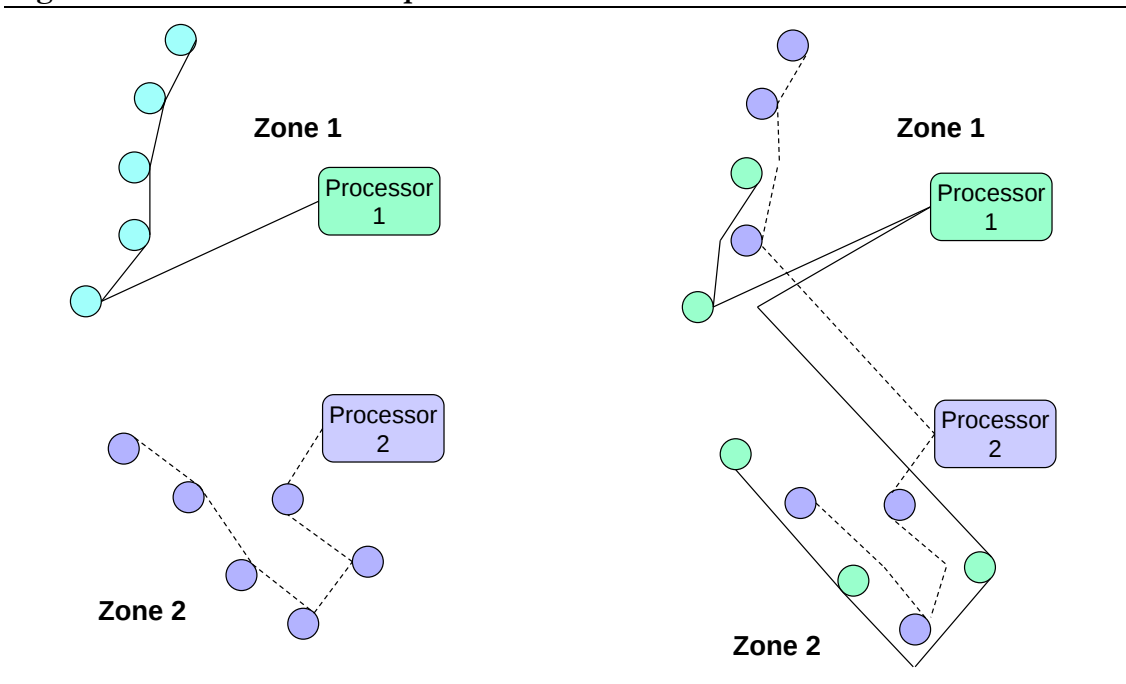
- Farmers and processors jointly contract to organise efficient milk runs (for example, each processor would collect both for itself and its competitor within an efficient area of aggregation, or they would contract to a third party).

In reality, however, these efficient outcomes may not occur, even if the market was not already concentrated:

- There are significant coordination costs between farmers, and
- Liability issues could make joint collection risky.

The likelihood of an efficient outcome is further reduced when the market for milk collection is largely controlled by Fonterra. It is not clear that Fonterra would have an incentive to collect on behalf of its competitors, as this could facilitate their entry into the market.

Figure 2.2: Milk Collection Options



In effect, we need to ask whether milk collection may be a local natural monopoly—is it inefficient to send multiple tankers owned by different collection companies down the same farm road. The network economies of scale in aggregating milk from farms and delivering milk to processing plants may mean that it is less costly for one supplier to provide this service in an area.

If such natural monopoly characteristics are significant, the implications for the rest of the dairy value chain are that:

- Collection efficiencies could become a barrier to entry for new processors. A new entrant would not only need to attract a required volume of suppliers, it would need to coordinate suppliers located within an area of efficient aggregation. Alternatively, the processing operation would need to be significantly more efficient than Fonterra in order to compensate for any collection inefficiency, and

- From Fonterra's perspective, the exit of members may lead to an increase in the average cost of collection. This would strengthen the incentive to lock members into the cooperative.

Concerns about the cost of duplicating milk collection do not hinge on this activity being a natural natural monopoly. For example, connecting houses to an electricity network is a natural monopoly (it would be inefficient to have two sets of wires running to a house), but there are many separate network companies throughout New Zealand. Similarly, it does not need to be a natural monopoly in every region of the country. One could easily imagine parts of New Zealand where the locations and prevalence of dairy farming enable overlapping milk collection runs to be reasonably efficient.

However, if the collection market has some natural monopoly characteristics in some areas due to low farm density and processor location, then intervention may be needed to avoid the inefficient duplication of costs and to ensure that the monopoly supplier charges reasonable prices for parties wanting to access its monopoly facilities. This issue is particularly important if there are resource rents in final product prices, for example, if New Zealand is a relatively low cost producer of milk products and can therefore sell milk products at a premium on international markets. Market entrants will have incentives to duplicate monopoly facilities to capture resource rents, while the owner of the collection monopoly may also have incentives to force new entrants into duplication. Similarly, it is important that policy interventions do not induce inefficient duplication if there is a natural monopoly in milk collection.

The current raw milk supply requirement under DIRA requires Fonterra both to provide supply from its member farms and to collect to an efficient point of aggregation on behalf of third parties. A possible alternative intervention could be to require Fonterra to offer a collection service which could link independent individual suppliers (including those who wish to exit Fonterra) and new entrants. We discuss this in more detail later in Section 2.3 of the paper.

Competition and pricing in the market for processing raw milk

Much of the concern about milk pricing seems to relate to competition in the market for milk processing and delivering final goods to consumers. However, if the price of raw milk in the market for the production at the farm gate is set above LRMC, competition in the market for processing will not compensate for the higher input prices.

There may be several reasons to want competition in this market:

- To put pressure on Fonterra to keep its production costs of bulk processing down. Given Fonterra's market share, such competition is unlikely to materialise, and other tools may be required
- To innovate and stimulate new demand for milk products. Entry by niche producers may lead to more of this innovation, and
- To keep pressure on final milk prices, particularly prices paid by New Zealand consumers. However, competition among many farmers may do little to reduce the price of milk products in New Zealand if prices are set by reference to export markets.

Initial concerns about competition in the processing market led to legislated access to Fonterra's raw milk under the Dairy Industry Restructuring (Raw Milk) Regulations 2001 (the DIRA Regulations). The DIRA Regulations require Fonterra to supply up to 600 million litres of raw milk per season to independent processors (less than four percent of Fonterra's expected production for 2010/2011). This access is provided at an

aggregation point (represented by point B in Figure 2.1). The access price is based on Fonterra's published milk price that farmers receive in the raw milk production market, plus collection costs and a margin. There are few restrictions on the use of this milk—new independent processors are able to create different products and export them.

As a result of access under the DIRA Regulations, since 2001 a number of independent operators have entered and established processing capacity. These processors include Open Country Cheese Company Limited, Dairy Trust Limited, Synlait Limited, and New Zealand Dairies Limited, and together collect or process approximately 10 percent of the raw milk collected in New Zealand.

2.2 Why Access to Raw Milk May Need to be Regulated

The boundary between vigorous but legitimate conduct by a firm with market power, and conduct that uses market power for anti-competitive purposes, is difficult to draw. However, law and public policy are clear that using market power to restrict competition is not in the long-term interests of consumers.

There are two reasons why Fonterra's market power may raise policy concerns in relation to access to raw milk:

- **Horizontal dominance**—By aggregating 92 percent of raw milk supply in New Zealand through a cooperative agreement, Fonterra acquires the power to set the price of raw milk at the farm gate (or elsewhere in the value chain) through a collective arrangement. Competitive pressures in these markets may therefore not prevent Fonterra from pricing at levels that are different from the prices expected in a workably competitive market, and
- **Vertical restraints on competition**—Fonterra is a vertically-integrated producer of final milk products, with market power in the upstream raw milk production and collection markets. Vertical integration may create an incentive and ability for Fonterra to prevent competitors from accessing raw milk on efficient terms.

We discuss both of these concerns under the following subheadings.

Horizontal dominance

As a cooperative, Fonterra is in effect exempted from the Commerce Act prohibitions on price fixing—Fonterra's 11,000 members are free to set internal transfer prices collectively. The key question is what happens when these internal transfer prices are applied to outside parties.

Section 36 of the Commerce Act prohibits parties from using market power to restrict competition, but does not prevent parties from deriving benefits from their market power. In other words, as long as a party does not use its market power to restrict entry, deter competition, or eliminate a competitor, the party with market power is free to determine prices for its products or services.

In order to exercise horizontal dominance in the market for the production of raw milk, Fonterra would need to create barriers to entry into dairy farming. Setting a high raw milk price does not do that. In fact, it has the opposite effect. High raw milk prices make conversion into dairying more attractive and encourage processors to seek out new suppliers. Hence, any exercise of Fonterra's horizontal market power is not against competition law. A policy intervention based on horizontal reasons would have to be based on a logic which goes beyond section 36 of the Commerce Act, such as an

argument that existing market power should be broken up (while section 36 of the Commerce Act only restricts creation of further market power).

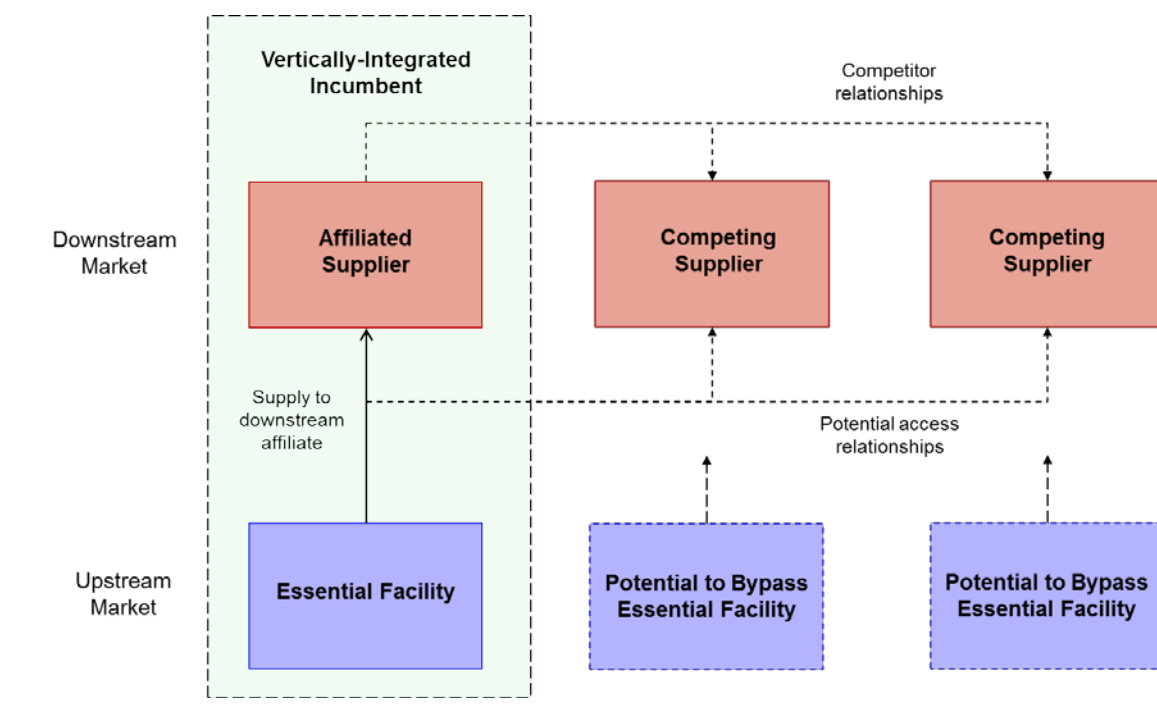
Part 4 of the Commerce Act also provides for the price and quality of certain goods or services to be regulated where there is little competition and no likelihood of an increase in competition. The provisions in Part 4 have been applied to industries where natural monopoly problems have been clearly identified, such as electricity lines services, gas pipelines, and airports.

Vertical restraints on competition

In situations where an upstream monopolist competes in downstream markets (in this case, milk processing), economic theory predicts that the monopolist may use its upstream market position to foreclose competition downstream, either by discriminating against its competitors through its prices or by otherwise raising its rivals' costs.

A common concern for policy-makers is that a vertically-integrated monopolist will prevent efficient access to a bottleneck facility that lies between upstream and downstream markets. Figure 2.3 emphasises the vertical and horizontal relationships in New Zealand's milk markets (this is essentially a simplified version of Figure 2.1).

Figure 2.3: Overview of Access to Essential Facility



In the markets shown, Fonterra could use its upstream market power in raw milk supply and collection by controlling access to raw milk, which is an essential element for milk processing firms that compete downstream. Without an opportunity to bypass Fonterra farmers' raw milk (for example by setting up supply through new dairy farms or by purchasing raw milk from farmers that leave the Fonterra cooperative), downstream firms are dependent on Fonterra for access to raw milk.

The term "essential" has a particular meaning in competition law and policy that requires further explanation. How could raw milk from Fonterra be "essential" if there are other potential sources of milk, including attracting new suppliers into the market?

- The concept of “essential facility” originates in the United States, and refers to situations where the owner of a facility could profitably supply a service, but refuses to do so, and it is not **privately** profitable for an entrant to duplicate this facility. For example, if Fonterra could, without any loss to itself, supply raw milk and collection services to a new entrant, while that entrant could not profitably attract independent suppliers, then any refusal to supply would fall within the US-style essential facilities doctrine, and
- The concept of “essential” access was extended in Australia and the European Union by focusing on whether it is **socially** optimal to duplicate a facility. The key difference is that, in some circumstances, it may be privately profitable but socially sub-optimal to duplicate a facility. For example, the very high prices of coal and iron ore in Australia make it privately profitable for mid-size mining companies to truck output from mine to port alongside roads running parallel to the under-utilised rail lines owned by the mining majors. While it is privately profitable to duplicate the service of the existing rail link, trucking is expensive and consumes resource rents. It would be socially optimal for all miners to have access to the rail link. The same situation may occur with respect to raw milk supply—it may be privately profitable for new entrants to set up their own collection networks, but it may also be socially sub-optimal.

A recent decision² by the Australian Federal Court approved a “privately profitable” test, which is narrower than the “social benefit” approach previously used by the Australian Competition Tribunal.

Overall, to say that a facility is “essential” does not deny that opportunities may exist to access the same service in alternative way. Rather, we ask whether it is efficient to by-pass the facility. In the context of access to raw milk, the question is: would the absence of regulated access to raw milk prevent efficient new entry into the processing market or induce entry through less efficient channels?

This means that the existence of small alternative cooperatives—such as Westland and Tātua—or the theoretical opportunity to organise a new cooperative, do not by themselves make access to raw milk from Fonterra less “essential”. The main question is whether Fonterra’s aggregation of 11,000 dairy suppliers (92 percent of raw milk by volume) effectively gives it control of raw milk supply, which can only be by-passed in extreme circumstances.

Fonterra’s upstream market power allows it to apply a margin squeeze to its competitors. A margin squeeze occurs if the revenue that the competitor earns less the price it pays to Fonterra for raw milk that has been collected from farmers, is less than the efficient costs of operations. Alternatively, if the processor collects its own milk, a margin squeeze would require revenues earned by the processor to be insufficient to cover the farm gate raw milk price plus the efficient costs of processing and collection.

This concern is not purely conceptual or academic. Specific concerns have been raised that Fonterra uses the combination of the farm gate raw milk price and its share price to create a barrier to farmers exiting the cooperative. Setting a high milk price and a low share price has the effect of locking in suppliers and maintaining Fonterra’s high market share of member farmers. Because farmers are indifferent as to how their pay-outs are received (whether through the milk price or dividends), this form of strategic pricing can be sustainable while distorting market outcomes.

² *Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* (2011) FCAFC 58.

Where rivals rely on a vertically-integrated incumbent for access to an essential facility, economic theory also predicts that the upstream monopolist will have the incentive and ability to use non-price discrimination to increase its revenues in the downstream markets.³ This can be achieved by increasing competitors' costs, reducing their operating efficiencies, or reducing the quality of the product offered to downstream competitors.

There are numerous ways that Fonterra could use non-price discrimination in the markets for raw milk. Practices that would fall into this category include:

- Discretionary delivery practices that result in delays and require processing rivals to hold more inventories of raw milk (a perishable good)
- Setting raw milk specifications that affect downstream rivals' product quality, and
- Prioritising Fonterra's own milk in order to ensure final customers perceive greater quality from Fonterra than its competitors.

2.3 Public Policy Objectives for Raw Milk Pricing

Given the concerns that arise from the characteristics of the relevant markets, we now consider a set of possible objectives that raw milk pricing could seek to achieve. At a high level, the objective is clear: to promote economic growth by ensuring that Fonterra contributes to maximising the potential of New Zealand dairy farming and that opportunities exist for new entrants to exploit niches that Fonterra cannot reach. The Government also has an interest in ensuring that it does not face any fiscal risks in relation to the dairy sector, and that the Government's investment in trade policy—including increased access for New Zealand dairy products into the international markets—translates into economic benefits for New Zealand.

In practice, it may be difficult to translate these high-level objectives into specific objectives in relation to the individual markets. Given the nature of the international dairy markets, how much would competition within New Zealand promote New Zealand's economic interests rather than benefit international consumers? As a cooperative, how much of Fonterra's effectiveness in maximising New Zealand's dairy potential depends on internal governance rather than external competition, and could the two be in conflict?

In fact, at the partial level at which policy interventions inevitably need to be assessed, it is possible that objectives may conflict. Policy-makers may therefore need to decide which objectives are most important, and which pricing approaches best achieve the most important objectives. In the absence of perfect information, policy-makers may also need to decide which risks are more or less important. We consider the main "partial" objectives below.

Ensuring workably competitive outcomes in the supply of raw milk

As discussed above, achieving the objective of workably competitive in the supply of raw milk at the farm gate will involve ensuring that the price of raw milk reflects the LRMC of dairy farming. This outcome will have a number of advantages:

- It will send efficient entry signals for conversion to dairy farming

³ See Salop, S. and Scheffman, D. (1983) "Raising rivals' costs," *The American Economic Review* 73(2) pp263–271, and Economides, N. (1998) "The Incentive for Non-Price Discrimination by an Input Monopolist," *International Journal of Industrial Organization* 16 pp271–284.

- It will ensure that the benefit of low cost of production is passed on to New Zealand processors and consumers
- It will create appropriate incentives for exit by Fonterra's members.

The question is whether the LRMC of raw milk supply in New Zealand is likely to be well below the export parity price (after allowing for collection and processing costs). In other words, it is important to understand whether New Zealand is earning resource rents from dairy production. In this context, it is important to distinguish between the accounting returns on dairy farming and economic returns. In New Zealand, dairy farm returns tend to be capitalised into land prices, reducing the accounting returns earned from farming. In a hypothetical workably competitive market, land prices would tend to be bid down to the value of land in alternative uses, while returns would decline to the level that enables farmers to earn their WACC on the market value of the land in alternative use.

If resource rents are available to New Zealand, a workably competitive market outcome would mean that the benefits of New Zealand's low cost of dairying would accrue to processors and traders, rather than to New Zealand dairy farmers. These benefits could also be lost through competition among processors and traders: in other words, if New Zealand consumers benefit from lower prices, so would foreign consumers.

Enabling efficient entry into the milk processing market

Another objective could be to allow new entry into processing, but only if that entry is more efficient than Fonterra. As we discuss below, this objective would be consistent with raw milk prices that are above workably competitive outcomes in the raw milk supply market. This objective is perhaps most consistent with the purpose statement in section 4 of the DIRA, which is to “promote the efficient operation of dairy markets in New Zealand by regulating the activities of new co-op to ensure New Zealand markets for dairy goods and services are contestable”.

Preventing inefficient duplication of investment in the collection of raw milk

It is difficult to know when duplication of dairy collection is socially inefficient. In principle, efficient duplication could occur in parts of the collection market, for example in an area with high farm production density and scope for competition. On the other hand, actual entry into collection may be inefficient—if there are sufficiently high resource rents, economically inefficient duplication of a natural monopoly would be privately profitable.

The objective of preventing inefficient duplication of milk collection could be achieved if rents are eliminated—that is, if export prices equal the LRMC of raw milk supply, collection and processing in New Zealand. However, this may not be a desirable outcome for New Zealand.

Ensuring that New Zealand captures full benefits from low cost dairy farming

Whether policy-makers should be more concerned about the possible dissipation of resource rents, or the dynamic and productive inefficiencies that may be associated with protecting those rents, is fundamentally an empirical question. However, if New Zealand is a relatively low-cost producer of raw milk, policy-makers will want to understand where the difference between production costs and international prices ends up. It is important to emphasise that New Zealand does not need to be the lowest cost producer in the world to earn resource rents. As long as New Zealand dairy farmers have lower costs than the marginal raw milk supplier into the international market (that is, the most expensive producer required to meet world demand) then resource rents will be present.

The risk to resource rents will also depend on the degree of influence that New Zealand supply could have on the international markets: could domestic rivals access raw milk at its LRMC, under-cut Fonterra's export price, and reduce the returns to New Zealand? Again, this is an empirical question, and to answer it would require a careful analysis of the structure of the international market and New Zealand's role in this market. Dairy markets globally are distorted by numerous policy interventions, and the effects of possible competition between New Zealand-based processors cannot be predicted on a conceptual basis. The key question is to what extent Fonterra's vertically-integrated cooperative structure may be necessary to allow farmers to retain the entire benefit of New Zealand's low cost dairy farming.

A pricing method that sets the price by subtracting processing costs from the export value will mean that the raw milk price in New Zealand reflects the LRMC of raw milk production in the marginal dairy supply country, rather than in New Zealand. As a result, New Zealand dairy farmers will be guaranteed to capture the full benefit of any difference between New Zealand and overseas costs of dairy farming.

2.4 Access Interventions

If access to raw milk is seen as a policy problem, there are several options for intervention. Fonterra's current pricing approach falls under the interventions in Subpart 5 of the DIRA, and there are several ways that regulatory intervention could be extended.

The current approach under DIRA can be characterised as consisting of three components:

- The requirement for open entry and exit into Fonterra, which is intended to create better incentives for Fonterra to set the price of raw milk at a level which would encourage neither inefficient entry nor inefficient exit
- The requirement to provide a certain quantity of the total collected milk at the internally set raw milk price to third parties
- The reliance on generic competition law, including section 36 of the Commerce Act to discipline Fonterra's market behaviour.

The present review of Fonterra's internally-set raw milk price responds to concerns that these components are not working effectively. In particular, there are concerns that open entry and exit into the cooperative may not provide sufficient incentive for Fonterra to set an economically efficient level of raw milk price, and that the Commerce Act does not provide adequate or efficient protection. Since the Commerce Commission has indicated that it is considering an investigation into the milk price, it may be impossible to determine what the effect of the Commerce Act would be until the conclusion of such an investigation.

If the concern about Fonterra's incentives is justified and if the *ex post* intervention under the Commerce Act is inadequate, possible interventions (in order of escalating regulatory intervention) include:

- The government could develop its own indicative pricing methodology, which would equip access seekers with a negotiating tool in their dealings with Fonterra
- The government could mandate a price negotiation-arbitration process. For example, in Australia, commonwealth and state access regulations do not mandate the access price. Rather, they provide principles that should be applied in determining access prices, with the opportunity for both the access

seeker and the access provider to appeal to the ACCC or the state regulator for price arbitration, and

- The government could intervene in the price setting mechanism and mandate that Fonterra apply a particular methodology. Cabinet has the power to set raw milk prices or specify a pricing methodology under section 115 of the DIRA through an Order in Council made on the recommendation of the responsible Minister.

While the degree of regulatory intervention would need to be determined, any option would need to consider, at a high level, the alternative approaches which could be used to determine efficient prices.

2.5 Approaches for Determining Prices

In this section we describe the alternative approaches for determining prices at the farm gate (access point A in Figure 2.1)—prices for the outputs of the raw milk supply market. These approaches provide both a framework for assessing whether Fonterra’s current methodology is efficient and provide a basis for a possible further regulatory intervention (whether fully prescriptive or not).

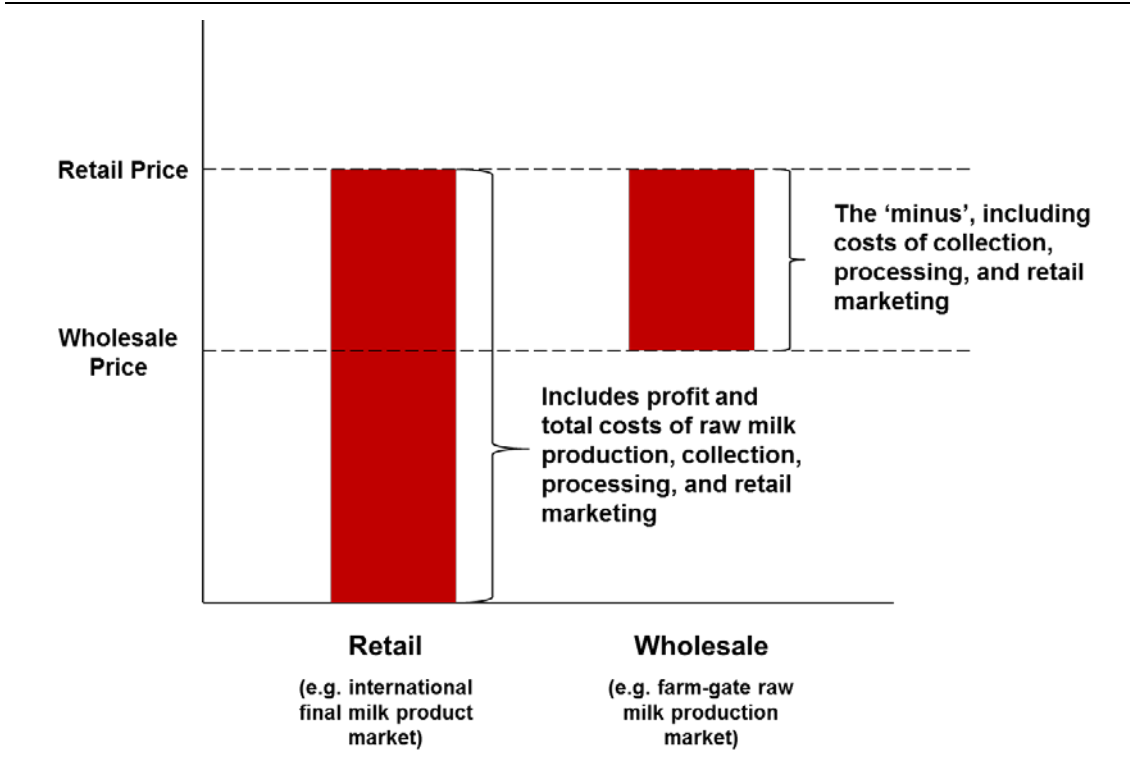
While there are numerous variations of pricing methodologies, the approaches can be grouped into two fundamentally different types:

- **Top-down**—input prices are calculated by subtracting processing and other relevant costs from final prices
- **Bottom-up**—input prices are calculated by estimating the actual costs of the activity.

Top-down (avoided cost or “retail-minus”) approach

Pricing raw milk using a top-down approach starts with the incumbent’s final market price and subtracts some measure of the costs incurred in turning the raw milk input into a final product. It is also known as the retail-minus method, since it starts with the incumbent’s “retail” price (the price achieved in its most downstream market), and subtracts all costs not relevant for the “wholesale” market (the market to which access is being considered). This is shown in Figure 2.4.

Figure 2.4: Top-down Pricing (Retail-Minus)



The formal exposition of the retail-minus approach is known as the **Efficient Component Pricing Rule**, or ECPR:

$$\text{Input price} = \text{output price} - \text{marginal cost of producing output products}$$

The ECPR is also known as the Baumol-Willig rule, the Margin rule, or the Imputation rule, and used to determine whether a margin squeeze (discussed above), has taken place. New Zealand has been a test-bed for the ECPR, beginning with the 1994 Privy Council consideration of section 36 of the Commerce Act in *Telecom v Clear*.⁴ The ECPR suggests that in a truly contestable market, an incumbent that sells essential inputs to downstream competitors would demand a price equal to the revenue the incumbent would receive if it processed the input itself.

Where competitors need to purchase the essential input from the incumbent (that is, if there is no opportunity for bypass), regulators may make access to the input compulsory. If access is created through the Fonterra's collection and delivery network, the additional cost of providing access to Fonterra's processing competitors would be added to the input price. The access price based on a top-down approach would therefore be set at a level that would discourage entry by a rival downstream processor that is less efficient than the costs subtracted from the retail price.

The Baumol-Willig version of the ECPR is based on subtracting actual avoided costs, so that a new entrant can be as efficient as Fonterra (or more efficient). In the context of pricing raw milk as an essential input into dairy processing, this price would equal what Fonterra would have earned if it had processed the available raw milk, less what it would save by allowing an entrant to process raw milk.

⁴ *Telecom Corporation of New Zealand Ltd v Clear Communications* (1994) 6 TCLR 138.

Given that New Zealand has a cost advantage in overseas dairy markets and is able to earn resource rents in the final market, the ECPR would result in a raw milk input price higher than the LRMC of producing that milk. There is on-going debate about settings where a rule that is more generous to entrants might be used to encourage entry to promote innovation, which is particularly relevant where there may be a minimum efficient scale of running a milk processing operation.

Bottom-up (cost build-up or cost of service) approach

A bottom-up approach to pricing reflects the costs associated with the product itself—raw milk made available by farmers—and does not rely on knowledge about collection or processing costs, or final product prices.

The logic of a cost-of-service approach is that in workably competitive markets prices tend to reflect the LRMC of production. Cost-of-service models therefore try to estimate the LRMC, with different degrees of precision.

The major areas of debate in applying cost-of-service approaches are:

- **The estimation of a weighted average cost of capital (WACC).** The logic of approximating a workably competitive market is that capital employed in the business will just recover its opportunity cost. Hence, WACC needs to reflect non-diversifiable risk involved in the business. For example, the more price volatility faced by dairy farmers, the higher the required WACC
- **The valuation of sunk assets.** It is reasonably easy to assess the value of new investments, but more difficult to decide on the value of the assets employed in the business such as land. There is a problem of circularity: the value of the current assets may depend on the price of the final output, while the regulated price depends on the value of the assets. Regulators using cost of service models have come up with various ways of addressing this problem, and
- **The degree of optimisation to apply to cost estimates.** Regulators do not want to reward regulated producers for inefficiency. This requires the regulator to decide the extent that prices should allow costs to be recovered that reflect the actual costs of the business rather than hypothetically efficient costs. This applies both to capital costs through the treatment of stranded or underutilised assets, and to operating costs through the use of assumed improvements in operating efficiency over time.

2.6 Pricing Approaches and the Hypothetical Efficient Competitor (HEC)

We can now consider how the concept of the HEC fits with top-down and bottom-up pricing approaches. In summary, using hypothetical costs in a top-down approach works against the objective of allowing firms that are more efficient than the incumbent to enter the market. Using hypothetical costs fits better in bottom-up pricing approaches, although hypothetical cost benchmarks still need to be applied with caution.

Using hypothetical costs in top-down pricing

The notion of an HEC does not fit very well into top-down pricing approaches. The costs subtracted from the retail price set the benchmark for efficiency that new entrants need to beat. Actual cost is therefore a natural benchmark in top-down approaches because the resulting input price provides an incentive for any new entrant that is more efficient than the current monopolist.

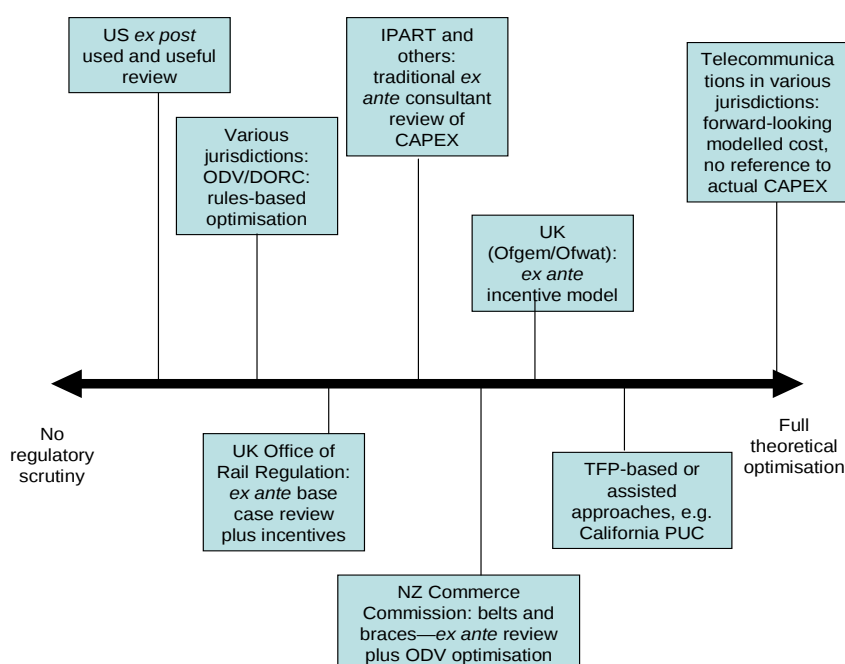
In contrast, a hypothetically efficient cost would not incentivise entry by more efficient firms than the monopolist: by subtracting the costs of an HEC from the final price, we require new entrants to instead be more efficient than the HEC. In theory, if the costs of the HEC are correctly calculated (as the costs that would be borne by an optimal new entrant) then no actual new entrant would be able to beat that hurdle.

Using hypothetical costs in bottom-up pricing

The HEC is a useful tool for bottom-up pricing approaches that build-up cost estimates. By using hypothetical rather than actual costs, bottom-up pricing approaches ensure that the monopoly provider of an input is not rewarded for any inefficiency through prices.

The different bottom-up methodologies for setting prices using hypothetical costs can be visualised along a continuum where, at one extreme, the regulator accepts whatever costs are incurred by the regulated entity, while at the other extreme, the regulator determines prices through a cost model which does not rely on the regulated entity's data. The approaches adopted by regulators internationally are placed along this spectrum in Figure 2.5, which shows that the reliance on hypothetical (optimal) costs differs in different jurisdictions and industries.

Figure 2.5: Options for Applying HEC in Bottom-up Pricing Approach



Note: ODV is Optimal Deprival Valuation. DORC is Depreciated Optimised Replacement Cost. TFP is Total Factor Productivity.

In selecting an appropriate level of cost optimisation, regulators need to balance concerns about the efficiency of the monopolist against the potential for regulatory error. Any estimate of hypothetically efficient costs risks being incorrect, and if prices are set too low as a result, the regulated entity will not recover its cost of capital and will not invest. If hypothetical costs are not sufficiently optimised in bottom-up approaches then the regulator loses the opportunity to encourage efficiency improvements through prices.

It is important to note that bottom-up pricing approaches focus solely on the impacts of prices within the level of the supply chain being analysed. Bottom-up estimates do not consider the impacts that the resulting prices might have on competition at other levels

of the supply chain. This means that a bottom-up approach to pricing that estimated the LRMC of dairy farming in New Zealand as a way to set raw milk prices at the farm gate would not account for any impacts that the resulting price would have in the milk collection and processing markets.

2.7 Summary of Pricing Approaches

The approach to regulating the price for raw milk needs to be based on a clear choice between possible public policy objectives, which in turn are derived from understanding the relevant markets for supplying dairy products in New Zealand, and the outcomes that would be desirable in these markets.

The HEC model then needs to be seen within the context of the pricing approach that would best achieve the policy objectives. The HEC model does not fit well into top-down pricing models. It does, however, fit into cost build-up approaches.

3 Fonterra's Current Pricing Approach

In this section, we describe our understanding of how Fonterra's *Milk Price Manual* works, and its implications.

3.1 How the *Milk Price Manual* Works

In essence, Fonterra's approach is to conceptualise its business this way:

- The marginal supply of milk to Fonterra (any milk additional to current volumes) is converted into a bundle of commodity products
- Farmers have to hire a collection, processing, and marketing agent to convert their raw milk into the commodity bundle and sell it to international buyers
- Since commodity products are freely traded, there is very little (if any) marketing cost
- Hence, the key issue for farmers is to ensure that they pay the collecting and processing agency no more than would be required for an efficient operator.

In this context, Fonterra's farmers want to regulate the "tolling" charge that the processing and collecting agency charges them. The Milk Price is the residual of that calculation: it is what the milk is worth to farmers if it is converted to a commodity bundle by an efficient collecting and processing sub-contractor.

Given this objective, Fonterra applies a bottom-up, cost-of-service pricing approach to calculate the charge levied by its milk collecting and processing arm. In other words, the price that is regulated is the price of the downstream services as if such services were supplied in a monopoly setting.

This approach is entirely logical for Fonterra's members. Large-scale entry into the processing market is unlikely in New Zealand—both because of the costs of coordinating a large scale exit of Fonterra's members and the incentives on Fonterra to prevent such an exit. Treating collection and processing as monopoly services provided to cooperative members, and applying standard regulatory pricing techniques to price these services makes sense from the perspective of cooperative members. The question is whether this is socially optimal.

The milk price is the residual of modelled collection and processing costs

The *Manual* essentially models the processing costs to produce a hypothetical product mix. The Milk Price is calculated as the residual of final revenue, less operating and overhead, less a charge of fixed assets and working capital of the business delivering product to the New Zealand wharf (the off-shore network is not included). The *Manual* therefore follows a building block regulatory model to generate an input, rather than an output price. This has four steps:

1. Defining the boundaries of the notional commodity business
2. Calculating the notional revenue
3. Calculating the recoverable notional costs ("notional cash costs")
4. Calculating an appropriate capital recovery amount ("notional capital costs").

We discuss each of these four steps below.

Defining the boundaries of the notional commodity (milk price business)

Efficient near-term competition comes from would-be new entrants who construct milk powder plants—equivalent to, and of the same scale as, the notional commodity business. This business is focussed on the sale of powder products overseas. International markets provide the deepest and most transparent benchmark for milk prices, so milk powder and cream products are simple to model. The *Milk Price Manual* produces a price that over time is the price that another “optimally efficient” Fonterra, processing all New Zealand raw milk, would pay farmers in a competitive, integrated collection and processing market.

Therefore a notional pure commodity product manufacturing business is identified within Fonterra. Fonterra doesn’t operate a segregated “powder-only” business. Aside from long term contracts, the difference in costs between Fonterra and the “Milk Price” is legacy assets. This historical asset footprint and capacity constraints limit the ability to produce an optimal product mix. For instance, cheese and casein plants reduce profitability relative to milk powder.

The treatment of volume and the product mix is important:

- **Volume.** All milk collected by Fonterra in New Zealand is manufactured into Reference Commodity Products (RCPs), including milk to independent processors under the Raw Milk Regulations (access point B in Figure 2.1). This means that any difference in the Milk Price and price paid for access to raw milk by independent processors will accrue to Fonterra
- **Initial Reference Basket.** A sample of Fonterra’s actual sales prices of four reference commodity “base” milk powder streams: whole milk powder (WMP, 58 percent), skim milk powder (SMP, 24 percent), butter (10 percent), and anhydrous milk fat (AMF) and butter milk powder (BMP) (eight percent).

Calculating notional revenue

Reference prices are derived from the *globalDairyTrade* online auction of commodity milk products,⁵ and bilateral trade prices are only relevant for butter and certain other items. Fonterra bears the risk of short term decisions to manufacture product mix different from the RCPs, as long as the benchmark mix can be adjusted to maximise the Milk Price (based on the Reference Basket).

Current actual Fonterra volumes are: WMP (36 percent), SMP (17 percent), Cream (including butter—13 percent), AMF and BMP (eight percent), and other (cheese, casein, liquid milk, MPC, whey, etc—26 percent).

The Production Plan and Benchmark Product Mix set the production volume of the Notional Commodity Business. They are prepared at the start of the season, but are able to be altered. Benchmarks must:

- Be feasible, given the Notional Fixed Asset Base configuration
- Result in the notional conversion of all Milk into RCPs
- Be consistent with an objective of maximising the aggregate Milk Price and profits of the Notional Commodity Business, given the relative returns of the RCPs, and
- Create strong incentives for Fonterra to optimise its product mix.

⁵ See <http://www.globaldairytrade.info/> (last accessed 4 July 2011).

Calculating the recoverable notional (operating) costs

The calculation of operating costs applies Fonterra's actual manufacturing unit, maintenance, collection, and supply chain costs to a manufacturers' specification of processing utilisation.

- Modelled variable costs x notional production volume
- Plus modelled fixed costs, if all milk converted to reference commodity products,
- Plus notional tax payable (this requires an adjustment of depreciation for tax purposes from the assumed regulatory treatment described below).

Manufacturing costs reflect a "standard" of 1.9m litres per day average plant capacity. Notional manufacturing costs use a 'bottom-up' approach on the notional construction of the cost base Fonterra would require if it did nothing other than manufacture this milk into Reference Commodity Products. Financial models are maintained and audited for each standard plant and for manufacturing sites in aggregate.

Variable manufacturing costs are set by reference to utilisation rates set by manufacturer and independently reviewed. **Fixed costs** are "reasonable" and reviewed by an independent reviewer. **Maintenance costs** are actual Fonterra costs over last four years, scaled by the ratio of the aggregate replacement cost of the Reference Assets to the replacement cost of Fonterra's actual NZ manufacturing assets, as calculated for insurance, adjusted for inflation.

Collection Costs reflect actual costs incurred by Fonterra in collecting milk, adjusted to reflect any material differences between costs of transferring milk between sites and the notional cost implied by the Notional Production Plan and the allocation of standard plants to sites. **Supply Chain Costs** reflect Fonterra's actual factory to wharf transport and storage costs, as if they were reasonably incurred manufacturing RCP under the Notional Production Plan.

Sales Costs include agent costs or Fonterra's own (whichever is lesser), including selling through *globalDairyTrade*.

Calculating notional capital costs

Capital recovery reflects the standard asset base (existing plus capital expenditure) applied to reasonable rate of return and depreciation/revaluation.

- Annualised provision for WACC recovery on notional fixed asset base
- Plus annualised provision for WACC recovery on notional net working capital
- Plus annualised provision for recovery of net depreciation on notional fixed asset base. The depreciation calculations for the notional commodity business back-load depreciation charges towards the end of the assumed useful life of the assets.

The Notional Fixed Asset Base comprises:

- Standard plants—using a cost assessment from a reputable engineering firm retained by the valuer
- On-site assets (and installation costs) required for processing—based on replacement costs

- Milk Collection Assets (including on-farm vats) required to collect total milk to deliver that milk to its “actual delivery point”—this is based on an estimate of replacement costs, and
- Information systems and land required for manufacturing sites—based on current market value.

Fixed asset capital costs of the notional commodity business are calculated through a stream of annuities sufficient to earn both a WACC and a recovery of a deemed acquisition cost over each asset’s economic life. The WACC used to determine the fixed asset capital charge and the net working capital charge is set to appropriately reflect the allocation of risks set out in the *Manual*. The capital charge is applied to a monthly net working capital balance.

3.2 Is There Anything “Wrong” with the *Milk Price Manual*?

The *Milk Price Manual* makes perfect sense as a manual for regulating the collection and processing toll to be charged to Fonterra members. The Milk Price, which emerges as a residual of the collection and processing cost calculation, produces an effective management tool for Fonterra shareholders:

- Fonterra management is remunerated on the basis of the profitability of the collection and processing business
- By treating the calculated Milk Price as an input cost into that business, managers can only earn more than WACC if they:
 - Achieve actual costs which are lower than the hypothetical efficient costs of processing and collection, or
 - Achieve a product mix which is more profitable than the hypothetical product mix.

Over time, for the purposes of the internal oversight, the *Milk Price Manual* can tighten the pressure on management through an even greater optimisation of inputs, or through stronger assumptions on the optimisation of the product mix. Either approach will result in a higher raw milk price for a given set of international commodity prices. In essence, as an internal management tool, the pricing model assumes that threat of, or actual exit by farmers is an inefficient and undesirable tool for keeping management honest. Rather, the model aims to achieve a desirable level of efficiency through an internal regulatory mechanism.

In terms of the pricing approaches introduced in Section 2.5 of this paper, Fonterra’s current approach follows the overall logic of top-down pricing by starting with the retail price and subtracting costs. Following a top-down approach ensures that any resource rents are captured by upstream economic agents (in this case, dairy farmers). However, by applying the HEC in the process of estimating costs, Fonterra is using an optimisation approach that fits much better with bottom-up pricing approaches.

While this model makes perfect sense as an internal management tool, the resulting Raw Milk Price does not appear to satisfy some of the public policy objectives presented above:

- It sets an unrealistically high hurdle for new entrants into the milk processing market, and may therefore prevent entry by efficient competitors
- It may deter investment from competitors that would contribute to a more dynamic agricultural sector, particularly niche processors

- It encourages uneconomic by-pass of existing milk collection services in an effort to capture any resource rents
- It serves as a barrier for Fonterra's farmers to exit the cooperative.

Box 3.1: Fonterra's *Milk Price Manual*: Summary

- Applied to raw milk, the *Manual* uses revenue from export commodity sales, minus the downstream costs of processing. The *Manual* therefore follows a building block regulatory model to generate an input price for raw milk, rather than an output price
- Applied to the cost of service provided to farmer-owners (that is, in adding value to raw milk), the *Manual* calculates a partially-optimised TSLRIC (total service long-run incremental cost) price of collection and processing services
- The *Manual* models the processing costs of producing a hypothetical product mix. The processing and collection costs include operating and overhead costs, and a charge of fixed assets and working capital delivering products to the New Zealand wharf
- The *Manual* identifies a notional pure commodity product manufacturing business within Fonterra. Aside from long term contracts, the difference in costs between Fonterra and the "Milk Price" relates to legacy assets. Historical assets and capacity constraints limit the ability to produce an optimal product mix. For instance, cheese and casein plants reduce profitability relative to milk powder
- The *Manual* assumes that efficient near-term competition comes from would-be new entrants who construct milk powder plants—equivalent to the notional commodity business and of the same scale as Fonterra. This business is focussed on the sale of powder products overseas. International market is the deepest and most transparent benchmark for milk prices, so milk powder and cream products are simple to model
- The *Manual* produces a price that, over time, is the price that a Hypothetically Efficient Competitor of a comparable scale to Fonterra would pay for raw milk in a workably competitive integrated collection and processing market. This entity benefits from any current economies of scale and scope in collection and processing
- The *Manual* also produces a milk price higher than would be achieved in a workably competitive raw milk production market.

4 Is there a Better Alternative to Fonterra's Current Pricing Approach?

Our analysis of Fonterra's current pricing model suggests that it results in a raw milk price to third parties (Fonterra's competitors) which may be higher than would be efficient:

- It requires any new entrant into the collection and processing markets to be super-efficient to beat the hypothetical benchmark. This weakens incentives to innovate and invest in areas where Fonterra may not be actively focusing
- It is likely to set the price for raw milk above a workably competitive outcome in the market for the supply of raw milk, and
- It may encourage inefficient solutions, such as requiring new entrants to waste resources (that is, to consume resource rents) on building their own supply base when this reduces New Zealand's welfare.

At the same time, it appears that Fonterra's current approach is effective at achieving the objectives set by cooperative members. In particular, the current approach ensures that Fonterra's processing and collection business is well managed in terms of keeping the costs of collection and processing as low as possible. By regulating the cost of collection and processing that is charged to cooperative members, members to a significant extent replicate the effects of any pressure that could be applied on Fonterra by external competitors to reduce production costs. With an efficient price of milk and open entry and exit, Fonterra would have an incentive to be as efficient as possible in order to avoid losing suppliers to external competitors. Fonterra's internal regulation of the cost of collection and processing applies the same pressure, regardless of whether the milk price that falls out of the model is efficient or not from the public policy perspective.

Given the effectiveness of the *Milk Price Manual* as an internal regulatory tool, and given the fact that Fonterra is likely to remain as the dominant dairy cooperative in New Zealand, it seems important to not undermine the mechanisms which Fonterra's members use to promote processing and collection efficiency. The question of whether Fonterra should be compelled to change its approach to pricing raw milk therefore comes down to whether the benefits of an alternative approach would exceed any costs in damaging Fonterra's internal mechanisms.

4.1 Alternative Approach Using ECPR

Given that Fonterra's model requires a new entrant to be super-efficient, social welfare could be improved if:

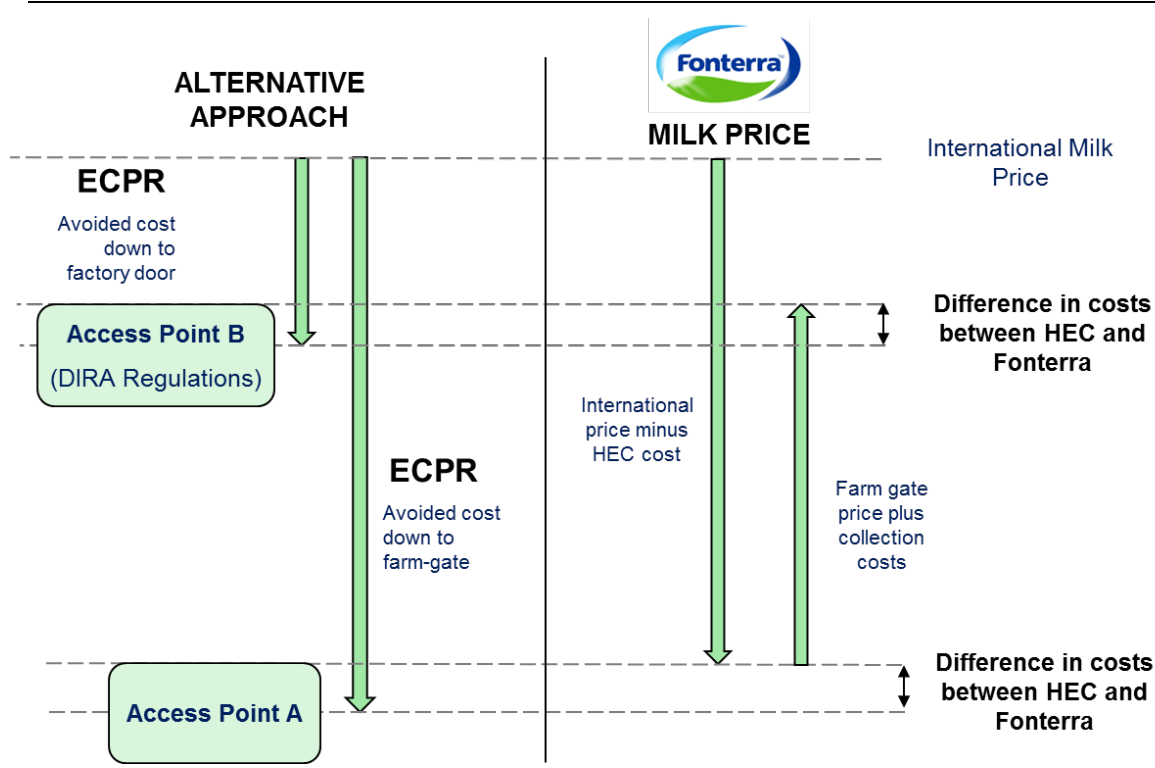
- The benchmark for new entrants was lowered to being at least as efficient as Fonterra. It is important to emphasise such entry may do little to increase the pressure on Fonterra to be efficient, compared to the internal pressure applied by the HEC model. However, it should enhance dynamic efficiency by allowing more innovation and investment in processing around the edges of Fonterra's business, and
- New processors—even if they had their own suppliers—could access Fonterra's milk collection services where duplication was socially inefficient.

Achieving these outcomes suggests two possible modifications to improve the current pricing regime:

- **Requiring Fonterra to use the ECPR approach to set the raw milk price applied to third party access seekers.** In general, the ECPR states that where a vertically-integrated access provider supplies both an access input upstream and a retail output downstream, the access price should be set equal to the direct incremental cost of access plus an amount which compensates an access provider for the opportunity cost, or lost profit, associated with not providing the retail output. In other words, under an ECPR approach, Fonterra would be no worse off from providing access than from doing its own processing (oddly, under the HEC model, it would actually be more profitable for Fonterra to supply milk to other processors than to process it itself). The ECPR price of raw milk would be lower than the price produced by the *Milk Price Manual*—in essence, it would subtract more costs (actual rather than hypothetical) from the same revenues, and
- **Requiring Fonterra to offer different “inter-connection” options on its network.** Competitors could either access raw milk that has already been collected or access raw milk at the farm gate. This means that ECPR solves both problems of entry into processing and any natural monopoly issues in raw milk collection—the access price would include a collection component if access seekers are supplied at an aggregation point. Access prices could also be specified at regional “collection nodes” to account for any geographic differences in Fonterra’s costs.

An overview of how an ECPR approach compares with Fonterra’s current pricing approach is shown in Figure 4.1.

Figure 4.1: Comparison of Fonterra’s Current Pricing Approach and ECPR



The fundamental logic of ECPR is that Fonterra should be indifferent to supplying access seekers and undertaking the processing and/or collection activity itself. The ECPR approach should therefore reimburse Fonterra for the actual costs that it bears, even in

regions that Fonterra serves under its statutory obligation under section 71(b) of the DIRA to accept all applications by new entrants and shareholding farmers to supply it with milk as shareholding farmers.

In principle, it is possible that a rigorous application of the Commerce Act would result in exactly the same outcome as ECPR. However, regulatory intervention may be justified if the transactions costs or regulatory uncertainty under the Commerce Act are inefficiently high.

A major advantage of ECPR over bottom-up pricing approaches is that ECPR ensures that farmers continue to receive any resource rents. In contrast, bottom-up approaches may place at risk New Zealand's ability to capture the benefits from low cost dairy farming. As a result, we have not explored the implications of requiring Fonterra to apply a bottom-up pricing approach for raw milk in detail.

4.2 Internal and External Milk Prices

In deciding whether some form of mandated shift to ECPR for setting the milk price for third parties is justified, we need to consider whether Fonterra's internal regulatory approach—which produces the milk price as a by-product—could co-exist with a different methodology being used to set the milk price for third-party access.

In theory, it is not unusual for vertically-integrated companies to use internal transfer prices that differ from market prices. In essence, what Fonterra is doing is not unusual: setting deliberately high transfer prices to hold manager's feet to the fire. Such internal mechanisms can, and do, co-exist with different market outcomes.

The divergence between internal and external prices could raise two types of issues:

- First, Fonterra members may protest against the apparent supply of milk to third parties at a lower price than they receive. Of course, Fonterra members are not really receiving a higher price. What is happening is that the *Milk Price Manual* notionally divides the payments that Fonterra members are receiving into a lower dividend and a higher milk price. However, this is a subtle distinction which may be difficult to explain, and which could cause farmer opposition to apparent “subsidy” to other processors, and
- Second, and perhaps more importantly, the value of Fonterra shares would continue to be based on the internal transfer price. Hence, the incentives for entry and exit into Fonterra would be influenced by the internal price. The availability of raw milk at a lower external price would mean that the incentives on the independent processors could become distorted: to secure their own supply, they will need to match the price that Fonterra is offering, while they could obtain milk from Fonterra at a lower price. Hence, the incentive will be to draw raw milk from Fonterra.

As a result, the co-existence of a more efficient external milk price and the internal milk price which feeds into Fonterra share valuation (whether under the current valuation model or through prices being set by trading among farmers) could entrench Fonterra's position as the raw milk supplier. In essence, new processors would always be better off drawing raw milk from Fonterra than seeking their own supply.

This outcome could be efficient, but it may be less competitive than the outcome which would result if both the internal and external prices for Fonterra raw milk were set using the same pricing methodology. The incentive to draw raw milk from Fonterra naturally poses the question: should the quantity which Fonterra is obligated to provide to third parties be restricted?

In theory, the application of ECPR should always ensure that Fonterra is no worse off supplying third parties than it is undertaking the processing itself. Hence, there is no reason why the quantity to be supplied should be capped. However, the cap may be necessary from a political economy perspective (particularly given concerns about supplying milk at a “subsidised” price).

5 Further Analysis

Conceptually, the use of the ECPR methodology to set the price for raw milk supplied to third parties may improve social welfare. This improvement is possible even if Fonterra continues to use its *Milk Price Manual* to internally regulate its processing and collection costs. However, internal regulation will inevitably have an external effect by feeding into the Fonterra share price. As a result, the coexistence of an ECPR-based milk price for third-party access and an HEC-based milk price for internal purposes will affect the incentives in the milk supply market, and may have substantial political economy effects. This makes it important to acknowledge the risk of introducing unintended consequences by implementing an ECPR methodology for third party access pricing.

Changes in regulation often cause unanticipated effects. In the context of this paper, we are unable to answer the empirical question of whether the distortion caused by Fonterra’s current use of the HEC methodology for setting the raw milk price is sufficiently large to justify the risk of causing unanticipated effects through a change in policy. This is an empirical question that needs to be informed by an analysis of:

- The loss in dynamic efficiency that is being incurred due to innovation from niche entrants and insufficient market discipline on Fonterra’s own investment decisions, and
- The loss in efficiency that is being incurred through the duplication of collection facilities to enable entry or expansion by independent processors.

There are also other practical or implementation issues that will need to be addressed in moving to an ECPR approach, including:

- Whether any restrictions should be placed on the quantity supplied by Fonterra at any access points on its network, and
- Whether any access requirements could be phased out once competition has emerged at the farm gate and factory door (similar to the current intended phasing out of the DIRA regulations).

Appendix A: Review of Access Regulation

The purpose of this appendix is to provide a brief overview of the theoretical justifications used for regulating access to services and facilities. We also explore how access is regulated by competition authorities in the following jurisdictions:

- Australia
- The United States
- Europe
- New Zealand.

A.1 Why Regulate Access?

It is well-recognised in economic theory and in regulatory practice that providing certain products and services—especially in the network parts of an industry—involves cost and demand characteristics that mean a single player is the most efficient industry structure, rather than competition between multiple suppliers.

These activities are referred to as natural monopolies. They are typically characterised by a combination of high fixed costs, high entry barriers and inelastic demand, and economies of scale (higher output lowers the average cost per unit). In technical terms, an activity is defined as a natural monopoly where total costs are lower with only one firm operating at the prevailing level of demand—known as cost sub-additivity. This means that resources are saved by keeping an incumbent monopoly intact, rather than breaking it up into several competing suppliers (which is a common regulatory solution in markets with a dominant player that are not natural monopolies).

Natural monopoly conditions have historically been associated with the public utility industries, such as electricity, telecommunications, water, and railroads. However, in the past 30 years many overseas jurisdictions have liberalised these markets by opening parts of the industry to competition and restricting the scope of regulation to natural monopoly aspects of the industry. Technological developments have played a role in these regulatory changes. Policy-makers now recognise that industries are often comprised of a number of sub-activities, some of which may be contestable. For example, gas storage in many jurisdictions is now considered to be a contestable activity, electricity generation is seen as competitive, as are many retail and supply related activities in the provision of utility services.

The “network” aspects of utility industries—the customer access network in telecommunications, and electricity transmission and distribution networks—are nevertheless still generally considered to display strong natural monopoly characteristics. Most jurisdictions therefore retain some form of regulatory regime to compel an incumbent to provide access to entrants. It is generally accepted that this form of regulatory intervention leads to more efficient outcomes. The motivation for this regulation is that efficient competition in downstream markets would be difficult, or even impossible, unless entrants can access the essential input at appropriate prices, terms and conditions.

Moreover, the regulation of access prices restricts the ability of the service provider to exploit their position of economic power by charging excessive or discriminatory prices. This is a particular concern where the incumbent access provider is vertically-integrated and operates at a number of levels in the production chain—for example as both a seller of an input (access at the wholesale level) to downstream markets and a competitor in

that (retail) downstream market. In these circumstances, the incumbent access provider has an incentive to raise the wholesale input price of access to its competitors in the downstream market, and to “squeeze” their competitors’ margins and make their competitors’ businesses unviable.

Whether a particular industry is a natural monopoly depends on the costs and demand characteristics of that industry—businesses that are a natural monopoly in one country may be competitive in another country where cost differ or market demand is higher. In relation to New Zealand’s dairy markets, there is some evidence that milk collection may be a natural monopoly. However, this will depend on the precise location of the different collection points or farms, and the local topography (including the road network), among other things. Collection services already exist for a range of agricultural products produced on farms. Distribution and collection services for supermarkets, shops, and hotels for several products already exist under competitive conditions, even in remote locations.

Access arrangements are sometimes also required for activities which may **not** be natural monopolies. Certain services may be an “essential” or “bottleneck” facility, where access to this service is required by firms at different levels of the production chain in order to participate in other markets. The meaning of what constitutes a bottleneck or essential facility (particularly as interpreted by the Courts) can be broader than that of a natural monopoly.

For instance, Fonterra could use its upstream market position by strategically controlling access to raw milk, an essential element for competing downstream milk processing firms. There is a risk Fonterra can set a farm gate raw milk price too high and make entry to the processing and collection markets difficult, particularly if there is a low potential for bypassing Fonterra’s upstream business. Without an opportunity to bypass Fonterra farmers’ raw milk (for example by setting up supply through new dairy farms or by purchasing raw milk from farmers who leave the cooperative), those firms are dependent on Fonterra for access.

How access is regulated: theory and practice

Whatever the rationale for regulating access, the central issue in access regulation is how the terms of access (both price and non-price) are determined between an integrated firm with market power and its rivals in downstream or related markets. Determining an appropriate access pricing methodology is controversial in regulated industries.

A net-benefit approach focuses on the goal of efficiency, the central question being “who can deliver the access service most efficiently?” From this perspective, the only time access should be “sub-contracted” to an entrant in a downstream market is where the entrant provides “value” over and above that which could be provided if the incumbent access provider supplied the market.

For example, in settings where the optimal access price results in “low” or “no” value entry (either because the entrant does not attract sufficient customers or the value added per customer is low), but results in a cost recovery problem for the incumbent access provider, it may be more efficient to not allow access. This is position might be qualified by recognising a number of other reasons that entry or competition may be desirable or important in many contexts (such as in cases of technological change and innovation possibilities).

Where a facility is deemed to be a natural monopoly, economic theory is clear that to promote economic efficiency, access prices should be set to equal the marginal cost of

providing the service. However, as many activities in network industries involve substantial fixed costs, this can lead to a revenue shortfall for a service provider.

One method of deviating from marginal cost pricing to account for fixed costs is to allow prices to reflect the willingness to pay of different users. This approach (known as Ramsey or demand-based pricing) applies a mark-up above marginal cost that is inversely proportional to the elasticity of market demand for a particular service. In principle, the mark-up for different users can be chosen in such a way that allows the service provider to generate sufficient revenue across all customers. Averaged long-run marginal cost (LRMC) is often a more useful benchmark, since it takes into account that:

- The cost of capital expenditure required to expand capacity before a firm can change production, and
- The revenue earned from such an investment may not be sufficient in the short run while capacity is unused. If prices deviate from LRMC over time, efficiency is not maintained.

In practice, different access prices and pricing methodologies will achieve different policy objectives. While a “low” access price might encourage entry into related markets, it might also reduce incentives for investment by the incumbent access provider. Conversely, a “high” access price might create incentives for network duplication or bypass, but also entrench positions of market power, frustrate competition and entry in related markets, and raise prices for consumers.

In order to generate incentives for dynamic efficiency, an access price needs to ensure that sufficient revenue is generated to cover the efficient costs of providing access to services, including an appropriate return on investment. At the same time, an access price should be related to the underlying costs of access services, as this will ensure the efficient use of services and investment in related markets. A further consideration, and one of importance in New Zealand’s dairy markets, is the relationship between access prices and final retail prices, and in particular, whether prices in related markets are regulated or unregulated.

The performance of an access pricing framework can be evaluated against the signals or incentives that an access price provides for:

- The efficient use of a network or facility
- The level and type of investment in a network or facility
- The type of competition in, and extent of entry into, related markets, and
- The supply of access services at reasonable costs.

There is typically no “right” answer when it comes to determining access prices. Rather, the key insight is that it is important to have an access pricing framework that is well-designed, and creates the right incentives for access providers and users, and achieves the desired policy objectives. This means that access prices cannot be evaluated without a thorough understanding of market dynamics—what is appropriate in any particular setting will depend on the context and conditions in the particular market, which are likely to change over time.

A.2 Review of Access Regimes Overseas

We now consider examples of approaches adopted in different jurisdictions to regulate access to facilities.

Australia

Australia has a formally developed nationwide access regime. It was implemented in 1995, and consists of a process to facilitate access to natural monopoly bottlenecks for businesses to compete in related upstream or downstream markets. Industry-specific access regimes have been developed in energy and telecommunications, and for some port facilities (such as the Dalrymple Bay Coal Terminal in Queensland).

The national access regime is contained in Part IIIA of the Competition and Consumer Act 2010. Part IIIA provides for access to the services of infrastructure facilities on appropriate terms through a process known as the “declaration” of services (with designation of a facility as a natural monopoly by the Government). The National Competition Council is responsible for making recommendations to relevant ministers on applications to have particular services or assets “declared” under Part IIIA.

If a service is declared under the national access regime, and an access seeker and the access provider are unable to agree on the terms and conditions of access, either party may notify the ACCC of the dispute. In these circumstances the ACCC may make an arbitration determination that binds the parties. The ACCC also has various price surveillance powers, which allow it to review (but not set) the prices of certain goods and services. These powers are in addition to standard competition law powers to intervene against proscribed anti-competitive practices by firms with substantial market power.

Part IIIA contains several criteria for access declaration, including:

- Whether access (or increased access) “would promote a material increase in competition in at least one market ... other than the market for the service”. This is quite a broad criterion, as it is not restricted to the downstream or final market, and
- Whether it would be “uneconomical for anyone to develop another facility to provide the service”. If applied as a strict natural monopoly issue, this is a very narrow test—asking whether capital and operating costs for meeting the reasonably foreseeable demand for the service would be lower with one facility than with more than one.

Applying these tests in the New Zealand dairy markets, it may be hard to argue for access to Fonterra’s milk collection assets. However, if applied more broadly in the context of the potential for strategic pricing, entry may be foreclosed due to the lack of bypass opportunities.

More generally, there is considerable legal and economic debate as to the proper interpretation of the natural monopoly part of the test. One interpretation is that this criterion looks at efficiency from a social welfare or net-benefit perspective, and in terms of the costs for production to occur through one facility (sub-additivity). However, in a recent Federal Court decision on access, the criterion was interpreted from the perspective of an access seeker or potential entrant, and is therefore focussed on the question of the interests and ability of that party to develop the facility⁶.

Under the Competition and Consumer Act, small businesses can be authorised to “collectively bargain” with customers and suppliers in circumstances where the ACCC is satisfied that the public benefit from the conduct outweighs any public detriment. This is a method by which the raw milk price has been determined in Australia since 2002, and

⁶ *Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* (2011) FCAFC 58, where the Australian Federal Court favoured the “privately profitable” interpretation of essential facility.

the ACCC has recently issued a draft decision⁷ proposing to allow dairy farmers to continue to collectively bargain with processors for a further 10 years (see discussion in Annex B below).

The United States

The institutional structure of antitrust and economic regulation in the United States is complex, partly reflecting the distinction between the jurisdiction of the Federal government and the States. Access arrangements for traditional utility activities (telecommunications, electricity and rail) are therefore often a combination of initiatives at the federal and state levels.

For example, the Federal Energy Regulatory Commission (FERC) has set out various Orders that establish a right for third parties to access interstate transmission networks, and FERC has outlined the pricing principles that should apply to such access. Similarly, in relation to interstate and international telecommunications network, the federal regulatory arrangements provide for negotiated agreements between parties on terms of access interconnection and resale, with the ability for State regulators to arbitrate if parties cannot agree on price and conditions.

In relation to economy-wide activities, United States antitrust law has developed an essential facilities doctrine, which sets a high bar for gaining access to privately owned bottleneck facilities, but can be used in extreme cases. The essential facilities doctrine asks whether it is privately possible (profitable) to develop an alternative facility or to use alternative means of meeting the need. A range of activities have been declared to be “essential facilities” under this doctrine, including a railway bridge, a sports stadium, the New York Stock Exchange, and a multi-day ski-pass scheme⁸.

A leading judgment⁹ has identified four necessary elements to establish access under the essential facilities doctrine:

1. Control of the essential facility by a monopolist
2. A competitor's inability (practically or reasonably) to duplicate the essential facility
3. Denial of the use of the facility to a competitor, and
4. The feasibility of providing the facility.

Criterion (2) relates to the duplication of the essential facility. According to one leading judgment on the interpretation of this provision, this requires a plaintiff to show that an alternative to the facility is not feasible—not simply that it would be inconvenient, or result in economic loss to develop the facility.

In a landmark 2004 decision regarding the telecommunications sector, the United States Supreme Court ruled that the essential facilities doctrine will **not** apply where a government agency (such as a regulator) has powers to enforce access to a facility. In its

⁷ Available online at:

<http://www.accc.gov.au/content/trimFile.phtml?trimFileName=D11+2247500.pdf&trimFileTitle=D11+2247500.pdf&trimFileFromVersionId=993364> (last accessed 4 July 2011).

⁸ A good review can be found in Blumenthal, W., King, and Spalding (1989) *Compulsory Access under the Antitrust Laws*, available online at: <http://www.kslaw.com/library/pdf/blumcompulsory.pdf> (last accessed 4 July 2011).

⁹ *MCI Communications Corp. v. AT&T*, 708 F.2d 1081, 1132 (7th Cir.1983).

judgment, the Court highlighted broader concerns and economic trade-offs associated with requirements to provide access to so-called essential facilities:

Firms may acquire monopoly power by establishing an infrastructure that renders them uniquely suited to serve their customers. Compelling such firms to share the source of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities. Enforced sharing also requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing - a role for which they are ill-suited. Moreover, compelling negotiation between competitors may facilitate the supreme evil of antitrust: collusion.¹⁰

In the United States, the essential facilities doctrine defines the boundary between the relevant property rights of the potential entrant and the incumbent as arising where an owner of an facility has freedom to choose its commercial counterparts and to deal or not to deal—unless there was no viable way for competition to occur in an upstream or downstream market without access. The focus is typically on the downstream markets and whether consumers will be harmed in the absence of access.

Europe

The position on access pricing in Europe is in some ways as complicated as that of the United States, reflecting the division of powers and responsibilities between the European Union and Member States. As in the United States, access terms for traditional utility type activities (telecommunications, electricity, and rail) are a combination of European and Member State initiatives and policies.

Beyond the regulated utility sectors, issues relating to access to bottleneck or essential facilities are also captured by the abuse of dominance provisions of the relevant European competition laws, principally where denial of access to a facility or service is characterised as a “refusal to deal”. In an early case concerning access to a port, the European Commission (EC) stated the position on access to essential facilities in the following way:

An undertaking in a dominant position may not discriminate in favour of its own activities in a related market. The owner of an essential facility which uses its power in one market in order to protect or strengthen its position in another related market, in particular, by refusing to grant access to a competitor, or by granting access on less favourable terms than those of its own services, and thus imposing a competitive disadvantage on its competitor, infringes [the prohibition on abuse of dominance].¹¹

Unlike the position in the United States described above, the European authorities have been more willing to conclude that a dominant firm refusing to supply an “essential service” to a rival constitutes unlawful behaviour. There has been a range of activities which have been investigated in the context of the “essential facilities” doctrine, including energy networks, airports, telecommunications networks, television programme listings, and clearing facilities.

Moreover, unlike the position adopted by the United States Supreme Court in *Trinko*, the notion of essential facility in the EU context does not appear to be restricted to non-regulated activities. The European Courts have upheld two decisions relating to access

¹⁰ *Verizon Communications Inc v Law Offices of Curtis V. Trinko LLP*, 540 U.S. 398 (2004).

¹¹ *Sea Containers/Stena Sealink*, OJ 1994 L15/8.

pricing (both too-high and too-low) in the telecommunications sector—even though there was government involvement in the terms of access to those facilities.

The EC has also addressed the issue of essential facilities in the application of Article 82 (now Article 102) to abusive exclusionary conduct, noting that firms, including dominant firms, are generally entitled to determine who they supply, and entitled to decide not to continue to supply certain customers.¹² However, when a dominant firm imposes unfair trading conditions, or charges prices that are not economically viable for the buyer to continue its activity, then such conduct can constitute a refusal to supply. Specifically, the EC's Discussion Paper notes:

*A refusal to supply may be classified as an exclusionary abuse. The dominant company prevents the requesting or terminated party from getting access to an input. As a result, this undertaking is either driven out of the market, marginalised or prevented from entering the market. For a refusal to supply to be abusive, it must, however, have a likely anticompetitive effect on the market which is detrimental to consumer welfare.*¹³

New Zealand

In New Zealand, section 36 of the Commerce Act has been used (with mixed success) to underpin access to bottleneck facilities. However, there is no overarching access regime for bottleneck facilities. It is possible that the lack of a clear regulatory framework has deterred competitive market entry in many sectors, particularly in vertically integrated industries. Several targeted attempts to develop a wide variety of case-specific solutions have occurred, most notably in telecommunications.

Section 36 is not directed against the existence of monopolies, but against the conduct of the monopoly—the misuse of market power. It does not prevent a firm using its market power for purposes other than restricting competition, such as charging prices above a competitive level. It is therefore unlikely that monopoly pricing would breach section 36 *per se*.

However, this will depend on the circumstances. Section 36 is likely to be more applicable in cases where the incumbent is vertically integrated, and an entrant seeks access to the monopoly input. This was the situation in the famous *Telecom-Clear* litigation,¹⁴ where the Privy Council found that Telecom's price in its offer to Clear, up until the High Court hearing in 1992, was in breach of section 36.

The *Telecom-Clear* case also sanctioned the use by Telecom of the Baumol-Willig (or ECPR) rule. This has attracted criticism because the ECPR does not act in itself to eliminate any monopoly rents resulting from the pricing of a hypothetical monopolist. According to the Privy Council, it provides a “level playing-field” upon which monopoly rents may be competed away. The default position in New Zealand is therefore, that monopoly pricing is legal, unless and until political action is taken to curtail particular pricing abuses.

¹² European Commission ‘DG Competition discussion paper on the application of Article 82 of the Treaty to exclusionary abuses’, December 2005.

¹³ Ibid, para 210.

¹⁴ *Telecom Corporation of New Zealand Ltd v Clear Communications* (1994) 6 TCLR 138.

Appendix B: Review of International Dairy Market Structures and Pricing Arrangements

A major issue in international dairy markets is the interaction between competition or antitrust laws on the one hand, and collective bargaining arrangements by farmers on the other. The purpose of this appendix is to summarise how dairy markets overseas operate in terms of market structure, price setting, and regulatory arrangements.

We present information on dairy markets in the following jurisdictions:

- Australia
- Great Britain
- Norway
- The European Union
- The United States, and
- Canada.

The experience in Europe and Australia, and the origins of deregulation in Great Britain, highlight the tension between allowing farmers to collectively negotiate raw milk production prices, and the paradigm shift in economic policy towards efficiency and pro-competitive reform.

B.1 Australia

The share of milk processing by traditional cooperatives in Australia (where the farmer is guaranteed that all of the milk produced will be taken) is less than 40 percent. The price of milk is determined according to a staged process where an opening price of milk is announced at the start of the season, followed by additional top-up payments. The other 60 percent of milk is supplied under different forms of supply arrangements. As a consequence, a range of supply models exist in Australia.

The majority of milk is now processed and marketed by a diverse group of proprietary firms from small, private, niche companies operating regionally, to large, international companies. There has been considerable foreign entry into processing, and the two dominant fresh milk processors are foreign-owned and procure their milk directly under contract from farmers.

Although the proportion of milk purchased under co-operative arrangements is declining, cooperatives still play an important role in how farm gate prices are determined. The largest buyer and processor of raw milk in Australia is the farmer-cooperative Murray Goulbourn, which takes approximately 33 percent of all milk. Murray Goulbourn has a large influence on the raw milk price facing other buyers and processors.

In recent years milk collection agents (firms who collect milk off farms and on-sell to third party processors) have entered the market. There is also diversity in terms of the focus of farmers in different parts of the country. In the northern states, such as Queensland, milk is mainly supplied for local markets, and this has led to firms seeking supply arrangements with more stable year-round prices. In contrast, a greater proportion of the milk produced in New South Wales and Victoria is destined for international markets.

Supply cooperatives have also emerged post-deregulation, and are principally the result of the splitting up of the production side from the collection side of operations. Supply cooperatives negotiate milk supply arrangements with processors of the former larger (combined) cooperatives.

In 1999, Australia began the transition of moving into a completely deregulated dairy industry. The Dairy Structural Adjustment Program (DSAP) eased the shift with an 11 cent per litre levy paid by consumers and allocated to farmers. Since the DSAP concluded, there are no legislative controls over the price of milk. Instead, the farm gate price is largely dependent on international markets. Australia has historically exported around 50 percent of its milk, mostly to Asia. Australia tends to receive slightly less for its milk than most countries, but the cost of production is also generally lower.

Payments to farmers vary marginally, being affected by such factors as product mix, marketing strategies, and plant efficiency. Each firm also has its own forms of incentives and penalties to encourage milk quality and volume.

Due to the reliance on international markets, Australian farmers created Dairy Australia, an industry service company that works to maximize the conditions for export. Dairy Australia is funded by levies paid by farmers on the fat and protein content of their milk. The company researches new markets while monitoring established ones, and works on maximising effectiveness of Australia's overseas marketing. Dairy Australia is also politically involved in assessing trade agreements in other countries and promoting the removal of trade barriers. It has been active in World Trade Organisation discussions, as the Australian dairy industry has a lot at stake in the Doha round of agricultural negotiations.

The lack of government involvement makes the Australian dairy industry similar to New Zealand. However, rather than a cooperative organising payments to farmers (as Fonterra does in New Zealand), farmers are paid by processors directly. Although each processor has its own way of determining prices, prices are generally based on butterfat and protein content.

The deregulated nature of Australia's market has led to the government recognising a need to manage the tension between the sustainability of farming and other companies in the milk value chain on one hand, and the volatility of international markets on the other hand.

In broad terms, the price of milk sold under direct contract (typically for domestic consumption) is usually higher than that paid under other supply arrangements, reflecting the greater costs associated with supplying a year round supply of milk. In contrast, the manufacturers of longer-life products, or for export, have tended to prefer the traditional pricing approach based on an opening price at the start of the season, with step-up payments.

One response to the issue of how farmers can protect their positions when negotiating prices and conditions with larger dairy processors has involved collective bargaining arrangements. This involves groups of farmers collectively negotiating the terms under which they will supply raw milk to individual firms. However, such collective negotiations may breach competition laws relating to coordination between horizontal suppliers on terms of supply. These arrangements therefore need to be authorised by the ACCC, which balances the potential detriments against the public benefits of the agreement.

Dairy farmers have been collectively bargaining with milk processors under an ACCC authorisation granted to Australian Dairy Farmers Ltd (ADF) since 2002. Approximately

500 farming families are currently registered under the ADF's collective bargaining arrangements in 18 collective bargaining groups. The most recent approval was on 16 June 2011, where the collective bargaining agreement was approved for 10 years.¹⁵

Several submitters to the recent approval noted that the success of collective bargaining depends on several factors, including:

- The abilities of the bargaining groups' leadership
- The relationship with processors, and
- The training provided.

The Australian experience with milk price negotiation suggests that the less successful farmer groups are those that have taken a more adversarial approach. As part of the collective bargaining arrangements, the Federal government has provided funding to allow for the training of farm leaders on negotiation skills and bargaining tactics.

The Australian Dairy Industry Council has concluded that there is generally a high level of competition for farm milk in Australia. The diversity in supply arrangements have allowed farmers to freely move between different firms—it appears that farmers regularly monitor pricing offers and are willing to switch if actual or expected payments diverge. However, the presence of a large cooperative (owned by farmers) has kept upward pressure on farm gate prices.

B.2 Great Britain

The history of British milk is interesting from the context of deregulation. Until 1994, there were four Milk Marketing Boards (MMBs) which held a statutory monopoly on the collection and sale of milk in Great Britain. The MMBs were established to resist the downward pressure on producer incomes resulting from the increasing power of dairy processing companies. The MMBs became responsible for all the milk produced by dairy farmers, selling it on their behalf and pooling the returns in order to provide equal returns according to the volume of milk consigned by each farmer.

Although the MMBs were typically described as co-operatives, farmers were generally required to sell their milk to them. The MMBs were, in turn, required to buy milk from farmers and find a market for it. This meant that MMBs acted not only as sole purchasers but also as monopoly suppliers of milk to the processors in their respective areas. The price of milk was negotiated and agreed by the MMB (on behalf of dairy farmers) and the Dairy Trade Federation (on behalf of dairy processing companies).

Although the MMB system was generally regarded as having operated satisfactorily, the customers of the MMBs became concerned about prices and their relationship to competition law. Following consultation, the MMBs were abolished in 1994 and the market was deregulated.

Following deregulation, a farmer-owned voluntary co-operative, Milk Marque, was established as the successor to the England and Wales MMBs. The majority of dairy farmers who had previously sold milk through the MMBs switched their allegiance to Milk Marque.

In 1999, the Monopolies and Mergers Commission (now the Competition Commission) determined that Milk Marque had used its dominant position to hold prices above a

¹⁵ Draft determination available on the ACCC's website:

<http://www.accc.gov.au/content/trimFile.phtml?trimFileName=D11+2247500.pdf&trimFileTitle=D11+2247500.pdf&trimFileFromVersionId=993364> (last accessed 4 July 2011).

competitive level, and recommended that Milk Marque be broken up¹⁶. The Government did not accept the recommendation.

Some dairy farmers were also dissatisfied with the farm-gate price offered by Milk Marque and were withdrawing in ever-increasing numbers. In the event, Milk Marque voluntarily chose to split into three roughly equal-sized farmer-owned cooperatives:

- Milk Link
- Axis (now merged with Scottish Milk to form First Milk), and
- Zenith (now merged with The Milk Group to form Dairy Farmers of Britain).

Since deregulation, the Government's role in the dairy industry has been limited. As the market is deregulated, all prices are determined by negotiation. Raw milk is procured from dairy farmers mainly by three types of purchasers: cooperatives, milk brokers, and independent processors.

Market Characteristics

The main farmer cooperatives are First Milk and Dairy Farmers of Britain. They keep some of the milk they procure from their farmer-members for their own processing activities and sell the remainder of their milk on to other processors. Milk brokers sell all the milk they procure to processors (except for those that are active as a processor as well as a broker).

Independent processors that procure milk directly from farmers use almost all for their own activities. These processors generally also buy some of their milk requirements from co-operatives and milk brokers to "dual source" their requirements.

According to the Department for Environment, Food, and Rural Affairs, there are 130 milk purchasers and over 100 processors in the United Kingdom. The industry is, generally speaking, domestically focussed. The largest purchasers from producers are the farmer-owned cooperatives. The combined share of all cooperatives in the procurement of raw milk was 46 percent in 2006/7.

The Dairy Industry Association believes that about 90 percent of the UK's raw milk is processed by the privately-owned dairy companies and only about 10 percent by farmer-owned cooperatives. The main processors that procure milk directly from farmers are Dairy Crest, Arla, and Wiseman, with their volumes growing in the past three years.

Milk brokers procured an estimated 7.6 percent of milk in 2007. This includes Meadow Foods, which also operates as a processor, and the largest pure broker, Sorn Milk, with a share of less than 5 percent.

An estimated 3,000 of the United Kingdom's 13,500 dairy farmers have special supplier deals with the major supermarket chains, although it is unclear whether these farmers are currently covering their costs of production. It is therefore been argued that the processing sector has been taken right out of the value chain, as supermarkets contract the farmer to supply the milk, before it goes to the processing plant contracted for by supermarkets. This has resulted in supermarkets integrating up the supply chain, lowering prices for farmers and processors. The major supermarkets in the United Kingdom are therefore now criticised for being in a position to determine farm-gate prices, with Tesco particularly influential due to its volume.

¹⁶ UK Monopoly and Mergers Commission (1999) *Milk: A Report on the Supply in Great Britain of Raw Cows' Milk*, June 1999, summary and conclusions available online at: http://www.competition-commission.org.uk/rep_pub/reports/1999/fulltext/429c1.pdf (last accessed 4 July 2011).

There are longstanding concerns about the sustainability of milk farming, and the low levels of raw milk prices. In particular, concern that low prices for raw milk has resulted from strong bargaining power of supermarkets. This is similar to recent media coverage of Australian supermarkets engaging in a price war over liquid milk. There are currently calls for minimum prices to be paid to farmers.

B.3 Norway

TINE Råvare is the largest dairy producer in Norway, and has a near monopoly with market share of 99 percent. TINE Råvare is the tenth largest global dairy co-operative in terms of turnover, and experienced annual growth in sales between 2003 and 2008 of 7 percent.

TINE's commercial objective is not to earn an annual profit. Any profit or deficit is allocated in the annual settlement as accounts receivable or debt, and set off by the fixing of the subsequent payment price to farmers from TINE Råvare. According to academic literature,¹⁷ farm gate raw milk prices are set by the Norwegian Agricultural Authority regulator following an ECPR approach. Norwegian milk producers receive the profits from TINE Råvare in the form of the paid price of milk delivered to TINE Råvare. The disbursement is divided into two payments.

The result that appears in the TINE Råvare accounts is based on the same price for milk as the input factor for other players. However, other players have received a rebate for milk which is paid to them through the price compensation scheme. The payment in arrears by TINE Industri represents the share of the annual result approved by the Group Board. The remaining part of the annual result is allocated to retained earnings.

The Agricultural Agreement in the spring of 2009 did not lead to a changed target price for milk, but measures were adopted to improve the milk producers' economic situation via the state budget. Rate changes in the price compensation scheme for milk made it possible to bring the quoted price from TINE Råvare up to the target level from 1 July 2009. Since the first half of 2008, the Norwegian Competition Authority has conducted a semi-annual margin control of selected TINE products. Which products are selected in each review depends on the volume of product sold and on competition issues. The first check was conducted in the autumn of 2008, with the results available in June 2009. The Norwegian Competition Authority writes in its report that the obtained information gives no reason to suspect that margins have been squeezed in order to impair competition.

B.4 The European Union

Like New Zealand, farm gate prices in Europe are generally determined by cooperatives. Unlike New Zealand, however, there is competition between the cooperatives and the price the producer receives is specific to each organisation. About 58 percent of milk in Europe is currently processed by cooperatives. Under the following subheadings below, we review some of the major features of the dairy markets in Europe, and we consider the specific arrangements in some Member States (the Netherlands, Ireland, Germany, Denmark, Sweden, and Finland).

The Common Agricultural Policy (CAP)

The 27 countries that make up the European Union (EU) are joined by a Common Agricultural Policy (CAP) that is based on a single market and common financing. The

¹⁷ Kristin Linnerud and Steinar Vagstad (2010) European Review of Agricultural Economics, Volume 37, Issue 1, pp 77-96.

dairy industry was previously seen as part of a larger European position of agricultural being multifunctional, fulfilling a broad range of roles, from maintaining rural communities to protecting environmental welfare. Farmers were paid both for their milk, and on the basis of commodity-focused supports in the form of subsidies that rewarded producers for these other inherent services they provided. Supply was controlled and dictated by a quota system.

Quotas are now in the process of being phased out, with a complete termination targeted for 2015. The European Commission (EC) supported a paradigm shift toward making the market more efficient through price determination. The previous subsidies schemes are being replaced by a decoupled payments that are not based on the amount of milk produced.

Bargaining Power of Farmers and Competition Rules

The market structures for milk are very different across the different Member States in Europe, but generally speaking, the concentration at production level is less than the supply or processing level concentrations.

This is seen to result in an imbalance in bargaining power in many Member States, and means that farmers have little choice of processor or transportation option for raw milk. In addition, in some countries, farmers are unaware of the prices that they will receive for raw milk until after they have delivered it to processors, as the price may be set much later.

There has been much interest in the structural characteristics of the milk sector in the EU in the last 18-24 months, which culminated in the creation of a high-level group (HLG) on milk in 2010. After examining the structure of the market and the participants (including contractual relations, bargaining power, the role of producer organisations, and vertical integration), the HLG concluded that there is an imbalance in the bargaining power between farmers and processors. Much of the information in this appendix summarises the submissions and report of the HLG.¹⁸

According to the HLG, the production chain arrangements and the long period of high institutional prices and fixed quotas did not give incentives for market participants to respond to market signals. For example, despite low demand in 2009 and low prices, the level of supply in many member states did not respond, leading to “milk being poured on the streets” in Europe.

The EC is currently proposing a regulation to implement a number of significant changes in the dairy sector.¹⁹ The regulation aims to improve the contractual relationships between farmers and processors, including allowing farmers (subject to certain thresholds) to collectively bargain through producer organisations with processors (and therefore be exempt from competition rules). This will allow farmers to negotiate raw milk prices collectively and allow farmers to be in a stronger bargaining position.

The proposal will provide for optional written contracts to be drawn up in advance of delivery of raw milk which would include the key aspects of price, the timing and volume of deliveries and the duration of the contract. The arrangements relating to collective

¹⁸ Information can be found on the EC website at http://ec.europa.eu/agriculture/markets/milk/hlg/index_en.htm (last accessed 4 July 2011).

¹⁹ The proposal will be discussed in the Council of Agriculture Ministers and in the European Parliament and is expected to come into effect in 2012. http://ec.europa.eu/agriculture/milk/index_en.htm (last accessed 4 July 2011).

bargaining do not apply where cooperatives are vertically-integrated in raw milk supply and processing.

The collective bargaining arrangements for the collection of raw milk by a farmer to a processor can be negotiated between producer organisations on behalf of farmer-members, subject to certain thresholds. As long as these thresholds are *not* exceeded, then the agreements will be exempt from competition restrictions of collective agreements. However, the regulation states that a competition authority may choose to investigate a collective arrangement in a member state below these thresholds where there are concerns that small and medium processors are potentially being excluded from the market.

Pricing Formulas and Member Country Market Dynamics

The determining formulas and factors involved in these calculations are private and seldom released. The government has little involvement in the market, except for price support arrangements in association with the Intervention Milk Price Equivalent (IMPE).

The EU buys an allotted amount of units of unsalted butter and skim milk powder when the prices for these products fall to a determined level, functioning much like the Commodity Credit Corporation (CCC) in the United States.

Another benchmark indicator used in Europe is the Milk for Cheese Value Equivalent (MCVE). This figure determines a factory-door price by calculating the returns on mild cheddar, whey butter, and whey protein. The MCVE has no direct bearing on the price received by farmers and is not used in any other calculations. Instead, the level of its changes is used to indicate the adjustment in the value of the milk farmers supply to their cooperatives, and in turn can hope to receive back.

The Netherlands

The dominant co-operative in the Netherlands (with 70-80 percent market share) is Friesland-Campina, the world's largest global dairy co-operative in terms of turnover. Retained earnings in 2010 were 8.7 percent of total assets. The co-operative was created (subject to strict undertakings) in 2008 via a merger between two large dairy cooperatives, and required explicit clearance from the EC. Other dairy companies include DOC Kaas, Cono Kaasmakers, and Bel-Leedamer.

The farm gate milk price is determined on the basis of an index of weighted average of the raw milk price paid by dairy cooperatives in Denmark (Arla), Germany, Belgium (Milcobel) and the Netherlands (DOC, Cono, Bel-Leedamer).

Before merging with Friesland, the farm gate price was calculated by Campina *ex-post* to reflect the financial performance achieved (revenues, cash costs, and capital costs). The farm gate price was based on the net result of the cooperative with part of the net profit reserved for re-investment in the co-operative. The remaining net profit was paid to the member-farmers through the same average milk price, irrespective of where these members are located

On top of the milk price, farmers were granted member bonds and member certificates, which are financing instruments awarded to member-farmers on the basis of the quantity of milk delivered by them in a given year. The compensation or interest rate payable on such instruments for financing the company is independent of the quantities of milk that such investors deliver to the company. Therefore, members are remunerated for financing the company through annual interest on bonds. They also have the option of cashing the value of these bonds upon termination.

Friesland pays a dividend to its current and retired members at the end of the fiscal year. The amount paid depends also on the business results of the cooperative and is the same for each member. The so called “performance” payment equals 25 percent of the net profits, while 75 percent of these profits are added to the reserves of the company. Of this, 60 percent is added to the reserves directly and 15 percent through the issuance of bonds to members.

Access to raw milk for competitors is mandated through the Dutch Milk Fund (DMF)—similar to the framework in New Zealand’s DIRA. The DMF is an independent non-profit organisation which acts as a mediator between Friesland-Campina and potential access-seekers. A “default” maximum quantity of raw milk for competitors is set at 1.2 billion kg. Incentives are designed to provide access for competing processors to the source of raw milk—farmers—through “start-up” subsidy scheme. This aims to encourage exit from the dominant cooperative Friesland-Campina.

The DMF scheme is intended to remain in operation until the volume of raw milk to be made available by Friesland-Campina through the DMF has been reduced to zero following farmers departing to supply to other milk processors. The volume will be reduced every year until newcomers in the downstream markets have been able to constitute their own supply platform.

The DMF price for raw milk is the same as the guaranteed price that the merged entity will offer to its member-farmers **minus** 1 percent for the first five years. Thereafter, it will be the same as the guaranteed milk price.

Ireland

The Irish Dairy Board (IDB) is a commercial cooperative, and owner of the Kerrygold brand of butter and cheeses. Kerry is an international food processor with 140 factories in 19 countries. It had a turnover last year of €4.8 billion and profits of just under €300 million. At the initial public offering in 1986, the share capital was valued at the equivalent of €50 million. At today’s share price of approximately €20, the cooperative is worth close to €800 million. The annual dividend is €9 million. Add in the current value of the 48 million shares dispersed to members since 1993, and the collective shareholding of Kerry’s farmers is an estimated €1.8 billion.

Kerry started as a dairy co-operative in the south west of Ireland. From 1986, its model retained some cooperative ownership of the public company, and was imitated by Avonmore Foods, Waterford Foods, Golden Vale, and the Irish Agricultural Wholesalers Society.

Farmers clubbed together to form Kerry by buying local dairy processing and collection assets from the state, in order to keep control of the downstream operations. The industry was adapting the EU’s introduction of production quotas for milk, aimed at restricting farmers’ output. Kerry was at the time the smallest and least resourced of Ireland’s big six milk cooperatives.

As with Fonterra, farmers are both suppliers to the company, and company shareholders. The issue is often highlighted at annual meetings where farmer-shareholders press for milk price increases. As a company buying bulk milk for processing cheese, milk proteins and other products, there is an incentive to keep prices low. The farmers, on the other hand, want to maximise the price received for their production.

Driving earnings and meeting its responsibilities to the members of the dairy co-operative was initially very difficult. If there is a conflict today, it is between those farmer-shareholders (who are still milk producers) and those who have retired or

inherited shares. Dry shareholders make up two-thirds of the cooperative's 12,000 members. Those engaged in milk production have seen the rise in the Kerry share price more than compensate for declines in the milk price.

Germany

Nearly two-thirds of German milk is processed by dairy cooperatives, but there is no dominant dairy company. Market players include Friesland-Campina, NordContor, Nordmilkch, Humana Milcunion, and Hochwald.

Private cooperatives use two price setting systems, either a reference price plus a top-up, or a fixed price between farmer and cooperative. A survey was carried out in 2008 among 161 dairy farmers. Most farmers (71.2 percent) delivered their milk to a dairy cooperative and 72.8 percent based their decision on price. 65 percent of producers were critical of price setting, while 35 percent approved or had no opinion.

The main factors influencing the price setting of dairy cooperatives include long-term orientation, followed by support for cooperatives, economic power of supermarkets, importance of milk income for farm income, and the age of the farm manager.

Denmark

Arla is the third largest global dairy co-operative in terms of turnover. Arla uses a common milk pricing formula across both Denmark and Sweden. When the merger between Arla and MD foods occurred (2000) two separate raw milk prices were used in the two countries due to the additional earnings in the Swedish market (in 2000, Swedish dairy farmers received a 18 percent higher milk price than that paid to Danish dairy farmers). This difference was phased out in three years, as per the original agreement.

The state plays only a minor role in regulation of Danish dairy market, and the EU framework has largely superseded this role.

Sweden

The performance price is a key figure for Arla. This includes everything that Arla has paid out for milk during the year as well as the year's profits. The performance price is based on the amount of milk (in kg) supplied by the owners during the preceding year.

Following a decision by the Swedish Competition Authority, Arla undertook to introduce a clear amendment to its membership rules, giving Swedish members the right to deliver up to 50 percent of their milk production to dairy companies other than Arla.

Finland

Valio is the main dairy producer in Finland with a market share of approximately 86 percent. Valio procures raw milk for processing primarily from the milk producers of the dairy co-operatives committed to the company. Milk is supplied to Valio Group dairies by some 9,200 milk producers. Arla is also a minor player in Finland.

Valio pays its owners a monthly advance for raw milk, using equal criteria, proportioned to composition, quality and the time at which the milk is produced. In addition to the advance, Valio pays for the precise milk volume afterwards and then a dividend after the closing of the accounts.

Valio's group financial goal is to have a milk margin that is on par with the best European dairy companies. The milk margin is equal to the net turnover minus other costs excluding depreciation and the producer price and interest on shareholder loan paid to the owners. Retained earnings in 2010 were 15.2 percent of total assets, with annual growth in sales between 2003 and 2008 approximately four percent.

Valio actively co-operates with Finnish and international universities and research institutes. The research goal is to utilise the diversity of milk as a raw material and develop products for the promotion of health and well-being, as well as general marketing potential.

B.5 United States

A total of 196 cooperatives sold 86 percent of all milk sold in the United States in 2002, with five cooperatives accounting for half of all milk sold. 62 percent was sold raw, and the remaining 38 percent processed.

There are currently two programmes to regulate raw milk prices in the United States:

- The Federal Milk Price Support Program, which began in 1949, and
- Federal Milk Marketing Orders (FMMOs), which started under the Agricultural Marketing Agreement Act of 1937.

Through the Federal Milk Price Support Program, the government purchases dairy products that cannot be sold commercially. Prices are set at levels intended to enable processors to pay farmers the announced support price for milk. Cooperatives are thus assured of a market for their products at federally set minimum prices.

FMMOs require milk processors (called handlers) to pay no less than an established minimum price for the “Grade A” milk they purchase from farmers. A classified pricing system requires handlers to pay a higher price for milk used for fluid consumption than for milk used in manufactured dairy products. According to the United States Department of Agriculture, the three major objectives of FMMOs are to:

- Assure consumers of an adequate supply of milk at a reasonable price
- Promote producer price stability and orderly marketing, and
- Provide producer prices to ensure an adequate current and future “Grade A” milk supply.

B.6 Canada

Canada uses a milk quota supply management system. Through this system, the Canadian Milk Supply Management Committee (CMSMC) estimates domestic demand for milk by consumers, and sets the national target for production.

The price to be paid to the producer is then set by the Canadian Dairy Commission (CDC) based on an annual study of production costs. Production in excess of a farmer’s quota is purchased at reduced or zero price. Producers own a number of shares in the quota and are required to increase or decrease production for their quota as determined by the demand.

The CDC operates a supply management system that works to plan annual production. Under the National Milk Marketing Plan, the CMSMC establishes the market-sharing quotas (MSQ) for the country, which the CDC monitors and adjusts when necessary. Target production is measured in terms of butterfat. The CMSMC gives each province a share of the MSQ, which the province allocates to individual producers.

Like the United States, the milk produced in Canada is priced with a Harmonized Milk Classification System, breaking down the end use of wholesale products into five classes. Class I consists of fluid milk, Class II of most soft products (except butter), Class III for cheeses, Class IV is butter, milk powder, and certain components like casein, and Class V

includes ingredients used elsewhere in manufacturing. Each class has multiple subsets that further organise the products.

Revenues from milk components used in rennet casein are pooled among all the provinces, and CDC receives milk utilisation declarations from all provinces on a monthly basis for pooling purposes.

The CDC annually determines support prices for butter and skim milk powder. They work much like the United States CCC in purchasing butter and skim milk powder at this established price, creating a support floor on the market. Once a year the CDC collaborates with the provinces in a national study on the farmer's cost of production. In addition to this, the CDC holds a forum with producers, processors, restaurant owners and consumers.

Provinces in Canada function in similar ways as marketing orders in the United States. While the government has federal authority over the marketing of industrial milk and products (solid goods), provinces regulate the marketing and export trade of fluid milk. Provinces generally license producers, distribute milk quotas to producers, determine the prices charged to processors, and some assume other specific responsibilities, such as negotiating shipping costs with transportation agencies.

There are two pooling agreements among provinces:

1. The P5 "All Milk Pooling" (five signatory provinces) pools both industrial and fluid milk, transportation costs, and provides for multiple component pricing, a daily quota system and quota trade, and the pricing of components based on their end use in products, and
2. The Western Milk Pooling Agreement (WMP, containing the four western provinces) has been engaged in discussion on a pricing system that provides fluid milk pricing that allows for the consumer price index, the cost of producing milk, and farmers' disposable incomes.



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