



Review of 2015/16 Milk Price Calculation

Report to Open Country Dairy

**September
2016**

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1 Introduction and Summary

The Commerce Commission (Commission) has released its draft report (the Draft Report) on its review of the 2015/16 milk price calculation. In the Draft Report the Commission states its draft conclusion that the asset beta used by Fonterra of 0.38 satisfies the purpose of the Dairy Industry Restructuring Act 2001 (DIRA), being to provide Fonterra with an incentive to be efficient while providing for contestability in the market for the purchase of milk.¹ The Commission has also published further analysis by Dr Martin Lally (the August Paper) on the asset beta including responses to submissions the Commission received on the asset beta and further questions raised by the Commission in response to submissions.²

Open Country Dairy (Open Country) has engaged Castalia to review the Draft Report and Dr Lally's August Paper, including to:

- Provide an estimate of the asset beta of the notional processor
- Comment on the appropriateness of using on-GDT and off-GDT sales in estimating the notional processor's revenues.

Dynamics in the New Zealand dairy industry over the past 15 years are consistent with the asset beta being below the appropriate level

The Commission is right to consider the theoretical arguments for asset beta alongside actual market conduct. However, rather than giving the Commission comfort that competition is thriving, we are concerned that an artificial milk price is having detrimental effects on the market. In the 15 years since Fonterra was formed, we would have expected significant entry into the dairy processing industry. While we have seen entry:

- That entry has been concentrated in the last eight years and has not removed Fonterra's dominant market position
- That entry has been partially underwritten by subsidised prices for milk under the Dairy Industry Restructuring (Raw Milk) Regulations (DIRA Milk Regulations)
- Downstream market dynamics are likely supporting the level investment that has been observed, including processors subsidising their purchase of milk through value-add operations and international firms entering for security of supply reasons.

This evidence underpins the need to closely examine the appropriate asset beta as capital costs are a key driver of the overall milk price and its contestability.

The asset beta of 0.38 is inappropriately low for a dairy commodity processing business—and we estimate the notional processor's asset beta to be 0.51

Dr Marsden and Dr Lally estimate the asset beta based on the notional processor being 'close to riskless'—on the basis that Fonterra passes on almost all commodity price risk to farmers. However, Dr Marsden and Fonterra both acknowledge that no processor replicates Fonterra's approach of passing on almost all commodity price risk to farmers. While there are some exceptions, our research finds the same result. Since Fonterra has a dominant market position, the way it allocates risks is not relevant. Further, since virtually every processor shares in the risk of commodity price fluctuations, the notional processor

¹ Section 150A of the Dairy Industry Restructuring Act 2001.

² Dr Martin Lally 'Assessment of the Asset Beta for Fonterra's Notional Business: Further Analysis' 1 August 2016.

should be assumed to do the same. Indeed, there are good conceptual reasons why processors would share in commodity price risk since they have the best information and ability to manage it. We would be surprised if the Commission found that a risk allocation that is inconsistent with that replicated in markets worldwide would be considered to be practically feasible under DIRA—and we understand Open Country’s legal counsel agree with this view.

Dropping the idea that the notional processor is a tolling operation, and focusing on the fact that it is likely to share in risks in similar ways to that evidenced in processors operating in markets internationally, we maintain our conclusion that market comparators are the appropriate starting point for estimating the notional processor’s asset beta. Further, we find that the only reason to adjust the beta is the one we already provided—the extent to which market comparators operate in business divisions with a higher exposure to systematic risk.³ Since Dr Marsden already estimates a subsample of dairy processors that focus on commodity processing, Dr Marsden’s analysis should be used to set the notional processor’s beta. Dr Marsden finds a range of 0.41 to 0.61—taking the mid-point of this range is a reasonable approach to estimating asset beta in the absence of evidence to the contrary, so we find that the asset beta of the notional processor is 0.51.

Setting the asset beta below the appropriate level has significant negative consequences for dairy markets

Since the asset beta is a sensitive input, setting it too low leads to a significant inflation of the milk price, raising the bar for entry and expansion by competing processors. While the Commission might consider this as improving the incentives for Fonterra to be efficient, two counter-arguments are that:

- Flowing through this change in risk allocation into the manual would in fact improve the incentives for Fonterra to be efficient since Fonterra would share in the risk of its decisions in how it allocates milk to the production of various commodities
- There is a trade-off here between actual and theoretical discipline. In theory, putting more pressure on Fonterra’s costs improves its incentives to be efficient, however, the trade-off is that artificially-established milk prices deter competition and therefore lessen actual competitive pressure. We see this as particularly important to ensure that DIRA supports dynamic efficiency and not simply cost-focused productive efficiency.

GDT prices should continue to be used to estimate the notional processor’s revenues

The price data used to estimate the notional processor’s revenue need to satisfy DIRA. Accordingly, the price data should represent the efficient sales the notional processor would expect to make from exporting the Reference Commodity Products to customers overseas.

Based on our understanding of GDT sales, the GDT platform is the best data available since GDT is open to a wide number of buyers, uses auctions to set the price, and customers can and do buy dairy products off-GDT. The main difference between on-GDT and off-GDT sales is that the off-GDT market incorporates sales with different characteristics since we understand that many off-GDT contracts are typically longer-term, provide greater security of supply, and involve some degree of product customisation.

³ See Castalia ‘Report to Open Country: Asset Beta and Specific Risk Premium Reports’ 17 June 2016, accessible at [this link](#).

Accordingly, using off-GDT sales does not improve the representativeness of the notional processor's revenues—it changes what the notional processor is assumed to sell.

Longer-term contracts with more stability and security are more akin to hedges in the electricity market and involve the provision of a financial product in the form of greater certainty over price and supply. To provide such hedging products, the notional processor would need to hold more capital to handle the volatility in input prices while providing more fixed output prices. Since that capital has a cost, the Commission can either:

- Use only on-GDT sales and assume that the notional does not operate such a business
- Use a mix of on-GDT and off-GDT sales based on an efficient strategy, and incorporate the additional capital costs of offering hedging products.

As economists, it seems more suitable to continue using only on-GDT sales as using off-GDT sales involves reconceptualising the notional processor as a wider business than seems to have been intended.

In the rest of this report, we set out:

- Our views on the market dynamics since DIRA was enacted in 2001 (Section 2)
- The methodology we apply to estimate the notional processor's asset beta (Section 3)
- Our views on the appropriate price data to use in estimating the notional processor's revenues (Section 4).

2 Market Dynamics Since DIRA Was Enacted

As discussed in Section 3, the notional processor's asset beta should be significantly higher than that currently assumed—with the consequence that it is reducing competition in the markets for raw milk. The Commission should naturally look to the market dynamics that have played out in the last 15 years to see whether they are consistent with this logic.

We have concerns about the way the New Zealand dairy processing market has operated over the last 15 years. In our view, the dynamics in the dairy sector over the last 15 years are consistent with a milk price that is higher than efficient levels—driven in part by the asset beta being too low. In the 15 years since Fonterra was formed, we would have expected significant entry into the dairy processing industry to the extent other processors are more efficient than the notional processor. While some entry has occurred, it should be interpreted in the following context:

- That entry has been concentrated in the last eight years and has not removed Fonterra's dominant market position
- That entry has been partially underwritten by subsidised prices for milk under the Dairy Industry Restructuring (Raw Milk) Regulations (DIRA Milk Regulations)
- Downstream market dynamics are likely supporting the level of investment that has been observed, including processors subsidising their purchase of milk through value-add operations and international firms entering for security of supply reasons.

Entry has been concentrated in the last eight years and has not removed Fonterra's dominant market position

Despite 15 years since Fonterra was formed, and legislation designed to encourage new entry (including providing guaranteed access to milk at a subsidised price), Fonterra still has a dominant market position in the farm and factory gate markets.

Fonterra's dominance can be seen in capital investment in new plant, and plant upgrades and expansions, and in behaviour regarding milk volumes and switching:

- **Capital investment.** The available evidence suggests that, since the formation of Fonterra, Fonterra has invested more in capital expenditure in New Zealand than all other processors combined. Our best initial estimate is that Fonterra has invested 10 to 20% more than all other processors combined.⁴
- **Milk supply volumes.** While independent processors are gaining in overall market share, over the six-year period from 2008 to 2014, Fonterra has increased its milk supply by more than double the amount it has lost to independent processors.⁵ The main reason independent processors have gained market share therefore seems to be from new conversions. This suggests there is more limited switching than has been anecdotally suggested, and indicates that any continued gain in market share by independent processors may be significantly tied to future conversions maintaining at the pace they have in the recent past.

Based on our understanding, independent processors also remain significantly less than the size NERA's analysis for the Ministry of Agriculture and Forestry indicated was necessary for robust competition.⁶ In addition, the profitability of those who have invested is mixed,⁷ and one processor collapsed—with its assets acquired by Fonterra.⁸ This is despite DIRA facilitating new entry, including through subsidies for milk that processors have been able to receive from Fonterra at the factory gate in the past.⁹

Downstream market dynamics are likely supporting the level of investment that has been observed

Even if processors do not expect to be able to generate a risk-adjusted return on wholesale commodity operations, they may nevertheless find it profitable to pay a higher than efficient milk price to the extent that over-payment supports profitable

⁴ Figure estimated based on publicly available financial statements and, where no financial statements are available, company press statements and secondary analysis.

⁵ Fonterra has increased its milk supply by approximately 390,000 kgMS over the period 2008 to 2014, while independent processors have increased their milk supply by only 190,000 kgMS. Analysis using Fonterra's public reports and New Zealand milk supply data from the Dairy Companies Association of New Zealand—accessible at [this link](#).

⁶ NERA 'An Assessment of the DIRA Triggers: Report to Ministry of Agriculture and Forestry' 30 March 2010, at p.27, accessible at [this link](#). Referred to in: Ministry of Agriculture and Forestry 'Extension of the Pro-Competition Provisions of the Dairy Industry Restructuring Act 2001—Regulatory Impact Statement' July 2010, accessible at [this link](#).

⁷ See NERA 'An Assessment of the DIRA Triggers: Report to Ministry of Agriculture and Forestry' 30 March 2010, at p.14, accessible at [this link](#).

⁸ See: Commerce Commission Clearance Register – Fonterra Co-operative Group Limited and New Zealand Dairies Limited: <http://www.comcom.govt.nz/business-competition/mergers-and-acquisitions/clearances/clearances-register/detail/758>.

⁹ Under the Dairy Industry Restructuring (Raw Milk) Regulations.

downstream operations. We observe two forms of downstream operations that are likely interacting with the market for raw milk:

- Some processors that have entered since the formation of Fonterra have significant value-add businesses—the success of which may be being used to cross-subsidise their purchase of milk. Data is limited on this, but Synlait investor presentations recently have noted that, despite only contributing 16% of revenue, nutritional products are the “primary driver behind growth” of profitability¹⁰ Unlocking the full value of these value-add businesses would require a milk price set at an efficient level.
- Some investment in processors is from companies operating in downstream markets that are seeking security of supply. For example, the investment by Yili (China’s largest dairy company) in Oceania Dairy provides Yili with security of supply for its downstream operations in China.¹¹

These characteristics of businesses entering the market help to explain how entry can and has occurred with a milk price that has departed significantly from efficient levels.

3 The Appropriate Methodology for Estimating the Notional Processor’s Asset Beta

The discussion on the milk price regulatory oversight regime has generally proceeded on the basis that the notional processor is substantially similar to Fonterra. It appears to be thought of by Fonterra, Dr Marsden, Dr Lally and by the Commission as being subject to the same regulatory environment and operating with the same allocation of risks—that is, ‘close to riskless’. Of particular importance is the ex-post calculation of the milk price by Fonterra that contributes to Fonterra passing on substantial risks to farmers and leaves Fonterra’s equity holders bearing limited risk. This risk allocation is central to Dr Marsden and Dr Lally’s conclusions that the notional processor is close to riskless and therefore the asset betas they derive.

However, we would be surprised if this interpretation of the notional processor satisfied DIRA and the requirement for the milk price to be practically feasible. Open Country has received legal advice that such an interpretation would not satisfy practical feasibility. On that basis, and since, to the best of our knowledge, almost all large milk processors globally share in commodity price risk, this allocation of risk should be incorporated in the understanding of what the notional processor is—and therefore its asset beta.

Open Country has asked us to provide an estimate for the notional processor’s asset beta. Below we set out:

- Our understanding of DIRA
- DIRA’s conceptual basis
- The allocation of commodity price risk
- Our methodology and estimate for the notional processor’s asset beta.

¹⁰ Synlait ‘FY16 Interim Report Presentation’ 31 March 2016, at p.19 accessible at [this link](#).

¹¹ See Oceania Dairy ‘Oceania Dairy: Our Story’, accessible at [this link](#).

Our understanding of DIRA

DIRA's aim is to ensure that Fonterra is incentivised to be efficient and that processors that are more efficient than the notional processor can enter the market and obtain market share. This aim is implemented under DIRA through:

- **The purpose statement of DIRA.** Section 150A of DIRA states that the purpose of the milk price is to provide an incentive for Fonterra to be efficient while providing for contestability in the market for the purchase of milk. Section 150A further colours contestability by stating that the milk price will be contestable if it is “practically feasible for an efficient processor”.
- **The permitted assumptions.** These are assumptions that can be made in setting the milk price and fall into two categories:
 - **Permitted assumptions that are simply extensions of DIRA's purpose statement.** In terms of providing Fonterra with incentives to be efficient, this includes that an efficient processor would operate at scale and produce products that are expected to be the most profitable. In terms of providing for contestability, the notional processor must be assumed to process milk into products at practically feasible yields
 - **Permitted assumptions that provide for pragmatism in setting the milk price.** There are cost components that would be challenging to estimate and may not materially improve the estimate over and above using Fonterra's actual costs—for example the notional processor's foreign exchange costs.

Based on our understanding and advice received from Open Country's legal advisors, the purpose statement and permitted assumptions, taken together, implement the conceptual basis of DIRA by promoting a milk price that:

- Is based on an efficient processor—and so incentivises Fonterra to be efficient by assessing Fonterra against a benchmark
- Is practically feasible—ensuring that efficient processors can enter the market. If the milk price was set based on unattainably high ‘stretch’ targets, then the inability to achieve them would prevent entry by firms that are potentially significantly more efficient than Fonterra—harming competition in the market for milk, reducing the competition Fonterra is exposed to, reducing dynamic efficiency, and creating wider negative consequences for the economy.

We agree with Dr Lally that setting the milk price based on what an efficient processor could achieve provides Fonterra with an incentive to be efficient.¹² To the extent that the milk price is set based on the notional processor having costs that are lower than Fonterra's actual costs, this difference goes to earnings and will reduce Fonterra's profitability. Although Part 4 of the Commerce Act 1986 has much more direct price intervention, this aspect of DIRA has a similar logic to Part 4, where targets and regulatory allowances are set for electricity and gas distribution businesses and their profitability depends on the extent to which they under/out-perform these allowances.

Legal advice Open Country has received indicates that DIRA's language presents a clear Parliamentary intention to link the two purposes of efficiency and contestability—the milk price must provide Fonterra with an incentive to be efficient “while providing for”

¹² Dr Martin Lally ‘Assessment of the Asset Beta for Fonterra's Notional Business: Further Analysis’ 1 August 2016.

contestability. These objectives must be balanced for the benefit of New Zealand. There is an obvious tension between these two parts of DIRA's purpose, but if a component in the milk price manual is not practically feasible—not achievable for a real-world efficient processor—then based on legal advice that would breach DIRA.

DIRA's conceptual basis

DIRA's role in the merger of Fonterra was to ensure that the creation of a processor with a dominant national market position had incentives to set an efficient milk price for farmers.

Since Fonterra is a co-operative, it would not be expected to act like a typical buyer with market power and drive down the input price of milk—the same farmers receiving the low milk price would receive the higher profits (dividends) from doing so. As a co-operative, Fonterra's incentives would instead be to act in ways that reduce competition for raw milk and reduce competition in downstream markets which use raw milk as an input.¹³ For example, Fonterra might pay an artificially high milk price and a low dividend (which its farmers would be neutral to) but which would preclude investor-owned processors from entering the market—harming competition. The preclusion of entry by investor-owned processors would be expected to be particularly harmful to dynamic efficiency given the well-acknowledged limitations of co-operative companies in capital-intensive businesses in the economics literature.¹⁴

The primary way DIRA sought to regulate Fonterra's behaviour and prevent these kinds of outcomes was by regulating Fonterra's conduct—by allowing farmers to freely enter and exit Fonterra, and ensuring no discrimination between farmers. However, Fonterra also needed a methodology to set the milk price because it valued shares for entry and exit by farmers. Through the introduction of external equity investors in Fonterra through Trading Among Farmers, this milk price methodology took on the additional role of ensuring that those external equity investors had confidence in the returns they received when they had no voting rights in the co-operative. The purpose of that methodology is to ensure that the price Fonterra pays for milk reflects the value of milk and the dividend reflects the cost of capital—that each component is set efficiently.

Conceptually, then, the value of milk can be set based on the residual once all other costs are deducted from the revenue of the notional processor (including a return on and of capital). If the milk price reflects the value of milk, this encourages efficient entry into the market since another processor would only be able to enter if they could generate greater value from milk than the benchmark.

Rather than setting the milk price based on the value of milk to Fonterra (based on Fonterra's actual revenues and costs), the milk price is set based on the value of milk to a hypothetical efficient processor (the 'notional processor'). This has the effect of setting a high bar for entry—where entry can only occur if processors are more efficient than this notional processor—or can subsidise their purchase of milk through their operations outside of processing milk into commodities.

The allocation of commodity price risk

The allocation of commodity price risk is central to the practical feasibility of the asset beta and therefore the milk price. By commodity price risk, we mean the potential for variation

¹³ Evans, Lew., & Quigley, Neil 'Watershed for New Zealand Dairy Industry', July 2001 *ISCR Monographic Series*, accessible at [this link](#).

¹⁴ See, for example, Baumer, David., Masson, Robert., & Masson, Robin 'Curdling the Competition: An Economic and Legal analysis of the Antitrust Exemption in Agriculture' *Villanova Law Review*, 31, 182-252.

between the price a processor achieves for the sale of the processed milk products it produces and the price it pays suppliers for milk as an input. Dairy commodity prices fluctuate significantly—a component of which is systematic. Accordingly, the extent to which shareholders bear this risk significantly affects the level of systematic risk they are exposed to and therefore the returns they would expect.

Currently, the milk price manual allocates commodity price risk to farmers because, holding costs constant, any change in revenue leads to a change in the milk price. Importantly, the milk price is set via an ex-post calculation such that all variation between forecast and actual prices achieved flows through to farmers. The one exception to this risk allocation is that if assets become stranded due to changes in the Reference Commodity Products, then to some extent this may be borne by shareholders, although how this works under Rule 30 is unclear and involves Fonterra having significant discretion—as the Commission has pointed out.¹⁵

It is the foundation of Dr Lally and Dr Marsden’s¹⁶ analysis of the notional processor’s asset beta that the notional processor is ‘close to riskless’. As Dr Lally states, his assumption that the notional processor pays for milk on the basis stated above “exert[s] a significant downward effect upon the asset beta”.

However, the allocation of commodity price risk, like all other components of the milk price manual, must comply with DIRA. Since the permitted assumptions do not provide for how commodity price risk is allocated, we must assess what risk allocation would provide Fonterra with an incentive to be efficient while being practically feasible. Our view is that Fonterra sharing commodity price risk would in fact satisfy practical feasibility while also improving the incentives for Fonterra to be efficient.

As economists, our view on the appropriate test for what allocation of commodity price risk is practically feasible is the way commodity price risk is allocated in practice in competitive or contestable dairy markets. As summarised in Table 3.1, our analysis of the operations of large processors internationally finds that almost all processors operating in markets where prices are not directly regulated bear a significant degree of commodity price risk. Our findings are consistent with the statements of Dr Marsden including based on Fonterra evidence that Fonterra is not aware of any processors internationally that allocate commodity price risk in the same way as Fonterra/the notional processor.¹⁷

Table 3.1: Allocation of Commodity Price Risk by a Sample of International Processors

Processor	Country	Corporate structure	Allocation of commodity price risk
Friesland Campina	Netherlands	Co-operative	Friesland Campina pays a guaranteed ex ante milk price for each month of supply, and so is exposed to monthly variance between prices achieved and milk prices paid
Muller	United Kingdom	Investor-owned	Muller use a non-aligned pricing system which protects farmers from extreme fluctuations in

¹⁵ Commerce Commission ‘The Dairy Industry Restructuring Act 2001: Review of Fonterra’s 2014/15 Milk Price Manual: Final Report at para X10.2, accessible at [this link](#).

¹⁶ Alistair Marsden ‘Update on Asset Beta for Fonterra’s New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra’s Notional Business’ 10 April 2016, at para 5.12, accessible at [this link](#).

¹⁷ Alistair Marsden ‘Update on Asset Beta for Fonterra’s New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra’s Notional Business’ 10 April 2016, at para 5.9, accessible at [this link](#).

			commodity prices. A retailer supplement is then added to the non-aligned price based on sales prices achieved
Bongrain, Danone, Lactalis and Sodiaal	France	Investor-owned	The milk price in French contracts between producers and dairy companies passes on limited price fluctuations to farmers ¹⁸
Arla	Denmark	Co-operative	Arla sets monthly prices in advance for milk based on a base value and supplementary payment ¹⁹
Warrnambool Cheese & Butter (WCB)	Australia	Investor-owned	While some reconciliation of actual prices achieved and prices in advance occurs, WCB passes on risk asymmetrically by not clawing back ‘over-payments’ to farmers. ²⁰

Source: Publicly available information on dairy processors

There are exceptions such as Kerry (Ireland) but they appear to be limited. In addition, two notable exceptions are Fonterra and Murray Goulburn’s operations in Australia. However, legal action has arisen over the potential for clawback of over-payments which may well lead to some form of greater risk sharing in line with international comparators.²¹

Our findings are also consistent with how we would have expected commodity price risk to be allocated. Risks are efficiently allocated when they are borne by the party with the best information, ability and incentives to manage them:

- **Information**—processors have better information on product optimisation and processing investment decisions than farmers
- **Abilities**—processors have the power to decide what products to produce and how to sell it
- **Incentives**—while incentives depend on regulation in this case, processors typically maximise their profits by maximising the value of the product they sell, and therefore are well-incentivised to manage commodity price risk.

We also add that Fonterra has in the past come under pressure to bear a greater extent of commodity price risk through both the Fonterra farmer support interest-free loans and the oversubscription by farmers in Fonterra’s Guaranteed Milk Price scheme.²² These arrangements come closer to the operation of both international comparators and the competitive New Zealand fringe of dairy processors—as they generally do share in commodity price risk and we understand that the provision of farmer support during the recent commodity price downturn was widespread.²³

Since no processors globally are ‘close to riskless’ in the way that the notional processor is currently assumed to be, we do not see how it can be practically feasible to maintain this risk allocation in the Manual. This is consistent with legal advice that Open Country has

¹⁸ LTO Nederland ‘LTO International Comparison of Producer Prices for Milk 2015, accessible at [this link](#).

¹⁹ LTO Nederland ‘LTO International Comparison of Producer Prices for Milk 2015, accessible at [this link](#).

²⁰ Warnambool Cheese & Butter ‘Milk Supply Handbook 2016/17’, accessible at [this link](#).

²¹ DairyNews Australia ‘Class Action Against Clawbacks Builds’ 15 August 2016, accessible at [this link](#).

²² NZFarmer.co.nz ‘Farmers Rush to Fonterra’s Guaranteed Milk Price’ 25 June 2015, accessible at [this link](#).

²³ Open Country Dairy ‘Submission on Process and Issues Paper’ February 2016, accessible at [this link](#).

received. The notional processor must be more than simply a tolling operation, and it must bear the level of risk that is observed in markets internationally.

Importantly, this approach not only satisfies practical feasibility but would seem to also improve Fonterra's incentives to be efficient. The allocation of some commodity price risk to the notional processor would actually provide Fonterra with greater incentives to be efficient—since Fonterra's optimisation of what products it produces would influence earnings and therefore the dividends payable to shareholders and unitholders.

While this is the risk allocation that should be used to estimate the notional processor's cost of capital, this implies no requirement for Fonterra to change its approach to allocating risks. Rather, the benchmark against which Fonterra will be assessed should change—and it is up to Fonterra whether it changes its approach to allocating risks.

Our methodology and estimate for the notional processor's asset beta

Dr Marsden and Dr Lally's arguments for the notional processor's asset beta being low are built on the assumption that the notional processor passes on almost all commodity price risk to farmers (through an ex-post milk price) and thus the notional processor is 'close to riskless'. However, it seems to us that satisfying practical feasibility requires the notional processor to share commodity price risk with farmers since that is the risk allocation observed in dairy markets. Dr Marsden and Dr Lally's estimates therefore are based on a fundamentally different understanding of DIRA than we have. In our view, this position appears to be based on an unorthodox understanding of the key economic principles involved. Further, Open Country has received legal advice that the statutory interpretation underpinning Dr Marsden and Dr Lally's reports is inconsistent with DIRA and Parliament's intention.

On the basis that the notional processor allocates commodity price risk in the same way as replicated internationally, the primary reason for Dr Marsden and Dr Lally's asset beta estimates now does not apply. Dr Lally, in particular, focused on the asset beta of electricity lines businesses (ELBs) because they are more in the nature of a tolling operation. However, with the notional processor sharing commodity price risk, the notional processor cannot now be described as a tolling operation. Further, the reasons we originally stated for why electricity lines businesses are a poor comparator for the notional processor continue to be valid:

- **Consuming electricity from the distribution network is a necessity whereas dairy products are either not necessities or much less so.** Since the milk price manual assumes all processed milk is exported, only export customers are relevant to this question. For overseas consumers, processed dairy goods (like infant milk formula) are more of a luxury good (that is, they have a higher income elasticity of demand).²⁴ The greater income elasticity of demand of goods is a factor that Dr Lally (among others) has previously noted is an important driver of asset beta.²⁵

²⁴ Since asset betas estimate correlation between a firm's returns and that of the domestic market, a further question arises as to the correlation between global stock market returns. While there has not been a great deal of literature on this topic, globalisation and interconnectedness of global economies points to meaningful correlation. Those correlations are not constant over time, but some research on the last century of global equity markets observes relatively high correlation (0.7 to 0.8), and that correlation has grown significantly since the 1980's. See Quinn, D., & Voth, H-J. (2008) 'A Century of Global Equity Market Correlations', *American Economic Review: Papers and Proceedings* 2008, 98:2, 535-540, accessible at [this link](#).

²⁵ See Lally, M. (2016). 'Review of WACC Issues' 25 February 2016 at p.8, accessible at [this link](#).

- **The notional processor faces a much greater risk of asset stranding than an ELB.** Especially in the current operating environment, we would expect equity investors to take into account significant risks that the notional processor’s assets become stranded from structural changes in milk production throughout New Zealand. In addition, because the notional processor faces at least some competition for milk, it cannot simply pass on the costs of stranded assets in the way that an ELB can under Part 4 of the Commerce Act. It faces the risk of losing supply in the contestable market within which it operates.²⁶
- **There are greater growth options for dairy than for ELBs.** The conversion of land to dairy farming in New Zealand over the past decade demonstrates the growth options available to dairy. In contrast, the limited growth options available to ELBs have already been discussed extensively in the Commission’s consultation process on the asset beta for gas pipeline businesses. Dr. Lally (among others) has previously noted the presence of growth options as a factor indicating a higher asset beta.²⁷ These growth options sit alongside the potential for significant asset stranding. This is not inconsistent—rather, it highlights the volatility of the dairy processing business and its greater exposure to macroeconomic fluctuations.

Aside from removing ELBs as a relevant benchmark, we follow the approach to estimating asset beta that Dr Marsden takes, which is to:

- Estimate asset betas for a range of comparator companies
- Analyse estimates by others in the market as a consistency check
- Undertake a conceptual sense check on the figure.

Estimate asset betas for a range of comparator companies

We must first identify a range of comparable companies that operate as dairy commodity processing businesses. Dr Marsden has already undertaken this process in his report, and Dr Marsden’s list of comparator companies appears broadly appropriate (although the precise list of comparators is open to discussion). Dr Marsden isolates a sub-sample of businesses which have material commodity exposure (and therefore relatively less exposure to non-commodity markets). Marsden’s analysis indicates that the asset beta range for these comparator companies with “material commodity exposure” is between 0.41 and 0.61.²⁸

The businesses Dr Marsden identifies generally have some level of non-commodity operations which would have differing exposures to systematic risk. However, our understanding is that there is limited evidence of ‘pure play’ commodity processors on which to base the asset beta, and attempting to make an adjustment without an empirical basis would be difficult to do with any precision. Accordingly, we do not favour making an adjustment to remove this effect. We favour isolating businesses which are the closest comparators available for the notional processor.

Taking the mid-point of the range of asset betas that Marsden finds, we estimate the notional processor’s asset beta as being 0.51.

²⁶ This argument has recently been made in the gas sector although it is more pronounced here. See: First State Investments ‘Comments on Professor Lally’s Review of WACC Issues’ 24 March 2016, at para 4.4, accessible at [this link](#).

²⁷ Lally, M. (2008). ‘The Weighted Average Cost of Capital for Gas Pipeline Businesses’ 28 October 2008 at 5.1.

²⁸ Alistair Marsden ‘Update on Asset Beta for Fonterra’s New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra’s Notional Business’ 10 April 2016, at p. 34, accessible at [this link](#).

Analyse estimates by others in the market as a consistency check.

Estimates by other brokers can help to provide assurance that the estimate of 0.51 is consistent with other research. Dr Marsden provides estimates by four brokers—highlighting that two estimates (0.45 and 0.55) estimate betas specifically for Fonterra’s commodity-based business rather than Fonterra’s business as a whole.²⁹ The estimate of 0.51 is in the middle of the range of these two estimates, supporting its reasonableness as an estimate.

Undertaking a conceptual sense check on the figure

An asset beta of 0.51 implies that only half the variation in returns for dairy processors is shared by movement in the New Zealand stock market. This still appears low to us—and we would have expected a greater degree of co-movement than this. This is consistent with statements by UBS Investment Research cited in Dr Marsden’s report that noted that the beta appears low compared with US and European beta estimates.³⁰ While dairy might only contribute approximately 4 percent to GDP, it has wide indirect effects on economic growth, including in the transport and logistics sectors. In addition, the major success of commodity dairy production in the past decade has been driven by economic growth in places like China—for these markets, milk products are more akin to a luxury good. However, without an empirical basis to make any adjustment, we do not favour any adjustment and maintain that the estimate of 0.51 should be used for the notional processor.

Removal of specific risk premium for asset stranding

The milk price manual currently allocates a limited amount of commodity price risk to shareholders in the potential for asset stranding from a change in the Reference Commodity Products. This is currently provided for as an uplift on the weighted average cost of capital, and Dr Marsden has provided an estimate of this specific risk premium based on subjective estimates of the potential value and likelihood of asset stranding. Since the market comparators in Dr Marsden’s sample are for companies that already bear asset stranding risk, a consequence of adopting the asset beta of 0.51 is that the specific risk premium for asset stranding should be removed to avoid double-counting.

4 The Appropriate Price Data for Estimating the Notional Processor’s Revenues

The price data used to estimate the notional processor’s revenues needs to satisfy the purpose of DIRA just like the asset beta. Accordingly, the data used to set the notional processor’s revenue should represent the efficient sales the notional processor would expect to make from selling the Reference Commodity Products.

On-GDT prices have been used for this purpose. Our understanding of sales on GDT is that they are open to a wide number of buyers, customers can and do buy dairy products off-GDT, and auctions are used to set prices. Based on these assumptions, we do not consider there to be any fundamental problem with the operation of the GDT platform. However, if any of these assumptions are incorrect, then this conclusion may need to be revisited.

²⁹ Alistair Marsden ‘Update on Asset Beta for Fonterra’s New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra’s Notional Business’ 10 April 2016, at para 6.4, accessible at [this link](#).

³⁰ Alistair Marsden ‘Update on Asset Beta for Fonterra’s New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra’s Notional Business’ 10 April 2016, at para 6.1, accessible at [this link](#).

Concerns have been raised about the relative price difference between on-GDT and off-GDT sales—particularly that the prices achieved off-GDT tend to be higher than the on-GDT price. The concern here seems to be that using only on-GDT sales is not representative of the sales the notional processor would be expected to make. The consequential concern would appear, then, to be that this reduces the incentives for Fonterra to be efficient because the notional processor is not being assumed to maximise its revenues—reducing the milk price and increasing Fonterra’s earnings.

However, incorporating off-GDT sales does not improve the representativeness of the notional processor’s revenues—based on our understanding of the markets, it changes what the notional processor is selling. We understand that on-GDT and off-GDT sales have different characteristics. As stated by the Commission, Fonterra’s global ingredients and global operations (GOGI) business’ off-GDT sales are characterised by:³¹

- Contracts extending over a period of greater than 5 months
- Security of supply
- Non-standard product specifications.

While it is also stated that off-GDT sales include sales to ‘high risk markets’ and customers unwilling to purchase on-GDT, the three characteristics above are very different to on-GDT sales.

Longer-term contracts like off-GDT sales that have more stability and security are more akin to hedges in the electricity market and involve the provision of a financial product in the form of greater certainty over price and supply. To provide such hedging products, the notional processor would need to hold more capital to handle the volatility in input prices while providing more fixed output prices. Since that capital has a cost, the Commission would seem to have two options:

- Use only on-GDT sales and assume that the notional does not operate a financial product business
- Use a mix of on-GDT and off-GDT sales based on an efficient hedging strategy, and incorporate the additional capital costs of offering hedging products into the milk price.

Our view is that it is more suitable to continue using only on-GDT sales as extending the notional processor into hedging operations would involve reconceptualising the notional processor as a wider business than was likely intended.

³¹ Commerce Commission ‘Addendum to Draft Report: Review of Fonterra’s 2015/16 Base Milk Price Calculation’ at footnote 1.



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