

Attachment 6: Asset beta and specific risk premium

Milk Price Group Paper

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Topic: Asset Beta and Specific Risk Premium

1 Executive summary

This paper sets out the Milk Price Group's (MPG's) assessment of an appropriate asset beta and specific risk premium (SRP) for use in the Milk Price with effect from the 2020/21 season (F21). Our assessment reflects the amendments to DIRA which require that the asset beta must be consistent with the estimated asset betas of other manufacturers of commodity dairy and other food products, noting that this amendment does not take effect until the 2021/22 season. We assume that compliance with this provision requires that we use the Commerce Commission's framework for the assessment of asset beta.

We conclude that, with effect from the current 2020/21 Season:

- An appropriate asset beta for the Milk Price calculation is 0.45.
- An appropriate Specific Risk Premium for the Milk Price calculation is nil.

We summarise below the key aspects of our analysis which support these conclusions.

The new DIRA requirements

- Under the new s 150C(4) of the Dairy Industry Restructuring Act 2001 (DIRA) the Milk Price asset beta must be 'consistent with' the estimated asset betas of (a) processors of dairy and other food products which (b) are characterised by uniform technical specifications and (c) are traded in significant quantities in globally contested markets.

Sources of risk relevant to the Milk Price calculation

- It is important not to lose sight of the purpose of the Milk Price calculation, and of the role of the asset beta in that calculation: under both the Manual and DIRA, the intent is that suppliers of milk to Fonterra receive a commodity-based return, calculated as commodity revenue less the costs, including capital costs, that would necessarily be incurred in the course of converting current-season milk into the commodities used to calculate the Milk Price.
- Equivalently, any costs, including capital costs, which would not necessarily be incurred by an efficient processor in generating the revenue stream used in the Milk Price calculation should not be deducted when calculating the Milk Price. In this context, to the extent a real world processor's normal pursuit of NPV-positive (to shareholders) investments increases its exposure to systematic risk, the associated increase in the processor's cost of capital should be borne by the firm's shareholders, not by its suppliers – otherwise, suppliers will be subsidising through a lower Milk Price the firm's pursuit of higher returns for its

shareholders.

Comparator set

- We have identified 19 firms (our Core Comparator Set) with some operations which appear to satisfy the new s 150C(4) criteria. All these firms also undertake a range of other activities, and 'manufacturing commodity food products for sale in global markets' generally constitute a relatively insignificant portion of their overall activities.
- We have identified a further five firms (our Extended Comparator Set) with operations which arguably come 'close to' satisfying the s 150(4) criteria, in that they manufacture food products which can be viewed as commoditised and sell them on either global market or on markets where prices can be expected to be correlated to global market prices. Again, the relevant operations generally comprise a relatively small proportion of the firms' overall businesses.
- We have excluded a number of firms included in the previous comparator sets employed by Fonterra's and the Commerce Commission's advisors (primarily Uniservices and CEPA). The excluded dairy firms do not have **any** operations which fall under the new s150C(4) definition, but instead buy commodity dairy products as inputs, rather than produce them as outputs (e.g., The a2 Milk Company), produce commodity dairy products but use them exclusively in their own further manufacturing processes (e.g., Nestlé), or purchase raw milk but process it solely into consumer-format products (e.g., Danone).

Estimation approach

- We estimated daily, weekly and four weekly-equity betas over the five-year periods to December 2018, June 2019, December 2019, June 2020 and December 2020.
- For the weekly calculations we averaged for each firm the results obtained by running five separate regressions on each Monday – Monday, Tuesday – Tuesday, etc, pair of percentage changes in share prices against percentage changes in the market indices, and for the four weekly calculations similarly averaged over 20 separate regressions for each comparator. This averaging approach, which has the advantage of using all available data, is supported by the Commerce Commission, but is often not employed.
- The estimated equity betas were de-levered using the 'no tax' Hamada formula to derive asset betas.

Average comparator asset beta

- The Core Comparator Set of 19 firms has an average asset beta of 0.47 across all methods and measurement dates, with a range of 0.44 to 0.52 across different combinations of methods and measurement dates.
- The five firms in the Extended Comparator Set have a higher average asset beta (an average of 0.59 across all methods and measurement dates, with a range of 0.53 to 0.70). However, given the small number of firms in the Extended Comparator Set we would not read much into these estimates.
- The Full Comparator Set (the combination of the Core Comparator Set and the Extended Comparator Set) has an average asset has an average asset beta of 0.50 across all methods

and measurement dates, with a range of 0.46 to 0.55 across different combinations of methods and measurement dates. Under the Commerce Commission's framework, when determining 'the' average comparator asset beta we should place most emphasis on the results for the full set.

Case for a downward adjustment to the average comparator asset beta

- The differences in the average asset betas for our Core Comparator and Extended Comparator Sets provide some evidence that firms with some operations which fully conform to the new s 150C(4) criteria have lower overall systematic risk than firms which do not. Given the small sample size for our Extended Comparator Set and the heterogeneity in both comparator sets we would not overemphasise the precise differences between the average asset betas for the different comparator sets.
- We present analysis demonstrating the likely impact of Synlait's evolving commercial relationship with a2, which strongly suggests that systematic risk attaching to Synlait's commodity operations is materially less than the systematic risk attaching to its non-commodity operations. This analysis illustrates that at least some of the non-commodity operations of the comparator firms have materially higher systematic risk than their commodity operations, and that for these firms their 'commodity division' asset betas would likely be lower than their overall asset betas.
- In his assessment of the merits of a downward adjustment to the regulatory asset beta for airfields, and an upward adjustment for gas pipeline businesses, Martin Lally makes the point that the approach used by the Commission to arrive at its adjustments results in "an extremely imprecise estimate for the beta deduction." Lally does not, however, suggest an approach which might result in a more accurate estimate, and the general tenor of his paper is that sample size and data issues, coupled with the heterogeneity of comparator firms, will inevitably mean it is simply not possible to arrive at precise estimates of appropriate differences in asset betas in these types of circumstances. We agree.
- In 2018 the Commerce Commission's advisor CEPA concluded that a downward adjustment of 0.05 to the average comparator asset beta would be reasonable. Like CEPA and Dr Lally we agree that it is not possible to derive an analytically robust adjustment, but that an adjustment of 0.05 to the average asset beta of 0.50 for our Full Comparator Set is reasonable, noting that a sound case could be made for a larger adjustment.
- Given the statistical imprecision in both beta estimates and in the estimation of an appropriate adjustment, we consider it reasonable to round the final beta estimate to 5bp. Coincidentally, given the average estimate for our Full Sample Comparator Set is 0.50 and our proposed adjustment is 5bp, our actual estimate of 0.45 is equal to our rounded estimate. However, if adjustments to the comparator set or estimation method resulted in minor changes – and particularly if the new estimate still fell in the range of ~0.48 – 0.52 – we would not recommend any adjustment to our proposed asset beta of 0.45.

Conclusion on SRP

- The SRP was first introduced to compensate for potential downside risk associated with stranded assets which the Commerce Commission believed should not be compensated for through the asset beta, mainly because the Commission considered this risk was unlikely to

be systematic.

- The Commission has recently restated its position on asset stranding risk in the context of fibre regulation, explaining it considers that “stranding risk is normally – but not always – non-systematic”¹ and more generally, that “compensation is only required for a risk when the risk is both asymmetric and material.”² From this perspective, we explain that:
 - Even if the NMPB’s asset stranding risk is non-systematic, its investors exposure to the risk is not material: the most likely cause of asset stranding is through a loss of milk supply, and the depreciation profile in the base milk price calculation means the NMPB is assumed to be replaced just under 3% of its plant each year. The NMPB is therefore exposed to stranding risk only to the extent that Fonterra sees its milk supply fall by significantly more than 3% p.a over an extended period. Even then, the impact of asset stranding would be relatively minor, since the homogeneity of the NMPB’s product mix and asset base means the assets which would be stranded would be the oldest, nearly fully depreciated, plant. (The principal other reasons why assets might be stranded relate to changes in the relative profitability of product streams, resulting in changes in the NMPB product mix, and technological change resulting in the economic obsolescence of some of the NMPB’s assets. We explain why we do not consider the NMPB’s exposure to asset stranding risk from either of these sources of risk is material.)
 - As the Commission explains in the Fibre Input Methodologies Reasons Paper, asymmetric risks of asset stranding can in effect be converted into symmetric risks through the adoption of expected economic lives for depreciation rates which render it equally likely, after accounting for stranding risk, that the actual lives will exceed or will fall short of the assumed lives.³ In this context, the base milk price calculation assumes asset lives which are shorter than the demonstrated economic lives of Fonterra’s actual powder assets.
 - It follows that any residual asymmetric stranding risk is clearly not material, and therefore does not require specific compensation through a separate risk premium.
- In contrast to the Commission, CEPA posited that stranding risk is more likely systematic, and that compensation for the risk should therefore be provided for through the asset beta. From this perspective, there is no reason to believe that the NMPB’s exposure to stranding risk is higher than that of the average comparator, and there is therefore no need for a separate SRP.

¹ Commerce Commission, *Fibre Input Methodologies Main Final Decisions Reasons Paper*, 13 October 2020, para 6.1035.

² Op cit, para 6.1033.

³ Op cit, paras 6.1010 – 6.1072.

2 Background

The Milk Price Manual

The Fonterra Board agreed in June 2020 to amendments to Rules 42 (asset beta) and 43 (specific risk premium) of the Milk Price Manual, with effect from the 2020/21 season. The amended rules assign responsibility for determining the asset beta and specific risk premium to the MPG, and read as follows.

Asset beta	The WACC should be consistent with the principle that providers of capital to Fonterra should receive a commercially reasonable return on their investment in Fonterra’s New Zealand manufacturing asset base.	The MPG will determine an updated Asset Beta in a Review Year. ⁴ In calculating the Asset Beta, the MPG will have regard to: <ul style="list-style-type: none"> ▪ Fonterra’s exposure to systematic earnings risk with respect to the portion of its business corresponding to the Farmgate Milk Price Business, as implied by the allocation of risks between Fonterra and suppliers under the Farmgate Milk Price Methodology. ▪ Any relevant requirements under DIRA.
Specific risk premium	The WACC should incorporate appropriate compensation for risks that investors in the Farmgate Milk Price Commodity Business would seek compensation for, and which are not otherwise provided for in the Farmgate Milk Price calculation methodology.	The MPG will determine an updated Specific Risk Premium in a Review Year. In calculating the Specific Risk Premium, the MPG will have regard to: <ul style="list-style-type: none"> ▪ Fonterra’s exposure to earnings risk as a consequence of assets being removed from the Farmgate Milk Price Business asset base due either to a shortfall in milk supply or an adjustment to the Reference Basket; ▪ Any other factors which in the MPG’s opinion would result in investors in the Farmgate Milk Price Commodity Business requiring additional compensation for risk; and ▪ The extent to which compensation for such additional risk has otherwise been provided for in the Farmgate Milk Price calculation methodology.

The function of the asset beta and specific risk premium

The asset beta provides an allowance in the weighted average cost of capital (WACC) for ‘systematic risk’ faced by shareholders, comprising risk which cannot be diversified away by holding a portfolio of shares in different companies. Systematic risk is a measure of the amount by which a specific company’s shares vary with the market in general: if a 10% movement in the market typically coincides with a 10% movement in the company’s shares, the company will have an *equity* beta of

⁴ The F20 season was a ‘review year’ for the asset beta and specific risk premium, but the reviews were deferred pending passage of the amendments to DIRA.

1.0, whereas if a 10% movement in the market typically coincides with a 5% movement in the company's shares, the company will have an equity beta of 0.5.

In turn, the concept of an 'asset beta' reflects the fact that the risk faced by a company's shareholders will, other things equal, be higher if the company carries more debt. The equity beta reflects shareholders' exposure to systematic risk given the amount of debt actually carried by a company, and the asset beta reflects the lower exposure to systematic risk shareholders would face if the company was debt-free. So whereas the equity beta for the market as a whole is 1.0, the asset beta for the market as a whole is typically around 0.70.

Normally, the asset beta comprises the only allowance in the WACC for equity risk. However, we also include in the Milk Price a separate allowance, the specific risk premium (SRP), for risk specifically related (in practice) to asset stranding. Therefore, when considering whether the Milk Price calculation adequately compensates Fonterra's shareholders for the undiversifiable risk associated with their investment in the RCP business, it is necessary to have regard to both the asset beta and the specific risk premium.

The specific risk premium was introduced in 2014 in response to the Commission's position that "asset stranding risk is an unsystematic risk which should not be included in the calculation of the asset beta".⁵ The inclusion of an SRP of 15bp reduces the milk price by ~0.75 cents per kgMS.

In the context of the Milk Price, the only risks which should be priced in the WACC are the undiversifiable risks which would be faced by investors in a commodity processing business with the characteristics of the NMPB – while Fonterra may elect to undertake other, riskier, activities, the returns to these activities will accrue to shareholders, as should all the associated costs, including the impact on Fonterra's cost of capital, on the basis that the incremental returns to undertaking those activities also accrue to shareholders rather than suppliers.

The Commerce Commission's preferred approach

The Commerce Commission describes its preferred framework for setting an asset beta in a regulatory context as comprising a five-step process:⁶

Step 1: identify a sample of relevant comparator firms.

Step 2: estimate the equity beta for each firm in the sample.

Step 3: de-lever each equity beta estimate to get an estimated asset beta for each firm in the sample.

Step 4: calculate an average asset beta for the sample.

Step 5: apply any adjustments for regulatory differences or differences in systematic risk across services to the average asset beta for the sample.

The Commission also explains that where possible in applying this framework it:

⁵ Commerce Commission, *Final report on review of Fonterra 2014-15 base milk price calculation*, para 6.23, p.59.

⁶ Commerce Commission, *Emerging views on asset beta*, 20 July 2017, p.8. This document describes six steps, with the final step involving re-levering the asset beta to obtain an equity beta.

- favours empirical evidence over theory
- favours use of as large a sample as reasonably possible with comparators from the same industry, to “limit the need to make subjective judgement calls regarding whether each of the companies in the sample should be included”
- favours using the sample average as a starting point, and only departing from the average where there are sound reasons for doing so, and
- avoids placing too much weight on a single comparator, including the observed estimate of the company subject to the estimation.

The Commission has set out its views in a number of publications on various technical aspects of the application of its approach. Where relevant we expand on these matters below.

DIRA

In August 2020 the following subsections were added to s 150C of the Dairy Industry Restructuring Act 2001 (DIRA), with effect from 1 June 2021:

- (3) For the purposes of subsection (1)(b), any estimate of the return on capital must be made applying the capital asset pricing model.
- (4) For the purposes of subsection (3), the asset beta used in the application of the capital asset pricing model must be consistent with the estimated asset betas of other processors of dairy and other food products that are—
 - (a) traded in significant quantities in globally contested markets; and
 - (b) characterised by uniform technical specifications.
- (5) In subsection (4), **asset beta** means a measurement of a firm’s exposure to systematic risk where systematic risk measures the extent to which the returns on a company fluctuate relative to the equity returns in the stock market as a whole.

The Milk Price Manual already prescribes the use of the capital asset pricing model in the calculation of the WACC, so the only new requirement is in ss(4), which requires that our asset beta be ‘consistent with’ the estimated asset betas for producers of dairy and other food products traded on globally contested markets.

The new ss(4) contains three criteria, all of which must be satisfied if Fonterra is to be required to include a particular firm in the comparator set used to estimate the Milk Price asset beta:

- The firm must be a “processor” – and therefore not, for example, solely a trader – of dairy or other food products. We assume in this context that the term processor refers to the conversion of raw milk to durable commodity products, or of other raw food products into a format which is globally traded.
- At least some of the products manufactured by the firm, and sold by the firm in globally contested markets, must be products which are characterised by “uniform technical specifications”. This term is not further defined but we assume it references products which:
 - are typically transacted according to a standard market convention (e.g., metric tonnes of commodity dairy products like WMP or SMP, bushels of corn, barrels of oil, etc.)
 - are considered sufficiently undifferentiated for the processor’s identity to be relatively immaterial to a potential purchaser’s decision about whether to buy the

- processor's output,⁷ and
- for which information on current prices for standard units of the product is readily available.

For convenience, we refer below to products which satisfy these criteria as base commodity products.

- At least some of the base commodity products manufactured by the firm must be “traded in significant quantities on globally contested markets”.⁸ The section is not explicit as to whether it is necessary that the particular firm's products are traded on global markets, or whether it is sufficient that the firm manufactures products which, when manufactured by other firms, potentially in other countries, are traded on global markets. The natural interpretation though is that the intent is that the subject firm's products should be sold on globally traded markets – it would not make any sense to include, for example, a firm which manufactured standard specification WMP solely for sale in a highly protected domestic market, or solely for its own use in the manufacture of consumer-ready products, merely because WMP manufactured by other processors was sold in globally contested markets.

We refer below to firms which satisfy all three of these criteria as ‘processors (or manufacturers) of globally traded commodity food products’.

As discussed below, all the listed processors of globally traded commodity food products which we have identified also undertake other discrete operations, the nature (and likely systematic risk) of which varies significantly across firms. We believe the intent of the amendments to s 150C is to require Fonterra to apply an asset beta which is comparable to the asset betas of firms which can *prima facie* be assumed to have similar exposure to systematic risk as the NMPB. This implies that where our comparator set contains firms with both commodity processing and other operations we should not merely use the average of the asset betas of those firms, but should, to the extent possible, look to determine what the average asset beta of the comparator set might be if the comparator firms only manufactured commodity food products for sale on globally contested markets. In practical terms, this means:

- we consider that the use of the phrase “consistent with” in s 150C(4) should not be interpreted as requiring us to use the average of the asset betas of our sample of dairy and other commodity processors, and
- in applying Step 5 of the Commission's preferred framework for setting an asset beta we should, so far as possible, be looking to identify and adjust for differences in systematic risk between the comparators' commodity processing operations and their other operations.

⁷ Other than as an indicator of the likelihood that the product manufactured by that processor will in fact be characterised by uniform – i.e., consistent – technical standards.

⁸ The new provision does not define ‘globally contested market’. Our working assumption is that the relevant markets comprise the major dairy importing nations, subject to these being accessible by processors located in two or more major dairy exporting nations, although as shown in the discussion below on the comparator set nothing much hangs on this definition.

3 Comment

Our analysis below is organised under the following headings:

- A. Sources of risk relevant to the Milk Price calculation
- B. Global dairy markets and major commodity producers
- C. The comparator set
- D. Beta estimates for the comparator set
- E. Assessment of the case for an adjustment to the average comparator asset beta
- F. The specific risk premium.

A. Sources of risk relevant to the Milk Price calculation

The purpose of this section is to provide an assessment of the sources of risk which are potentially relevant to the Milk Price calculation and which, if systematic, should therefore be captured within the asset beta or specific risk premium.

Rule 42 of the Milk Price Manual provides that in determining the asset beta the MPG is to have regard to “Fonterra’s exposure to systematic earnings risk with respect to the portion of its business corresponding to the Farmgate Milk Price Business, as implied by the allocation of risks between Fonterra and suppliers under the Farmgate Milk Price Methodology.” We interpret Rule 42 of the Milk Price Manual as requiring us to only have regard to the systematic risk Fonterra would face if it aligned its operations as closely as possible to those of the NMPB; i.e., if:

- Fonterra’s operations were restricted to the manufacture of RCPs, with all milk collected by Fonterra used to manufacture RCPs.
- Fonterra’s RCP business only manufactured the products included in the Milk Price calculation, and only sold those products to the customers included in the Milk Price revenue calculation.
- Fonterra committed that it would not pursue any opportunities not related to the manufacture of RCPs.

Section 150A of DIRA requires that inputs into the Milk Price calculation, including the asset beta, must be practically feasible, both for Fonterra and for a generic entrant which only undertook the activities that are undertaken by the NMPB and which had the same milk pricing mechanism as Fonterra. We interpret the DIRA practical feasibility requirement similarly to our interpretation of Rule 42, with the only difference being that under DIRA the asset beta also needs to provide for any additional systematic risk necessarily faced by investors in a dairy processor other than Fonterra which restricted its operations to the manufacture of RCPs, and more generally attempted to mirror as closely as possible the NMPB’s operations.

In practice, both Fonterra’s RCP business and other real-world commodity dairy processors manufacture a broader range of products and sell them to a wider range of customers under a wider range of terms than those assumed in the Milk Price calculation. And investors in Fonterra and other commodity dairy processors expect the business to pursue NPV-positive growth opportunities, and will place some value on those opportunities, which will vary depending on the business’s strategy and investors’ perception of the firms’ abilities to successfully execute on their growth opportunities.

But because the incremental returns to this wider set of activities do not flow to the Milk Price the incremental costs, including any risk-related increment to the cost of capital, should also not flow through to the Milk Price.

Our conceptual approach to determining the nature of the systematic risk which Fonterra or another processor would be exposed to if it aligned its business as closely as possible to the operations of the Milk Price Manual's NMPB is to ask the following three questions:

1. What sources of systematic risk does the NMPB face? (While the NMPB is a purely theoretical construct, this still provides an appropriate starting point for assessing the exposure to systematic risk of a real-world RCP business.)
2. Relative to the NMPB what additional risks is Fonterra's RCP business necessarily exposed to, and is it likely that this additional risk is systematic?
3. Relative to Fonterra's RCP business, what additional risks are a non-Fonterra NZ-based RCP business necessarily exposed to, and is it likely that this additional risk is systematic?

Question 1: What sources of systematic risk does the NMPB face?

By construction, the Milk Price model is designed to provide the NMPB with a WACC return on an efficient asset base. If (notional) investors in the NMPB believed the model would deliver precisely a true WACC return in all states of the world, it follows that the NMPB would always be valued at the depreciated replacement cost (DRC) of its assets, irrespective of movements in the market. If this were the case investors would not be exposed to any systematic risk and the NMPB's asset beta would be nil.

Previous work on the asset beta has identified several reasons why notional investors in the NMPB might be exposed to the risk of actual returns not equalling investors required WACC return on the DRC of the NMPB's assets, and assessed whether this risk might be systematic:

- The NMPB is exposed to the risk of differences between benchmark efficient costs and actual costs. The model uses benchmark (rather than actual) costs in a number of instances, with some of these benchmark costs only reset on a four-yearly basis. Lally (2014) and CEPA 2018⁹ posited that divergences between benchmark and actual costs might be partially related to economic conditions, but that the correlation could be negative (thereby reducing the NMPB's beta). The argument is that actual costs might rise more rapidly than benchmark costs when the economy is strong, and vice versa, reducing the NMPB's earnings and therefore share price in circumstances where the market is on average increasing.
- The NMPB is exposed to stranded asset risk which might arise from (a) technological obsolescence of the NMPB's assets (b) a change in the basket of RCPs manufactured by the NMPB or (c) a long-term loss of milk supply. We discuss stranded asset risk in detail in section F (Specific risk premium) below.
- Investors in the NMPB might consider that the NMPB has available to it NPV-positive growth options and that the NMPB is likely to look to exercise those options. In this event investors will value the NMPB at more than the DRC of its assets, and this 'excess' value is

⁹ Cambridge Economic Policy Associates, Dairy Notional Processors' asset beta, Final Report, 28 March 2018, hereafter CEPA 2018.

likely to vary systematically with the market – in general, growth options will be considered more valuable (or more likely to be exercised) if the economic outlook is positive, and vice versa if the outlook is negative.¹⁰

- There may be differences in the calculated WACC and the ‘true’ WACC required by notional investors in the NMPB. Differences could arise due to errors in specifying the WACC or establishing inputs (such differences appear more likely to represent unsystematic risk)¹¹ or because we use rolling five year averages of five year risk-free rates and debt premiums, with there generally being differences between five year rolling average and spot values. The lag effect will result in the Milk Price WACC being higher than a spot WACC when interest rates are falling, and lower than a spot WACC when interest rates are increasing, so the associated risk may be systematic. However, the Milk Price WACC will still on average equal the spot WACC, with unders and overs netting out over time.

Question 2: Relative to the NMPB what additional risks are investors in Fonterra’s RCP business necessarily exposed to?

Many of the most significant inputs into the Milk Price calculation are values actually achieved by Fonterra, and Fonterra’s RCP business could in principle elect to fully align these aspects of its operations to the Milk Price model. However, the Fonterra RCP business cannot avoid some elements of additional risk due to:

- The assumed ‘yields’ of finished product per kgMS for the purely notional business are based on notional assumptions around good operating performance, so Fonterra’s RCP Business is therefore exposed to some relative performance risk (both upside, in that the yield assumptions can be bettered in practice, and downside).
- The Milk Price calculation assumes a lactose purchase price equal to the lesser of Fonterra’s actual average cost and the average cost of other NZ processors as reported to NZ Customs, with it being determined before the start of the season which reported price series will be used. To date the average price reported by other NZ processors has always been used, leaving Fonterra’s RCP business exposed to the risk it cannot match this price. There is no reason however to believe that variances between Fonterra’s and other processors’ lactose procurement costs will covary with the market, so this risk is unlikely to be systematic.
- The Milk Price calculation used Fonterra’s unit costs for labour, energy and packaging (and most other major cost inputs) so Fonterra is not exposed to any risk with respect to these costs. However, the number of required units of each input (e.g. required kw of electricity and tonnes of steam per MT of WMP) are based on manufacturer specifications or MPG

¹⁰ The Commerce Commission most recently advanced this argument in its Final Report on the 2017/18 base milk price. Our position then, and now, is that the purpose of the NMPB construct is purely to ensure farmers receive an appropriate price for their current season milk while the NMPB (Fonterra) is able to earn an expected WACC return on the assets required to process that milk. Within this framework it does not make conceptual sense to reduce payments for milk to compensate notional investors for changes in the value of options which, if exercised, are expected to generate NPV-positive for investors, not suppliers.

¹¹ CEPA 2018 raise the possibility of systematic differences in the borrowing rates available to dairy processors and industrial borrowers generally, meaning our use of debt premiums sourced from rates paid by industrial borrowers could be a source of systematic risk, but do not explore whether there is any empirical evidence in support of this argument.

analysis, confirmed (or modified) by reference to monitoring of actual Fonterra performance, so Fonterra's RCP business is exposed to both upside and downside risk. There is no reason however to expect this risk to be systematic.

- The NMPB's asset replacement costs are sourced from equipment manufacturers, but in practice are benchmarked to costs recently incurred by Fonterra for new plants. (In practice, Fonterra does not attempt to align its RCP plant configuration to the NMPB's notional asset base, by for example closing and replacing plants when they reach the average age of ~32 years assumed for the NMPB. This misalignment gives rise to an additional source of risk but (a) this is risk that Fonterra elects to take on, for the benefit of shareholders, and (b) there is no strong reason to believe it is systematic.¹²

Question 3: Relative to Fonterra's RCP business, what additional risks are a non-Fonterra NZ-based RCP business necessarily exposed to?

Other NZ-based manufacturers of RCPs do not have perfect real-time visibility over the Fonterra values which are used to calculate the Milk Price. Consequently, even if they attempted to mimic Fonterra's RCP business's operations as closely as possible they are necessarily exposed to earnings risk due to their inability to perfectly align their sales profiles (including contract tenor), product mix, or FX profiles to Fonterra's. However, there is no reason to believe any of this risk is systematic. We also note that most other NZ processors do not fully align their milk prices to Fonterra's Milk Price, and are therefore able to pass at least some of this 'relative performance risk' through to their suppliers of milk.

Sources of risk relevant to Milk Price calculation - conclusion

This section is conceptual and does not provide any particular insights into the issues involved in arriving at an empirical estimate of an appropriate asset beta for the Milk Price calculation. Our key observation, however, is that it is important not to lose sight of the purpose of the Milk Price calculation, and of the role of the asset beta in that calculation: under both the Manual and DIRA, the intent is that suppliers of milk to Fonterra receive a commodity-based return, calculated as commodity revenue less the costs, including capital costs, that would necessarily be incurred in the course of converting current-season milk into the commodities used to calculate the Milk Price.

The corollary of this point is that any costs, including capital costs, which would not necessarily be incurred by an efficient processor in generating the revenue stream used in the Milk Price calculation should not be deducted when calculating the Milk Price. In this context, to the extent a real world processor's normal pursuit of NPV-positive (to shareholders) investments increases its exposure to systematic risk, the associated increase in the processor's cost of capital should be borne by the firm's shareholders, not by its suppliers – otherwise, suppliers will be subsidising, in this case through a lower Milk Price, the firm's pursuit of higher returns for its shareholders.

¹² In effect when Fonterra elects to retain 'old' plants it is generally trading off avoided capital costs against higher (relative to a new plant) operating costs. The delta between these two amounts could conceivably vary systematically with economic conditions, but again, this is a risk that Fonterra elects to take, with the net benefit accruing to shareholders rather than suppliers.

B. Global dairy markets and processors

This section provides summary information on Fonterra's competitors in global dairy markets, with the most important point being that the large dairy processors which look most similar to Fonterra are not listed firms, and it is therefore not possible to derive estimated asset betas for them.

The figures presented below have been excerpted from a presentation prepared by the GIRA Dairy Club 2020. In summary, they show:

- Nine of the 20 largest processors of milk globally are listed, but these firms only process ~30% of the milk collected by the top 20 global processors. Of the six largest processors, only Fonterra and Nestlé are listed. (While Nestlé manufactures standard commodity products, including WMP and SMP, it then further processes these products into consumer formats, and does not sell standard commodity products to third parties.)
- The largest processor is Dairy Farmers of America, an unlisted co-operative, the third largest (behind Fonterra) is Lactalis, an unlisted corporate, and the fourth, sixth (behind Nestlé) and eight largest are all unlisted co-operatives (Arla, FrieslandCampina and Amul).
- Of the four largest listed processors, excluding Fonterra, (Nestlé, Saputo, Yili and Mengniu), only Saputo is a processor of globally traded commodity food products.
- The 'turnover per kg of milk processed' figure provides some indication of the potential significance of commodity production and sales to each processor, with lower average turnover implying a larger contribution from the sale of commodity products, albeit not necessarily on global markets. The yellow-highlighted processors in Figure 3 are listed, and it is apparent that the listed firms do not constitute an unbiased sample of commodity dairy processors (only one of the seven processors with the highest turnover per kg (and therefore lowest contribution from commodity sales) is a co-op / unlisted, whereas only two of the nine processors with the lowest turnover per kilo (and therefore with the highest apparent contribution from commodity sales) are listed.¹³

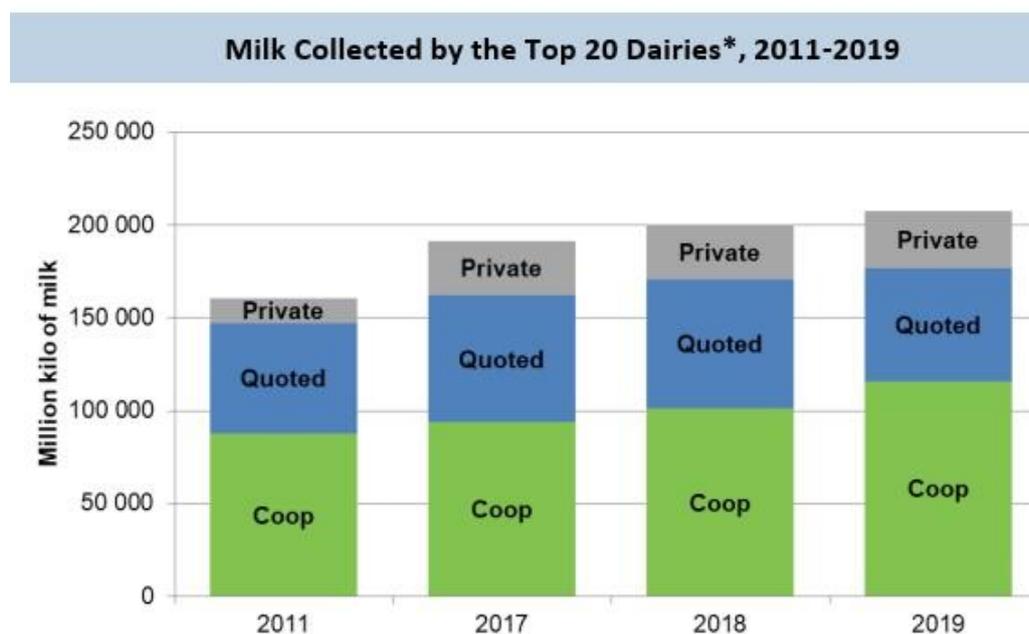
¹³ The 'Glanbia Group' shown in Figures 1 and 3 appears to represent the combination of the listed Glanbia plc and Glanbia Ingredients (GI). GI is an unlisted co-operative, and the largest milk processor in Ireland, with majority farmer ownership. It is a manufacturer (among other things) of commodity dairy ingredients. Glanbia plc does not produce any commodity dairy products, but has a 40% interest in GI. Glanbia plc also has JV operations which collect raw milk (and are likely included in the estimate of raw milk intake in Figure 1) and manufacture cheese. In 2019, Glanbia's JVs, including its interest in GI, contributed ~22% of Glanbia's plc's earnings.

Figure 1: Global dairy processors ranked by volume of milk processed

Rank (2019)	Company name	Origin and main operation countries	Milk intake (million t ME)
1	Dairy Farmers of America	USA	29.0
2	Fonterra	New Zealand/others	21.9
3	Groupe Lactalis	France/others	20.0
4	Arla Foods	Denmark/Sweden/others	13.7
5	Nestle	Switzerland/others	13.7
6	FrieslandCampina	Netherlands/others	11.8
7	Saputo	Canada/USA/others	10.5
8	Amul	India	10.3
9	Yili	China	9.4
10	Mengniu	China	8.7
11	California Dairies	USA	8.1
12	Glanbia Group	USA/others	8.0
13	DMK	Germany/Netherlands	7.1
14	Agropur	Canada/USA	6.5
15	Muller	Germany/UK/others	6.4
16	Leprino	USA	5.9
17	Land'O'Lakes	USA	5.8
18	Danone	France/others	5.7
19	Sodiaal	France	4.6
20	Savencia	France/others	4.2

Source: IFCN

Figure 2: Major dairy processors by ownership structure



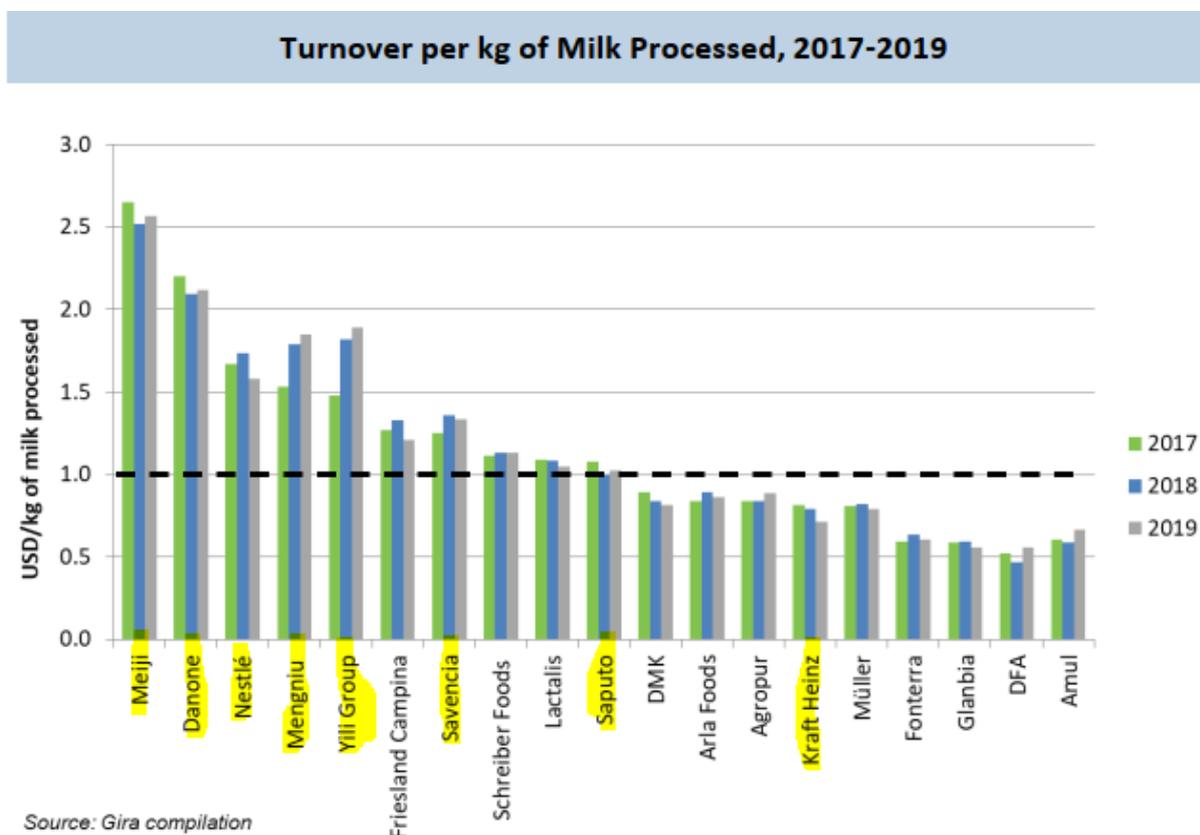
Source: Gira compilation

Figure 3: Major dairy processors, further information

Company	Country of Origin	Total milk intake (mio tons)	World dairy turnover (bn. USD)	Market focus		Ownership		
				National (& EU)	Inter-national	Privately owned	Quoted	CO-OP
Nestlé	CH	14 (*)	22.1		X		X	
Lactalis	FR	20.0	21.0		X	X		
Dairy Farmers of America (**)	USA	36.0	20.1	X				X
Danone	FR	8.6 (*)	18.2		X		X	
Yili	CN	6.9	13.4	X			X	
Fonterra	NZ	21.9	13.2		X			X
Royal Friesland Campina	NL	10.4	12.6		X			X
Mengniu	CN	6.2	11.9	X			X	
Arla Foods	DK	13.7	11.8		X			X
Saputo	CA/USA	11.0	11.3		X		X	
DMK	DE	8.0	6.5	X				X
Unilever	NL/UK	n.a.	6.4 (*)		X		X	
Meiji	JP	2.3	5.9	X			X	
Sodiaal	FR	4.7	5.7	X				X
Savencia	FR	4.2	5.6		X		X	
Amul	IN	8.3	5.5	X				X
Agropur	CA	6.2	5.5		X			X
Kraft Heinz	USA	7.6 (*)	5.4		X		X	
Schreiber Foods	USA	4.5	5.1 (*)		X	X		
Muller	DE	6.2 (*)	4.9 (*)		X	X		

Source: GIRA Dairy Club, 2020

Figure 4: Turnover per kilogram of milk processed



Source: Gira compilation

C. The comparator set

We have undertaken an extensive search for listed firms with operations which potentially satisfy all three limbs of the new s 150C(4); i.e., which manufacture commodity food products for sale in globally contested markets. This involved the following process:

- We started with the comparator set originally identified in the context of the 2014 Uniservices report,¹⁴ which was subsequently substantially used by CEPA 2018.
- To test for completeness of this initial set we (a) used the ‘quick comps’ feature in S&P Capital IQ to locate the firms identified by Capital IQ as potential comparators for all firms in our initial set, and (b) ran a screen on Capital IQ to identify all listed companies operating in North America, Asia Pacific or Europe with an industry classification of ‘food distributors’ or ‘food products (primary)’, and with a keyword search for ‘dairy’, ‘commodity’, ‘grain’, ‘meat’, or ‘oil’. This process resulted in the identification of 286 firms.
- We then reviewed all firms to determine whether any of their operations satisfied the new s 150C, by applying the three tests described above. Specifically, we asked whether the firm was (a) a processor of (b) commodity dairy or other food products which (c) the firm sold on globally traded markets (and whether the firm had satisfied tests (a) – (c) over a substantial portion of our estimation period, from 2013 – 2020).
- For firms with operations which satisfied (a) – (c) we also examined the likelihood that the firm’s overall asset beta reasonably reflected the systematic risk of its commodity operations, or whether the firm had other operations with potentially materially different systematic risk, such that the firm’s asset beta might not be representative of the systematic risk attaching to its commodity processing and trading business. This assessment did not affect the composition of our comparator set, but was undertaken to inform our assessment of the case for an adjustment to the average comparator asset beta (see section E below).

This process resulted in the identification of 19 listed firms which are processors of commodity food products and sellers of those products on globally traded markets. We therefore supplemented our initial comparator set with firms which:

- Manufacture food products which can reasonably be viewed as ‘commoditised’; i.e., products which are typically used as intermediate inputs, and where purchasers likely regard products produced by multiple suppliers as being readily substitutable.
- Sell commodity or commoditised food products in markets which might not be considered ‘global’, but where there is a reasonable prospect that prices in those markets broadly reflect prices achieved on global markets. (In particular, we included a number of firms which primarily sell commodity or commoditised dairy products in the EU or US markets, which are difficult to access for non-resident processors, on the basis that there is good evidence that commodity dairy prices in those markets are highly correlated with prices in the large dairy-importing markets, mainly located in Asia, Africa and the Middle East.)

We identified five additional firms through this supplementary process, giving us a full comparator set of 24 firms. Significantly, this set excludes a large number of firms included in the previous Uniservices and CEPA comparator sets, mainly comprising firms which do not, so far as we were able to ascertain, sell any commodity or commoditised products externally, even though some – such as

¹⁴ Asset beta for Fonterra’s New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra’s Notional Business, Alastair Marsden, Uniservices, November 2014.

Nestlé – manufacture commodity products for use as inputs into their own manufacturing processes.

Figure 5 below summarises our assessment of the firms included in our comparator set. Further details are provided in the Attachment.

Figure 5 - Summary assessment of comparator firms

Company	Processor	Commodity	Globally traded markets
<i>Primary Comparator Set</i>			
BRF S.A.	✓	✓	✓
Fonterra	✓	✓	✓
GrainCorp	✓	✓	✓
Bega	✓	✓	✓
Olam International	✓	✓	✓
Saputo	✓	✓	✓
Wilmar International	✓	✓	✓
Archer-Daniels-Midland	✓	✓	✓
Bunge	✓	✓	✓
Synlait	✓	✓	✓
Kerry Group plc	✓	✓	✓
Savencia SA	✓	✓	✓
Glanbia	✓	✓	✓
Golden Agri-Resources Ltd	✓	✓	✓
HOCHDORF Holdings	✓	✓	✓
ASTARTA Holding N.V	✓	✓	✓
First Resources Limited	✓	✓	✓
Ros Agro PLC	✓	✓	✓
Seaboard Corporation	✓	✓	✓
<i>Extended Comparator Set</i>			
Tate & Lyle	✓	✗	✗
Ingredion Incorporated	✓	✗	✓
JBS S.A.	✓	?	?
Associated British Foods plc	✓	?	✓
Adecoagro S.A.	✓	✓	?

The following points summarise our observations on the comparator firms, including comments on the nature and significance of each firm’s commodity operations:

- Archer-Daniel-Midland: ADM’s refined oil business satisfies the three DIRA tests, but in FY19 this business contributed just 11% of total revenue.
- Bega: In FY20 59% of Bega’s revenue (and 64% of EBITDA) was from the sale of branded products, including consumer format product, and 41% of revenue (36% of EBITDA) from the sale of ‘bulk’ products, including both commodity ingredients and more specialised dairy ingredients including nutritional powders. Bega did not separately report revenue from nutritional powders in FY20, but in FY19 nutritionals made up ~20% of bulk sales. Under the assumption that nutritional products generate higher margins it appears that sales of commodity dairy products make up no more than ~25% of Bega’s earnings.
- Graincorp: Graincorp’s edible oils business contributed 37% of total EBITDA in FY20, and an (uncertain) portion of this business appears to be consistent with the s 150C(4) tests.

Graincorp's grain procurement, storage and distribution business does not satisfy the 'processor' limb of the DIRA test but largely satisfies the 'commodity' (or commoditised) and 'sold into globally traded markets' limbs.

- **Olam:** Olam's Global Agri and Food Ingredients businesses sell a combination of food commodities, non-food commodities, commoditised and value-added products. These segments contributed almost all of Olam's EBIT in FY19 (its other business unit is loss-making in FY19). However, the contribution from each product category is unspecified and it is therefore not possible to assess the materiality of Olam's food commodity processing operations to its overall business. Olam owned a 15.19% minority shareholding in Open Country Dairy (OCD) in the period over which we have calculated our estimates of asset beta. OCD had an EBITDA of \$97m in FY19. Olam's share of OCD's EBITDA was approximately \$14.8m, an immaterial share of Olam's group EBITDA of \$1.7b in FY19.
- **Saputo:** From Figure 4 above, Saputo generates approximately 50% more revenue per litre of milk processed than Fonterra, consistent with the majority of its sales being in highly protected markets, particularly Canada and the US.
- **Synlait:** Synlait derives a larger share of its earning from the sale of commodity products on globally traded markets than probably any firm in the comparator set other than Fonterra, although the contribution to Synlait's gross profit of its commodity powder and cream business decreased from 90 percent to 66 percent between FY16 and FY20. Over the same period, Synlait's asset beta increased from 0.39 to 0.82, calculated on a weekly basis (0.44 to 0.98 on a 4 weekly basis). There is very strong evidence, summarised in section E below, that the increase in Synlait's asset beta over this period was heavily influenced by Synlait's relationship with a2 Milk, an FMCG and infant formula business.¹⁵
- **Tate & Lyle:** Tate & Lyle's Primary Products processes and sells commoditised products (for example, corn syrup and corn oil) and represents approximately 40% of operating profit in FY19. However, a significant portion of sales appear to be in the protected North America market, and not into globally traded markets.
- **Wilmar International:** Wilmar's Plantation and Feed and Industrial Products businesses process food commodities such as palm oil and sugar, and also non-food commodities such as animal feed. These segments contributed approximately 35% of operating profit in FY19. Refined oils produced in these segments appear to be at least partly sold internally to Wilmar's Food Products business (a consumer-centric division), implying Wilmar's commodity processing and trading business is not material to Wilmar's overall business.
- **BRF S.A.** BRF processes livestock into fresh meat for the domestic market in Brazil and export markets. The commodity products (processing fresh meat) and higher value products (e.g. packaged and further processed meat) contributed equally to earnings in FY19.
- **Bunge:** Bunge's Agribusiness segment, which distributes grains and processes crude vegetable oils, represented approximately 67% of EBIT (if the loss-making Sugar & Bio Energy segment is excluded) in FY19. The respective contributions of distribution and processing operations within Agribusiness are not clearly defined, and non-food products such as animal feed are also sold in this segment. Bunge's Milling and Oilseed segments, which produce commoditised products such as margarine and wheat flour, satisfy the s 150C(4) tests but contribute just ~16% of EBIT, part of which also reflects (unspecified) sales from retail products.

¹⁵ The a2 relationship provides an opportunity to potentially decompose the Synlait asset beta into its commodity and non-commodity components, which we explore in section E.

- Fonterra: Fonterra's Ingredients business which sells dairy commodity products globally (approximately 50% of gross profit before tax in FY20).
- Savencia SA: Savencia SA produces dairy ingredients, such as milk powders and whey, and exports globally through its Armor subsidiary. Savencia's Other Dairy Products segment represented 35% of operating profit excluding loss-making segments in FY19 however this segment also generated earnings from consumer and foodservice products. Approximately 42% of revenue in FY19 was from B2B sales.
- Glanbia plc: Products processed and sold through its joint venture Glanbia Ireland (40% owned by Glanbia plc and 60% by Glanbia Cooperative Society Limited) include commodity dairy ingredients including milk powders, lactose and whey proteins. Block cheese and whey protein ingredients are also produced by Glanbia's other US joint ventures, Southwest Cheese and MWC. Joint ventures contributed approximately 21% of Glanbia plc's EBITA in FY19.
- Kerry Group plc: Kerry Agribusiness, a division of Kerry Group plc, produces dairy ingredients such as skim milk powder. Manufacturing facilities are located in Ireland as well as the US, Europe and Asia. This operation appears to sit in Kerry Group's Taste & Nutrition segment which generated 84% of revenue in FY19 but included other food non-commodity products (further split not available).
- Golden Agri-Resources Ltd: Golden Agri-Resources Ltd processes and refines crude palm oil and soybean oil exporting to China, Europe, India and other (with commercial offices in Netherlands, Spain, and America). The business sells in bulk, industrial and branded form but the split is not specified.
- HOCHDORF Holdings: HOCHDORF Holdings produces dairy ingredients such as milk powders, milk protein concentrates and whey protein. Its primary markets are Switzerland and Europe but it also sells to other regions. Its Dairy Ingredients segment represented 89% of sales in FY19 but appears to include non-standard dairy products such as coconut oil fat powders.
- ASTARTA Holding NV: ASTARTA Holding NV's main division harvests and distributes crops but it is also involved soybean oil processing and sugar production. Approx. 56% of its revenue in FY19 was earned from exports, particularly within the EU.
- First Resources Limited: First Resources Limited produces palm oil products, such as crude palm oil and palm kernel oil, and sold to domestic (Singapore) and global markets (Indonesia, Europe and others) to palm oil refiners, traders and food businesses. Production volume for crude palm oil was approx. 811k tonnes.
- Ros Agro plc: Russia-based Ros Agro plc is involved in grain crop trading and also in meat (pork) processing and the production of commoditised products such as sugar and crude vegetable oils. In FY19, approx. 25% of revenue was derived from foreign sales in 50 countries. Consumer products only represented 22% and 23% of Ros Agro's sales volume for its Meat and Sugar divisions respectively.
- Seaboard Corporation: Seaboard plc's Commodity Trading and Milling division is involved in crop commodity trading and wheat milling (33% of EBITDA in FY19), while its Pork segment produces fresh and frozen products to further processors, foodservice operators and distributors (26% of EBITDA but further split of customers not available). Seaboard Products are sold domestically in US and in foreign markets such as South America and China.
- Ingredion: Ingredion processes and sells food commoditised products, such as corn starch, refined corn oil and sweeteners. Around 72% of sales in FY19 were to food and beverage ingredients customers. US and Mexico are its biggest markets but it also sells to the Asia

Pacific, Europe and other regions.

- JBS S.A.: JBS S.A. processes meat protein to retail, branded meat products but also appears to produce and sell fresh and frozen meat as B2B and restaurant sales. JBS S.A. has significant operations in Brazil and the US, and exports to other regions particularly Asia (approx. 15% of revenue).
- Associated British Foods plc: ~ 50% of ABF's revenue is generated from the sale of grocery products, commoditised ingredient products, such as refined sugar and yeast, and advanced animal nutrition and other food products.
- Adecoagro S.A.: Adecoagro has operations across Brazil, Argentina and Uruguay, and grows and distributes a variety of crops (most significantly, peanuts, but also including corn, wheat and soy beans), produces raw milk and mainly branded dairy products (including milk powder and whey) in Argentina, mills rice, and is involved in sugar production. The sale of UHT milk, milk powder, and other branded dairy products contribute ~15% of revenue.

Comparator set - summary

In summary:

- We have identified 19 firms (our Core Comparator Set) with some operations which appear to satisfy the new s 150C(4) criteria. All these firms also undertake a range of other activities, and the 'manufacturing commodity food products for sale in global markets' operations generally constitute a relatively insignificant portion of their overall activities.
- We have identified a further five firms (our Extended Comparator Set) with operations which arguably come 'close to' satisfying the s 150(4) criteria, in that they manufacture food products which can be viewed as commoditised on either global market or on markets where prices can be expected to be correlated to global market prices. Again, the relevant operations generally comprise a relatively small proportion of the firms' overall businesses.
- We have excluded a number of firms included in the previous Uniservices and CEPA comparator sets which do not have any operations which satisfy all the new s150C(4) criteria. The excluded dairy firms include firms which mainly buy commodity dairy products as inputs, rather than produce them as outputs (e.g., a2), firms which produce commodity dairy products but use them exclusively in their own further manufacturing processes (e.g., Nestlé), and firms which purchase raw milk but process it solely into consumer-format products (e.g., Danone).

D. Asset beta estimates

We set out in this section our approach to estimating asset betas and our estimates of asset betas for the 'core' and 'extended' comparator sets discussed above.

Estimation approach

Our estimation approach involves:

- First estimating daily, weekly and four weekly equity betas over the five year periods to December 2018, June 2019, December 2019, June 2020 and December 2020, using data downloaded from CapitalIQ.

- For the weekly calculations averaging for each comparator the results obtained by running five separate regressions on each Monday – Monday, Tuesday – Tuesday, etc, pair, and for the four weekly calculations similarly averaging over 20 separate regressions for each comparator. This averaging approach is supported by the Commerce Commission, but is often not employed.¹⁶
- De-levering the calculated equity betas using the ‘no tax’ Hamada formula (or, equivalently, the Miles-Ezzel formula with a nil debt beta), which the Commerce Commission explains is its preferred approach in its Input Methodology determinations.¹⁷
- Excluding from net debt (in the delivering calculation) lease obligations in respect of the period subsequent to implementation for each comparator of the recent IFRS 16 requirement to report as debt the present value of future lease obligations. (This adjustment is to ensure consistency of treatment of debt pre and post implementation of the new IFRS 16 requirements, and given data limitations is the only practical way of achieving consistency. We note, however, that it results in the understatement of ‘true’ debt, and therefore in some overstatement of asset betas.)

Results

We show in Figures 4 to 6 below our calculated asset betas for our core and extended comparator sets.

¹⁶ CEPA, for instance, implicitly acknowledged that they did not use this approach in the following comment in their 4 June 2018 paper: “Our weekly asset beta for Fonterra (NZX:FCG) is 0.09, this differs from Fonterra’s estimate of 0.14. A plausible reason is that Fonterra used an average over all reference days i.e., calculated a weekly beta for Monday, Tuesday, Wednesday, Thursday and Friday.”

¹⁷ For example, see pp.307-308 of Input Methodologies (Airport Services), 22 December 2010.

Figure 6 - Daily asset beta estimates

Primary Comparator Set	Daily calculations				
	31/12/2020	25/06/2020	26/12/2019	27/06/2019	27/12/2018
BRF S.A.	0.49	0.49	0.41	0.42	0.44
Fontterra	0.11	0.13	0.13	0.13	0.13
Graincorp	0.46	0.45	0.47	0.44	0.45
Bega	0.68	0.70	0.78	0.77	0.78
Olam International	0.26	0.26	0.23	0.25	0.25
Wilmar	0.44	0.45	0.39	0.39	0.39
Saputo	0.62	0.63	0.60	0.57	0.58
ADM	0.72	0.74	0.73	0.74	0.76
Bunge	0.53	0.54	0.45	0.44	0.45
Synlait	0.77	0.75	0.77	0.78	0.73
Savencia SA	0.11	0.09	0.06	0.07	0.07
Glanbia	0.53	0.54	0.47	0.46	0.45
Golden Agri-Resources Ltd	0.50	0.55	0.61	0.59	0.58
HOCHDORF Holdings	0.31	0.30	0.27	0.24	0.26
Kerry Group plc	0.46	0.47	0.52	0.52	0.53
ASTARTA Holding N.V	0.25	0.20	0.09	0.13	0.14
First Resources Limited	0.62	0.64	0.61	0.60	0.60
Ros Agro PLC	0.28	0.27	0.18	0.13	0.13
Seaboard Corporation	0.48	0.52	0.71	0.75	0.79
<i>Average - Primary Comparator Set only</i>	<i>0.45</i>	<i>0.46</i>	<i>0.45</i>	<i>0.44</i>	<i>0.45</i>
Extended Comparator Set					
Tate & Lyle	0.62	0.59	0.50	0.51	0.50
Ingredion Incorporated	0.66	0.68	0.59	0.60	0.61
Adecoagro S.A.	0.49	0.53	0.48	0.49	0.48
JBS S.A.	0.36	0.36	0.33	0.35	0.34
Associated British Foods plc	0.99	0.91	0.87	0.89	0.90
<i>Average - Extended Comparator Set only</i>	<i>0.62</i>	<i>0.61</i>	<i>0.56</i>	<i>0.57</i>	<i>0.57</i>
<i>Average - Full Comparator Set</i>	<i>0.49</i>	<i>0.49</i>	<i>0.47</i>	<i>0.47</i>	<i>0.47</i>

Figure 7 - Weekly asset beta estimates

Primary Comparator Set	Weekly calculations				
	31/12/2020	25/06/2020	26/12/2019	27/06/2019	27/12/2018
BRF S.A.	0.54	0.52	0.41	0.41	0.45
Fontterra	0.09	0.11	0.15	0.16	0.16
Graincorp	0.40	0.35	0.37	0.33	0.31
Bega	0.54	0.58	0.88	0.81	0.88
Olam International	0.30	0.28	0.29	0.29	0.29
Wilmar	0.36	0.40	0.39	0.39	0.38
Saputo	0.50	0.50	0.51	0.49	0.55
ADM	0.69	0.74	0.74	0.71	0.74
Bunge	0.56	0.62	0.42	0.41	0.44
Synlait	0.86	0.84	0.82	0.88	0.83
Savencia SA	0.21	0.18	0.14	0.16	0.13
Glanbia	0.52	0.52	0.49	0.41	0.41
Golden Agri-Resources Ltd	0.50	0.56	0.55	0.54	0.50
HOCHDORF Holdings	0.37	0.41	0.34	0.35	0.36
Kerry Group plc	0.38	0.37	0.42	0.43	0.45
ASTARTA Holding N.V	0.34	0.30	0.14	0.13	0.13
First Resources Limited	0.73	0.76	0.58	0.56	0.50
Ros Agro PLC	0.45	0.44	0.19	0.16	0.17
Seaboard Corporation	0.69	0.79	0.77	0.75	0.77
<i>Average - Primary Comparator Set only</i>	<i>0.48</i>	<i>0.49</i>	<i>0.45</i>	<i>0.44</i>	<i>0.44</i>
Extended Comparator Set					
Tate & Lyle	0.70	0.65	0.54	0.52	0.51
Ingredion Incorporated	0.67	0.72	0.62	0.61	0.60
Adecoagro S.A.	0.63	0.69	0.53	0.54	0.56
JBS S.A.	0.23	0.21	0.21	0.20	0.21
Associated British Foods plc	1.05	0.96	0.87	0.85	0.85
<i>Average - Extended Comparator Set only</i>	<i>0.66</i>	<i>0.65</i>	<i>0.55</i>	<i>0.54</i>	<i>0.55</i>
<i>Average - Full Comparator Set</i>	<i>0.51</i>	<i>0.52</i>	<i>0.47</i>	<i>0.46</i>	<i>0.47</i>

Figure 8 - Four weekly asset beta estimates

Primary Comparator Set	Four-weekly calculations				
	31/12/2020	18/06/2020	5/12/2019	20/06/2019	6/12/2018
BRF S.A.	0.54	0.53	0.32	0.31	0.35
Fonterra	0.11	0.07	0.09	0.13	0.14
Graincorp	0.41	0.38	0.18	0.15	0.21
Bega	0.26	0.32	0.68	0.66	0.73
Olam International	0.31	0.25	0.23	0.25	0.23
Wilmar	0.37	0.47	0.45	0.44	0.42
Saputo	0.57	0.56	0.56	0.57	0.63
ADM	0.71	0.75	0.80	0.81	0.83
Bunge	0.60	0.61	0.50	0.52	0.63
Synlait	0.98	0.97	1.10	1.10	1.11
Savencia SA	0.33	0.30	0.23	0.26	0.19
Glanbia	0.43	0.41	0.57	0.46	0.51
Golden Agri-Resources Ltd	0.53	0.62	0.56	0.53	0.50
HOCHDORF Holdings	0.52	0.53	0.44	0.38	0.15
Kerry Group plc	0.43	0.44	0.44	0.49	0.53
ASTARTA Holding N.V	0.46	0.39	0.19	0.17	0.22
First Resources Limited	0.82	0.94	0.78	0.82	0.72
Ros Agro PLC	0.61	0.59	0.47	0.47	0.59
Seaboard Corporation	0.70	0.77	0.70	0.75	0.77
<i>Average - Primary Comparator Set only</i>	<i>0.51</i>	<i>0.52</i>	<i>0.49</i>	<i>0.49</i>	<i>0.50</i>
Extended Comparator Set					
Tate & Lyle	0.80	0.80	0.73	0.79	0.81
Ingredion Incorporated	0.64	0.65	0.55	0.56	0.49
Adecoagro S.A.	0.71	0.70	0.43	0.39	0.41
JBS S.A.	0.20	0.20	0.22	0.22	0.22
Associated British Foods plc	1.16	0.99	0.78	0.82	0.70
<i>Average - Extended Comparator Set only</i>	<i>0.70</i>	<i>0.67</i>	<i>0.54</i>	<i>0.56</i>	<i>0.53</i>
<i>Average - Full Comparator Set</i>	<i>0.55</i>	<i>0.55</i>	<i>0.50</i>	<i>0.50</i>	<i>0.50</i>

Figure 9 - Summary asset beta estimates

Summary across all methods and time periods	Daily	Weekly	Four-weekly	Average
Primary Comparator Set	0.45	0.46	0.50	0.47
Extended Comparator Set	0.59	0.59	0.60	0.59
Full Comparator Set	0.48	0.49	0.52	0.50

We note:

- The average asset beta, across all methods and measurement dates, for the 19 firms in our Primary Comparator Set 1 is 0.47. If we focus only on the weekly and four-weekly estimates the average is 0.48.
- The average asset betas for the additional firms included in our Extended Comparator Set is markedly higher, at 0.59 across all measurement dates and methods (and also 0.59 if we only focus on the weekly and four-weekly estimates across all measurement dates).
- The average asset beta for the Full Comparator is 0.50 when measured across all methods and measurement dates and methods, and also 0.50 when the daily estimates are excluded.¹⁸

¹⁸ When expressed to 3 decimal places the averages are 0.496 across all methods and measurement dates, and 0.504 when the daily estimates are excluded.

- Average asset betas, when measured on a weekly or four-weekly basis, appear to have increased somewhat in 2020: the averages of the weekly and four-weekly asset betas across the June and December 2020 calculations are 0.50 (vs 0.48) for the Core Comparator Set and 0.53 (vs 0.50) for the Full Comparator Set. It is not clear whether this slight increase in average asset betas in 2020 represents a temporary COVID-19 related effect or a long-term increase in systematic risk.
- The Commerce Commission has previously argued that Fonterra should be excluded from the comparator set, although most recently it noted that it was “open to Fonterra being included in the comparator group”.¹⁹ While we consider Fonterra should be included in the comparator set, we note for completeness that its exclusion results in the average asset beta increasing to 0.49 for the Primary Comparator Set (0.50 excluding the daily estimates) and 0.51 for the Full Comparator Set (0.52 excluding the daily estimates).

Conclusion on average comparator set asset beta

In summary:

- The Core Comparator Set of 19 firms with some operations which appear to fully satisfy the three s 150C(4) tests has an average asset beta of 0.47 across all methods and measurement dates, with a range of 0.44 to 0.52 across different combinations of methods and measurement dates.
- The five firms in the Extended Comparator Set have a higher average asset beta (an average of 0.59 across all methods and measurement dates, with a range of 0.53 to 0.70).²⁰ However, given the small number of firms in the Extended Comparator Set we would not read much into these estimates.
- The Full Comparator Set has an average asset has an average asset beta of 0.50 across all methods and measurement dates, with a range of 0.46 to 0.55 across different combinations of methods and measurement dates. Under the Commerce Commission’s framework, when determining ‘the’ average comparator asset beta we should place most emphasis on the results for the full set.

E. The case for an adjustment to the sample average

Step 5 of the Commission’s is to “apply any adjustments for regulatory differences or differences in systematic risk across services to the average asset beta for the sample.” The Commission has previously explained that it considers a downward adjustment to the average asset beta of a large and diverse sample of dairy (and similar) firms may be appropriate for the NMPB, but that in its view an adjustment of 12bp (the difference between CEPA’s assessment of the average asset beta for the dairy comparator set and the current Milk Price asset beta of 0.38) is not supportable:

¹⁹ Final report on review of Fonterra’s 2018/19 base milk price calculation, p.12.

https://comcom.govt.nz/__data/assets/pdf_file/0037/173998/Final-report-Review-of-Fonterras-2018-19-base-milk-price-calculation-12-August-2019.pdf

²⁰ The top end of this range reflects significant increases in the asset betas for Adecoagro and Associated British Foods in the two most recent periods included in our analysis. We have not identified any obvious reason for the increase in Adecoagro’s asset beta, but note that Associated British Foods generates ~50% of its revenue from retail stores it owns and operates, which suffered a COVID-19 related 30% decrease in revenue in the last quarter of 2020, compared to a 7% increase in revenue from its more relevant food operations (see [Trading update \(abf.co.uk\)](#)).

B94 We accept that the NP does face less risk than most other dairy companies and, in particular, that it is able to transfer price and commodity risk more completely to farmers than most other processors can. To the extent that this reflects systematic risk then it is likely that the NP would have a lower asset beta than the average dairy company. That is, to that extent, the NP may have an asset beta lower than the midpoint (average) estimate of beta estimated for a sample of other dairy processors.

B95 However, our view is that those differences do not sufficiently explain the extent of the gap between the estimate used by Fonterra of 0.38 and the estimates of beta for the average dairy processor produced by CEPA (0.50-0.58 for the five years to Jan 2018) and Dr Marsden (0.48-0.52 across all periods).²¹

In its 103 page initial report on the asset beta, CEPA dedicated just two paragraphs to the question of whether a downward adjustment was warranted, explaining that:

“... an argument can be made for a downward adjustment to the full sample average. It is not possible to estimate this adjustment empirically. The Commission’s 0.05 asset beta adjustments made for gas (upwards) and airports (downwards) provide a precedent for such a risk adjustment.”²²

As explained in Section D above, we have elected to place primary reliance on the calculated asset betas for our largest set of comparators, consistent with the Commission’s preferred approach. However, the lower average asset betas for the Primary Comparator Set, which comprises firms with some operations which are fully compliant with the s 150C(4) provides some support for the proposition that a downward adjustment is warranted.

The Commission’s most comprehensive explanations of its views on the circumstances in which adjustments to the average sample asset beta may be warranted are set out in the various 2010 Input Methodologies Reasons Papers. In the Airport Services Reasons Paper, the Commission explains that the “Commission accepts the principle that there may be grounds for (a) making adjustments to multi-divisional asset betas estimates, (b) adjusting asset beta estimates sourced from overseas for differences in systematic risk due to regulatory differences, and (c) adjusting asset beta estimates due to differences in systematic risk between services.”²³ We assess below the relevance of each of these three circumstances to the NMPB.

Multi-divisional asset betas

The Commission explains that a “company’s overall beta can be viewed as a weighted average of the betas of its component businesses. The risk attached to a company’s different businesses may vary considerably, and the weighted average gives the overall risk of the firm. Where multi-division firms are used in the Commission’s analysis, it may be necessary to extract an estimate of beta for a

²¹ Commerce Commission, *Final report on review of Fonterra’s 2017-18 base milk price calculation*, p.39.

²² Cambridge Economic Policy Associates, *Dairy Notional Processors’ Asset Beta*, Final Report, 28 March 2018, p.45.

²³ Commerce Commission, *Input Methodologies (Airport Services) Reasons Paper*, 22 December 2010, pp.312-313.

specific type of regulated service from the overall group beta.”²⁴ All the firms in our comparator set are multi-division firms, with varying combinations of operations which are consistent with those described in the new s 150C(4) and other very different operations, potentially with very different sources of systematic risk.

The Commission describes three approaches which could in principle be used to estimate ‘divisional’ asset betas, comprising (i) the pure play approach (ii) the full information approach and (iii) econometric prediction based on risk-drivers, but explains that in practice it will generally not be possible to fully implement any of these approaches.

For the current exercise, none of our comparator firms are ‘pure play’ commodity processors. Unsurprisingly, given that the comparator firms all undertake a very wide range of ‘commodity’ and ‘non-commodity’ activities, we have not been able to decompose any of the firms’ asset betas into commodity and non-commodity components. However, Synlait’s evolution since its listing in 2013 from a firm that was closer to being a pure play commodity processor (albeit with well-signalled ambitions to move up the value-chain),²⁵ to a firm with a mix of commodity and value-add activities, coupled with its evolving relationship with a2 Milk, provides an opportunity to estimate divisional asset betas for Synlait’s commodity and non-commodity businesses.

a2 was founded in 2000, but did not launch its a2Platinum infant formula product, manufactured by Synlait, until 2013,²⁶ and sales of Synlait-manufactured product into the key China market did not take off until 2016, after which the share prices of both a2 and Synlait rapidly increased, as shown in Figure 10.

²⁴ Op cit, p.312.

²⁵ For example, Synlait commenced construction of Dryer 2, “a sophisticated purpose-build infant formula facility” in 2010, and in 2012 signed an agreement with A2 “to process and supply ... a2 Platinum infant formula.” See <https://www.synlait.com/history/>. And at Synlait’s AGM on 3 December 2013 then chair Graeme Milne said “Our focus is on continuing to increase the proportion of value added products in our ingredients business, and increase the volume of our infant formula and nutritional product sales.” (<https://www.nzx.com/announcements/244673>) However, in 2013 nutritional powders comprised less than 7% of Synlait’s sales by volume.

²⁶ A2 Milk Company Investor Presentation April 2015, p.3, <https://thea2milkcompany.com/wp-content/uploads/a2MC-Roadshow-Presentation-FINAL.pdf>

Figure 10: a2 and Synlait share prices, 2016 - 2020



The apparent relationship between a2’s and Synlait’s share performance is borne out by a regression of weekly percentage changes in Synlait’s share price over the period 1 August 2016 to 31 January 2020 on (a) weekly percentage changes in the NZSE 50 (to account for the impact of general market movements) (b) weekly percentage changes in the Fonterra share price and (b) weekly percentage changes in the a2 share price, which generates the following regression statistics.

Regression Statistics									
Multiple R	0.417								
R Square	0.174								
Adjusted R Square	0.171								
Standard Error	0.043								
Observations	915								
ANOVA									
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>				
Regression	3	0.355	0.118	63.910	0.000				
Residual	911	1.684	0.002						
Total	914	2.039							
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>	
Intercept	0.002	0.001	1.140	0.254	- 0.001	0.005	- 0.001	0.005	
NZX % change	0.706	0.121	5.857	0.000	0.469	0.943	0.469	0.943	
A2 % change	0.214	0.026	8.172	0.000	0.163	0.266	0.163	0.266	
Fonterra % change	0.024	0.060	0.401	0.688	- 0.094	0.143	- 0.094	0.143	

This regression shows that after controlling for general market movements, via inclusion of the NZX variable:

- There is not any apparent correlation between residual movements in the Fonterra and

Synlait share prices. (We included Fonterra to address the possibility that covariance between changes in a2's and Synlait's share prices reflected broader dairy industry-specific factors. For example, if commodity price or FX movements were perceived to have a significant impact on both Fonterra's and Synlait's earnings – and therefore, potentially, their systematic risk – we would expect to see a statistically significant relationship between movements in the two firms' share prices, but did not find such a relationship.)

- There is, however, a strong statistically significant relationship between residual movements in the a2 share price and Synlait's share price, with a 10% change in the a2 share price being associated with a change of approximately 2.2% in the Synlait share price, with a 90 percent confidence interval around this estimate of 1.6% - 2.7%.

In the main, Synlait's a2-related earnings depend on a2's performance, rather than a2's earnings being dependent on Synlait's performance,²⁷ with it following that changes in market expectations around a2's current or future performance will have a flow-on effect on Synlait's share price, rather than (generally) changes in market expectations about Synlait's performance having a flow-on impact on a2's share price. To test this assumption we ran two further regressions, noting that:

- If the direction of causality ran from a2 to Synlait, we might observe a lagged, relationship between changes in the a2 and Synlait share prices, to the extent the market does not immediately impound the impact of new a2 news into the Synlait share price.
- Similarly, if the direction of causation ran from Synlait to a2, we might see a2's share price responding to movements in both the current and historic Synlait share prices.

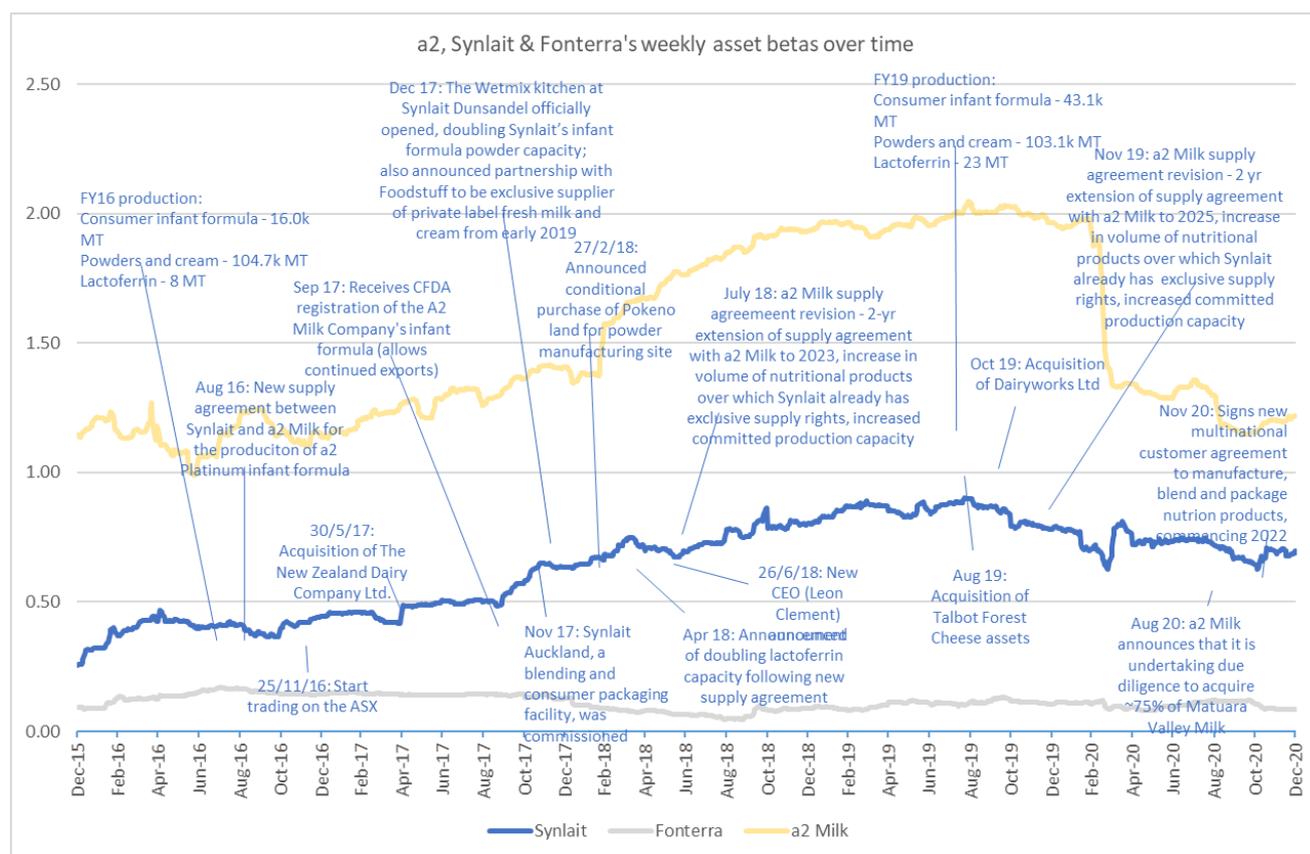
These regressions showed a statistically significant relationship, with the expected positive sign, between the prior day's change in a2's share price and changes in Synlait's share price, but did not show a statistically significant relationship between the prior day's change in Synlait's share price and the changes in a2's share price.²⁸ We interpret these results as supporting the proposition that the direction of causality runs from a2 to Synlait, and not vice versa.

We next examined the relationship between changes in a2's estimated asset beta and Synlait's estimated asset beta, given the apparent relationship between the two as shown in Figure 11 below.

²⁷ Issues related to manufacturing failures or Synlait's ability to obtain relevant licences will comprise exceptions to this claim, but we did not identify any issues of this nature over the period under examination.

²⁸ The coefficient on the lagged a2 share price was 0.06 with a t-statistic of 2.27, while the coefficient on the lagged Synlait share price was -0.05 with a t-statistic of -1.52.

Figure 11: Time profile of a2, Synlait and Fonterra asset betas



To test the significance of this apparent relationship, we regressed Synlait’s weekly asset beta, calculated using 60 months of data for every trading day between 1 August 2016 to 31 January 2020, on a2’s asset beta and a dummy ‘time’ variable.²⁹ Per below, this regression shows a strong correlation between Synlait’s and a2’s asset betas, together with a separate and highly significant upward drift over time. (The time variable was included to provide for both the increasing significance of the a2 relationship as a proportion of Synlait’s earnings over time, and the impact of Synlait’s ongoing diversification into other non-commodity activities, including its acquisition of Talbot Forest Cheese and Dairyworks in 2019, and its agreement in 2017 to become the exclusive supplier of private label fresh milk and cream to Foodstuffs South Island with effect from early 2019.)³⁰

²⁹ Synlait’s average weekly asset beta over this period was 0.66 and a2’s average weekly asset beta was 1.61.

³⁰ We also regressed the daily percentage change in Synlait’s asset beta on the daily percentage change in a2’s asset beta, again finding a statistically significant relationship (coefficient of 0.18 with a t-statistic of 4.45).

Figure 12: Regression of Synlait's asset beta on a2's asset beta and time

Regression Statistics									
Multiple R	0.968								
R Square	0.938								
Adjusted R Square	0.938								
Standard Error	0.042								
Observations	915								
ANOVA									
	df	SS	MS	F	Significance F				
Regression	2	24.70	12.35	6,893.19	-				
Residual	912	1.63	0.00						
Total	914	26.33							
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	- 0.049	0.010	- 4.723	0.000	- 0.070	- 0.029	- 0.070	- 0.029	
A2 asset beta	0.346	0.015	23.472	0.000	0.317	0.375	0.317	0.375	
Time	0.000	0.000	10.215	0.000	0.000	0.000	0.000	0.000	

The relationship between a2, a 'pure play' infant formula and FMCG business over the 2015 – 2016 period and Synlait, which over the same period moved from being largely commodity focused to deriving a much larger portion of its earnings from its non-commodity business, provides an unusual opportunity to infer a divisional asset beta for Synlait's commodity business. In Table 1 below, we show the results of the following exercise:

- We assume a2's asset beta represents a reasonable proxy for the systematic risk attaching to Synlait's non-commodity business, which over this timeframe was largely (albeit not solely) based on its partnership with a2.
- We also assume Synlait's actual asset beta comprises a weighted average, by current year gross profit, of the asset beta attaching to its non-commodity business (i.e., the a2 asset beta) and the asset beta attaching to its commodity business. (This approach effectively assumes the market was implicitly applying the same earnings multiples to Synlait's non-commodity and commodity earnings. Given the very high multiples attaching to a2 over this period this assumption will, at least in isolation, result in an overstatement of Synlait's commodity asset beta.)

Given the various simplifying assumptions implicit in this analysis, the results suggested in the table below look surprisingly strong, with the daily and weekly calculations generating implied commodity asset betas in the vicinity of ~0.30 – 0.40. And while these results do not translate directly into a specific recommendation for a downward adjustment to any of the average comparator asset betas, they strongly suggest that NZ dairy commodity processing operations are exposed to materially less systematic than at least some non-commodity dairy-related operations.

Table 1 Implied Synlait 'commodity' asset beta

	FY15	FY16	FY17	FY18	FY19	FY20
Gross Profit \$m						
Powder + cream	50.9	89.6	97.4	134.4	142.2	134.4
Consumer packaged	1.5	10.6	13.8	27.6	34.3	40.5
Lactoferrin	3.1	-0.2	0.8	4.4	13.3	28.4
Total	55.5	100.0	112.0	166.4	189.8	203.3
% of Gross Profit						
Powder + cream	92%	90%	87%	81%	75%	66%
Consumer packaged	3%	11%	12%	17%	18%	20%
Lactoferrin	6%	0%	1%	3%	7%	14%

Commodity' Beta calculation - based on 5yr 4-weekly	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Non-commodity (A2 as proxy)	1.00	1.05	1.00	1.40	0.92
Synlait 4-weekly beta	0.44	0.60	0.81	1.11	0.98
Implied Synlait commodity beta	0.38	0.54	0.77	1.01	1.01

Commodity' Beta calculation - based on 5-yr weekly	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Non-commodity (A2 as proxy)	1.07	1.34	1.70	1.92	1.34
Synlait weekly beta	0.39	0.38	0.53	0.75	0.82
Implied Synlait commodity beta	0.31	0.24	0.26	0.36	0.55

Commodity' Beta calculation - based on 5-yr daily	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Non-commodity (A2 as proxy)	1.20	1.43	2.02	2.28	1.56
Synlait daily beta	0.48	0.42	0.57	0.77	0.74
Implied Synlait commodity beta	0.40	0.27	0.22	0.26	0.32

The average differences across all five times periods between our estimates of Synlait's overall asset beta and its implied 'commodity beta' are 0.05 for the four-weekly calculations, 0.27 for the weekly calculations, and 0.42 for the daily calculations, while the average of the implied commodity asset betas across all measurement dates and methods is 0.46 (albeit with a very wide spread, from 0.29 to 0.74).

Differences in systematic risk due to regulatory differences

When applying its framework the Commerce Commission is normally considering the potential impact on asset beta of differences in regulatory regimes in the context of comparators which are generally subject to well-defined and extensive regulatory regimes in the context of their core operations. In contrast, none of the comparators considered in the context of this exercise are akin to the regulated utilities which form the bulk of the comparator sets typically considered by the Commission.

While Fonterra's milk price is not subject to formal regulatory control, subpart 5A of DIRA leaves Fonterra exposed to the risk of an adverse Commerce Commission finding if it does not use what is effectively a regulatory building blocks model to calculate its milk price. And Fonterra has in numerous instances committed to calculating its Milk Price under the Milk Price Manual (subject to well defined exceptions) which similarly reflects a regulatory building blocks model. The combination of the Commission's oversight under subpart 5A of DIRA and Fonterra's undertakings to use the Milk

Price Manual to determine what it pays for milk has the following implications for investors in Fonterra relative to investors in other listed processors of commodity dairy or other food products:

- It provides added certainty over expected returns to Fonterra's RCP business, with investors having considerably more certainty than other investors over the circumstances under which the RCP business will or will not generate a WACC return.
- The combination of DIRA and the Milk Price Manual similarly create more certainty over the value to investors of any growth options related to the RCP business: where net returns from the exercise of any option will accrue to the Milk Price investors will only recover costs, including a WACC return on any capital expenditures, related to the exercise of the option, and should therefore value the relevant growth options at nil.³¹ In contrast investors in any other commodity food processing business can normally be expected to assume the business holds some NPV-positive growth options, and it is similarly reasonable to assume changes in the value of at least some of these options will be positively correlated to changes in the value of the market as a whole.

Differences in systematic risk between Fonterra's RCP business and the comparator firms

CEPA 2018 provide a useful summary in Table 3.3 on pp.38-41 of the Notional Processor's (NP) exposure to risk (both systematic and non-systematic) relative to listed dairy comparators (and ELBs). The summary shows that in CEPA's view the NP is exposed to less risk than the typical dairy comparator on six of eight dimensions considered (comprising revenue risk, exchange rate risk, operational leverage, counterparty risk and financing risk) and – again in CEPA's view – is exposed to a similar level of risk to other dairy firms with respect to non-milk opex, asset stranding, and capex (including changes in the value of growth options). CEPA's analysis is necessarily restricted as they do not have available to them a statistically robust way of decomposing the differences in exposure to risk into systematic and non-systematic components, but they do accept that "there is an argument for a full downward adjustment ... [and we] consider that the Commission's 0.05 adjustment for ... airports (downwards) provide[s] a reasonable precedent."

The limitations in CEPA's analysis illustrate the impossibility of undertaking an empirically robust, first principles, assessment of the quantum of differences in systematic risk between the NMPB (or Fonterra's RCP business) and the average comparator firm, a point implicitly acknowledged by CEPA

³¹ Martin Lally, in *Review of WACC Issues*, 25 February 2016, prepared for the Commerce Commission, makes the point in the context of gas pipeline businesses that growth options (in this case the option to expand) will be valued less by investors in businesses subject to formal regulation than by investors in businesses which are merely subject to the threat of formal regulation. The Commerce Commission has previously argued that Fonterra's milk price is not formally controlled by the Commission and that investors may therefore impute value to growth options perceived to be available to the RCP business (see, for example, paras B28 – B29 of the Final 2017/18 base milk price report, at https://comcom.govt.nz/_data/assets/pdf_file/0027/96606/Final-report-Review-of-Fonerras-2017-18-base-milk-price-calculation-14-September-2018.pdf). We have two responses to this argument: first, since 2008 Fonterra has voluntarily submitted to a form of quasi-formal regulation, and the fact it has held to this commitment for 13 years means investors can be expected to form their assessments of expected returns 'as if' the business were actually subject to regulation, rather than merely faced the 'threat' of future regulation. Secondly, as noted above, milk suppliers should not be penalised, via a lower Milk Price, for any increment to the cost of capital attributable to the existence of growth options if the returns to the exercise of those options will accrue to investors rather than the future Milk Price. Alternatively, if there was an expectation that returns from the exercise of growth options would flow to the Milk Price the options would have a nil NPV to investors (in all states of the world) and their value would therefore not co-vary with the market.

in their failure to attempt even a back-of-the-envelope calculation of an appropriate adjustment.

Conclusion on case for downward adjustment and asset beta

In summary:

- The differences in the average asset betas for our Core Comparator and Extended Comparator Sets provides some, albeit limited, evidence that firms with some operations which fully conform to the new s 150C(4) criteria have lower overall systematic risk than firms which do not. But given both the small sample size for our Extended Comparator Set and the heterogeneity in both comparator sets we would not overemphasise the precise differences between the average asset betas for the different comparator sets.
- The Synlait analysis demonstrates that at least some of the non-commodity operations of the comparator firms have materially higher systematic risk than their commodity operations, and that for these firms their 'commodity division' asset betas would likely be lower than their overall asset betas.
- In his assessment of the merits of a downward adjustment to the regulatory asset beta for airfields, and an upward adjustment for gas pipeline businesses, Dr Lally makes the point that the approach used by the Commission to arrive at its adjustments results in "an extremely imprecise estimate for the beta deduction."³² Lally does not, however, suggest an approach which might result in a more accurate estimate, and indeed the general tenor of his paper is that sample size and data issues, coupled with the heterogeneity of comparator firms, will inevitably be such that it is simply not possible to arrive at precise estimates of appropriate adjustments to asset betas in these types of circumstances. We agree.
- Like CEPA, we conclude that a downward adjustment of 0.05 to the average (across all approaches and measurement dates) asset beta for our Full Comparator Set is reasonable, noting that a sound case could be made for a larger adjustment. Similarly, we cannot see how a robust case could be made for a smaller adjustment.
- Given the statistical imprecision in both beta estimates and in the estimation of an appropriate adjustment, we consider it reasonable to round the final beta estimate to 5bp. Coincidentally, given the average estimate for our Full Sample Comparator Set is 0.50 and our proposed adjustment is 5bp, our actual estimate of 0.45 is equal to our rounded estimate. However, if adjustments to the comparator set or estimation method resulted in minor changes – and particularly if the new estimate still fell in the range of ~0.48 – 0.52 – we would not recommend any adjustment to our proposed asset beta of 0.45.

F. Specific Risk Premium

Background

Rule 43 of the Milk Price Manual provides for the inclusion in the WACC of a Specific Risk Premium to provide "appropriate compensation for risks that investors in the Farmgate Milk Price Commodity Business would seek compensation for, and which are not otherwise provided for in the Farmgate Milk Price calculation methodology", and that the calculation of the SRP is to have regard to:

³² Martin Lally, 2016, Review of WACC Issues, p.4.
https://comcom.govt.nz/__data/assets/pdf_file/0016/61225/Dr-Lallys-expert-advice-on-asset-beta-adjustments-and-Blacks-simple-discounting-rule-25-February-2016.pdf

- Fonterra’s exposure to earnings risk as a consequence of assets being removed from the Farmgate Milk Price Business asset base due either to a shortfall in milk supply or an adjustment to the Reference Basket;
- Any other factors which in the MPG’s opinion would result in investors in the Farmgate Milk Price Commodity Business requiring additional compensation for risk; and
- The extent to which compensation for such additional risk has otherwise been provided for in the Farmgate Milk Price calculation methodology.

Prior to 2014, the Manual rule relating to the calculation of the asset beta (now Rule 42) required the independent expert charged with recommending an asset beta for use in the Milk Price to have regard to “in particular, stranded asset risk”, reflecting Fonterra’s position at that time that asset stranding risk would more likely than not be systematic and, more generally, that this was in fact the most significant risk faced by the NMPB / Fonterra’s RCP business, given that most other risks were borne by farmers.

Rule 43 was introduced in 2014 in response to the Commission’s expressed position at that time that, while the Milk Price should include an appropriate allowance, calculated either ex ante or ex post, for asset stranding, it is not appropriate to provide this allowance via the asset beta:

3.33. We consider that beta should not generally include an allowance for all of the risk of asset stranding, as beta is a measure of an investment’s exposure to market wide (systematic) factors, and we consider that most asset stranding risk is non-systematic.³³

Fonterra explained in response to the Commission’s position that from its perspective all that mattered was that the quantum of the total allowance for stranded asset risk was appropriate, and that it was of no practical significance whether the allowance was incorporated in the asset beta or a separate SRP. But given the Commission’s preference Fonterra undertook to incorporate a requirement in the Milk Price Manual (the current Rule 43) that an SRP be included in the Milk Price WACC calculation to separately provide for stranded asset risk.³⁴ The new SRP, equivalent to a 15bp increment to WACC (or a 22bp increment to the cost of equity), was implemented with effect from the 2014/15 Season, at which time the asset beta was also reduced from 0.45 to 0.38, on the basis that the NMPB potentially faced higher stranded asset risk than the regulated lines businesses used as comparators when setting the WACC.

The Commission and CEPA did not explicitly consider the relationship between the asset beta and the SRP in their work over the past three years on the asset beta. However, CEPA’s view that asset stranding is a systematic risk, and should therefore be considered in the asset beta, played a prominent role in its analysis and conclusion that an asset beta of 0.38 is too low. For example:

We consider that asset stranding is a systematic risk, although it is asymmetric as the NP will only face asset stranding risks from a systematic negative shock ... We consider that it is appropriate to consider it in the beta, as it is systematic, for the purposes of comparing risks to comparators.³⁵

³³ Commerce Commission, Review of Fonterra’s 2012/13 Milk Price Manual, 14 December 2012.

³⁴ Fonterra, Submission on draft report on 2012/13 Milk Price Manual, 15 November 2012.

³⁵ Cambridge Economic Policy Associates, *Dairy Notional Processors’ Asset Beta, Final Report*, 28 May 2018, p.18.

Regardless, the NP faces stranding risk as it removes assets from its asset base. ELBs have a RAB that is effectively guaranteed through regulation. In addition, as set out in our response to the first round of submissions, the asset beta is about systematic risks. In our view, UOA and Fonterra have still not provided reasons why ELBs' and the NP's asset stranding requirements would respond to the movement in the market returns in the same way. We are confident that risk to the NP's valuation from asset stranding would be more similar to those risks faced by companies in the sample rather than ELBs. This is because the times when the NP's assets and the sample companies' assets might be stranded are more likely to be similar, whereas ELB asset stranding would be determined by different factors and therefore may occur at different times.³⁶

The Commission did not explicitly either accept or reject CEPA's position that asset stranding risk is systematic, but did recite CEPA's position in various instances without any expression of disagreement, including in its 2017/18 base milk price report:

B51 After reviewing submissions to the emerging views paper, the Commission remains of the view that UOA and Fonterra have not provided appropriate reasons why ELBs' and the NP's asset stranding requirements would respond to the movement in the market returns in the same way.³⁷

B114 In their response to submissions on the emerging views paper CEPA suggested that forcing the NP to reduce the book value by removing the oldest assets first is not necessarily the best approach to reduce stranding risk. Removing the assets that are forecast to generate the least value would be a better approach than prescriptively removing the oldest asset. As a result, CEPA do not believe that this approach would reduce the asset beta to the extent that UOA and Fonterra state.

B115 We acknowledge that the Manual provides for the removal of the oldest assets from the asset base first. However, as indicated in the discussion of CEPA's response on this issue, this is not how processors (including Fonterra) would make decisions relating to asset stranding in the real world. An allowance for asset stranding risk which is less than that required by any processor other than the NP is unlikely to be practically feasible. This is therefore an issue that we will consider further in our review of the Milk Price Manual for the 2018/19 season.³⁸

More recently, however, the Commission has restated its position on asset stranding risk in the context of fibre regulation, explaining it considers that "stranding risk is normally – but not always – non-systematic"³⁹ and more generally, that "compensation is only required for a risk when the risk is both asymmetric and material."⁴⁰

Discussion

CEPA's analysis implies that from their perspective, the key question relating to the SRP is whether

³⁶ CEPA, Dairy asset beta – response to the second round of submissions, 16 July 2018.

³⁷ Commerce Commission, Review of Fonterra's 2017/18 base milk price calculation, 15 August 2018, .

³⁸ Commerce Commission, Review of Fonterra's 2017/18 base milk price calculation, 15 August 2018, p.44. In its final report on its review of the Milk Price Manual for the 2018/19 season the Commission announced it was deferring its assessment of the Manual's treatment of asset stranding (not just the SRP) until the 2020/21 season, by which time Fonterra would have completed its review of the SRP. (We explained in our response to the Commission that CEPA's argument that the NP would look to remove its 'least value' assets first was in fact synonymous with the Manual's requirements that the oldest assets be removed first, given the homogeneity of the products manufactured using the assets.)

³⁹ Commerce Commission, *Fibre Input Methodologies Main Final Decisions Reasons Paper*, 13 October 2020, para 6.1035.

⁴⁰ Op cit, para 6.1033.

the **average comparator's** (and not necessarily the NMPB's) exposure to asset stranding risk is (primarily) systematic or non-systematic. To the extent it is systematic, it will be captured in the average asset beta for the comparator set. An assessment of the NMPB's exposure to stranding risk (whether systematic or non-systematic) relative to the average comparator would then form part of the process of determining whether an adjustment is required to the average asset beta of the comparator set. And to the extent compensation for stranding risk is provided for in the asset beta (or elsewhere in the Milk Price Manual) the provision of additional compensation via the SRP will result in investors being over-compensated, and in the Milk Price being too low.

As CEPA explains, demand for a typical dairy comparator's output, and therefore its capacity requirements, will normally be positively correlated to the general economic cycle. We do not see any reason to contest CEPA's position, and therefore do not consider investors in either Fonterra's RCP business or any other NZ-based RCP business require more compensation, via an SRP, than investors in the average comparator firm.

We have also considered whether an SRP is required under the alternative assumption that the NMPB's exposure to asset stranding risk is non-systematic. In its Fibre Input Methodologies Main Final Decision Paper, released on 13 October 2020 (hereafter the 'Final Fibre Decision'),⁴¹ the Commerce Commission provided a detailed discussion of non-systematic asymmetric risk in the context of fibre businesses. Several aspects of this discussion are relevant to the current context.⁴² First, by way of context, the Commission explains that:

There are several options for compensating for non-systematic stranding risk. The main principle that underlies these options is that any additional revenue is provided only if there is an expectation that there will be an equivalent reduction in revenue at some point in the future. This is the *ex-ante* expectation of NPV neutrality, which is applied by ensuring the present value of the expected additional revenue is exactly offset by the present value of the expected reduction in revenue in the future. Hence any upfront compensation goes hand in hand with an expected reduction in revenue which occurs when assets are removed (or written off) from the asset base due to a stranding event (or cannot otherwise be recovered). This is a matter of assessing the economic value of the RAB, rather than individual assets.⁴³

The Commission goes on to explain that "we can broadly split methods to address asset stranding into *ex post* mechanisms and *ex ante* mechanisms". The Commission identifies two *ex post* mechanisms, both of which are provided for under the Milk Price Manual and calculation approach:

- Keeping stranded assets in the RAB (regulated asset base), which is the approach applied under Rule 32 to assets which become stranded due to a change in the reference basket. As

⁴¹ Available online at: https://comcom.govt.nz/__data/assets/pdf_file/0022/226507/Fibre-Input-Methodologies-Main-final-decisions-reasons-paper-13-October-2020.pdf

⁴² The Commission's discussion in the fibre context was predicated on its position that "We do not consider that the main stranding risk here is a systematic risk, and therefore the WACC is unlikely to compensate Chorus for it. And if it did, it is likely to compensate for only a small fraction of the risk" (para 6.1064, p.562). The Commission's position that stranding risk in this case is largely non-systematic follows from its view that the primary source of stranding risk for a fibre business is technological change, given that 5G presents a concrete and plausible substitute technology. In contrast, RCP manufacturing technology is mature, and has evolved only incrementally over a long period of time, and there is not at present any plausible alternative technology.

⁴³ Final Fibre Decision, para 6.1065, p.563.

noted in both Rule 32 and by the Commission, there may theoretically be circumstances where the impact of keeping stranded assets in the asset base is 'too significant' (i.e, results in an uncompetitive milk price). However, Fonterra's experience is that markets act so as not to allow returns to the processing of milk into different commodity baskets vary too much over the medium term, so it is highly unlikely that maintenance of a competitive Milk Price will ever require the replacement of a large portion of the Milk Price asset base, as compared to the gradual replacement of an existing RCP with a new one. Further, most non-RCP dairy commodities can be manufactured with the powder driers currently included in the Milk Price asset base,⁴⁴ with relatively minor modifications, so even a rapid change in the RCP basket would not in most circumstances result in the stranding of a significant portion of the existing asset base.

- Mitigation by shortening asset lives. The Milk Price calculation methodology assumes weighted average lives for powder driers of approximately 32 years. In reality Fonterra has a number of driers which are significantly older than 32 years, and it would not be unreasonable to conclude the actual average economic life of a powder drier is in excess of 40 years.⁴⁵ The use of shorter asset lives in the Milk Price asset base mitigates against two forms of stranded asset risk:
 - The risk of technological obsolescence. The use of fixed, rather than indefinite, lives in the asset base enables the Milk Price asset base to progressively benefit from any technological improvement in drier technology while ensuring that in the normal course Fonterra is fully compensated (by allowing older assets to be fully depreciated) for its investment in the original assets. As noted above, the rate of technological change in RCP manufacturing technology is such that it is highly likely this approach will continue to appropriately and fully compensate Fonterra's investors for the impact of technological change on the Milk Price asset base.
 - The risk of long-term loss of milk. An average asset life of ~32 years implies that in the normal course approximately 3% of the assets in the Milk Price RAB are replaced each year.⁴⁶ This means that in the event of a long-term loss of milk supply Fonterra can deal with the first 2-3% (on average) per annum by simply not replacing the assets falling out of the Milk Price asset base, in which case investors do not miss out on any expected returns.⁴⁷ Fonterra has undertaken a considerable amount of work

⁴⁴ The primary exceptions are cheese and casein. All non-RCP commodity streams have butter (and buttermilk powder) or AMF as by-products, so there is little to no prospect of existing cream or BMP processing assets becoming stranded in the event of a significant change in the RCP basket.

⁴⁵ Using an asset life of 32 years rather than 33 years (if that were the 'true' average) has an equivalent impact to adding 10bp to the WACC. Using an asset life of 32 years rather than 40 years (if that were the true life) is equivalent to adding ~60bp to the WACC.

⁴⁶ More precisely, around 2.5% of assets are replaced annually, because the assets in the Milk Price asset base are not assumed to have been installed in precisely equal tranches over the past 32 years – the significant growth in the volume of milk processed by Fonterra over the past 10 years means additional capacity has been added to the Milk Price asset base over that period, and that the asset base is therefore somewhat weighted towards newer assets.

⁴⁷ Given its scale and history Fonterra has significantly greater ability to 'fine tune' its response to a loss of milk by not replacing plants than a smaller existing processor with just a few plants, or a new entrant, and is therefore less exposed to stranding risk from this source. The Commission noted this situation in its discussion of asset stranding considerations in paragraphs 56 – 70 of its Review of Fonterra's 2018/19 Milk Price Manual, and concluded that "Our view is that the 'safe' harbours provisions in s 150B are applicable, and accordingly the contestability purpose in s 150A is met [if sufficient allowance is provided for the stranding risk faced

assessing potential future milk supply scenarios, and based on this considers the likelihood of consistent average annual reductions in supply (due either to competitor entry or expansion, or to changes in land use or productivity) in excess of ~2% to be low over the foreseeable future.

In the fibre context, the Commission concluded that “**given the circumstances specific to the regulated fibre sector**”⁴⁸ non-systematic stranded asset risk could not be dealt with solely through ex post compensation, and that it would therefore be appropriate to allow a provision for ex ante compensation calculated as 10bp of the RAB. Interestingly, the approach used to derive the 10bp provision was equivalent to the approach used to derive the Milk Price allowance, which is 50% higher at 15bp of the asset base, and involved determining the amount of compensation required for varying combinations of (a) the proportion of the asset base which might be fully stranded and (b) the probability of that proportion of the asset base being stranded.⁴⁹ The Commission’s position that a 10bp allowance was appropriate for fibre, together with its supporting reasoning, provides a useful benchmark against which to evaluate the MPG’s position that an appropriate ex ante allowance for the Milk Price is nil. In particular:

- The Commission’s position reflects the fact that fibre assets are exposed to a very real threat of technological obsolescence and supporting analysis which concludes (a) this risk is largely non-systematic and (b) cannot be fully compensated for through ex post measures.
- The assets owned by the NMPB (and Fonterra’s RCP business) are not exposed to anywhere near the same level of risk of technological obsolescence, and for the reasons discussed above it appears to reasonable to assume this risk is adequately provided for via ex post adjustments.
- The 10bp fibre allowance is the only compensation provided for stranding risk to fibre businesses, whereas the NMPB’s exposure to stranding risk is mitigated through the use of conservative asset lives and the retention in the asset base of assets stranded due to changes in the reference basket (equivalent to retaining stranded assets in the RAB in the fibre context).
- Reductions in milk supply constitute the primary source of stranding risk for the NMPB, but this risk is material on in the event of consistent year-on-year reductions materially in excess of 3% per annum for an extended period of time, which is in our view highly unlikely.

Conclusion on SRP

We conclude that, consistent with the third bullet point in the definition of SRP, the SRP should be reduced to nil, with effect from the 2020/21 season, on the basis that:

- The average comparator asset beta will reflect an allowance for stranded asset risk, and there is no reason to believe that the NMPB’s exposure to stranding risk (whether systematic

specifically by Fonterra] even though the stranding risk of the NP is lower than that independent processors, and in particular new entrants would be likely to face.”

⁴⁸ Final Fibre Decision, para 6.1107, p.573, emphasis added

⁴⁹ Per Appendix 2 of the 2014 Uniservices Report, the Milk Price allowance of 15bps is appropriate if investors in the NMPB face an otherwise-uncompensated annual risk of (a) 7.5% of assets (by productive capacity) being stranded with (b) a 10% probability. As has previously been noted by CEPA and the Commerce Commission, the calculation assumes the assets with the shortest remaining economic lives would be removed from the asset base first, but even if this assumption is relaxed the allowance appears very conservative, particularly in comparison to the 10bp fibre allowance.

or not) is higher than that of the average comparator.

- Alternatively, if the 'average' comparator's exposure to asset stranding risk is not systematic, and therefore not reflected in its asset beta, the NMPB's exposure to otherwise uncompensated for stranding risk is clearly not material, when benchmarked against the Commission's fibre analysis, and investors therefore do not require compensation via an SRP. In this context we highlight the combined effect of (a) the retention in the Milk Price asset base of assets which become stranded due to a change in the RCP basket (b) the use of asset lives which are shorter than the demonstrated economic lives of Fonterra's actual powder assets and (c) the fact that a reduction in milk supply will only result in material asset stranding if it occurs at a rate in excess of 3% per annum for an extended period.