

Asset Beta for Fonterra's Notional Business: Comments on questions raised by the Commerce Commission in the Milk Price Calculation Workshop



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Report prepared for:

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The assistance of EY New Zealand in the preparation of certain aspects of this report is acknowledged, in particular calculation of the empirical beta estimates for the comparator companies. However, all opinions in this report are the author's alone.

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Auckland UniServices will not be liable for any loss or damage to any party that may rely on our report other than Fonterra Co-operative Group Limited (“Fonterra”). In addition, we have no obligation to update our report or to revise the information contained therein because of events and transactions occurring subsequent to the date of this report.

In preparing this report we have also relied on the information supplied by Fonterra, EY New Zealand and other parties. Our duties, while involving an assessment of information provided and commenting as necessary, do not extend to verifying the accuracy of the information, and we have assumed its authenticity and completeness. We have not audited the information provided, nor have we been required to do so.

The analysis assumes that Fonterra has no information or knowledge of any facts or material information not specifically noted in our report that would reasonably be expected to affect its conclusions.

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Asset Beta for Fonterra’s Notional Business: Further Comments

1 Introduction

- 1.1 This report by Auckland UniServices Ltd (“**Auckland UniServices**” or “**UniServices**”)¹ provides further comments on our assessment of the asset beta for Fonterra Co-operative Group Limited’s (“**Fonterra**” or “**Company**”) New Zealand-based commodity milk powders manufacturing business (hereafter also “**Fonterra’s Notional Business**” or “**Notional Business**”), under the assumption that the business manufactured and sold milk powder-based commodity products (referred to in the Farmgate Milk Price Manual as “**Reference Commodity Products**”, or “**RCPs**”) both on and off Global Dairy Trade (“**GDT**”).²
- 1.2 For Fonterra’s Notional Business, the raw input “cost of milk” or the farmgate milk price is set in accordance with the Farmgate Milk Price Manual (hereafter also “**Milk Price Manual**” or “**Manual**”).

2 Scope of our work

Introduction

- 2.1 Fonterra has requested that Auckland UniServices provide further commentary on the asset beta for Fonterra’s Notional Business further to:
- a. The Commerce Commission New Zealand’s (“**Commerce Commission**” or “**Commission**”) Milk Price Calculation Workshop held on 23 May 2017 (“**Milk Price Workshop**”); and
 - b. Submissions by **Castalia**, **Miraka**, **Open Country Dairy** and **Synlait** at the Commerce Commission’s Milk Price Workshop in relation to the asset beta for Fonterra’s Notional Business.³

Questions raised by the Commerce Commission in the Workshop

- 2.2 The Commerce Commission (2017) has requested more information on the following points further to the Milk Price Workshop.⁴

¹ This report is written by Dr Alastair Marsden on behalf of Auckland UniServices Ltd. References in this report to “we” or “our” refer to the opinions of Dr Alastair Marsden.

² Under this definition, the “Notional Business” is largely Fonterra’s milk powder manufacturing business, scaled up to process all milk supplied to Fonterra in New Zealand.

³ These entities are Castalia Limited, Miraka Limited, Open Country Dairy Limited and Synlait Milk Limited.

⁴ See Commerce Commission, 2017, Review of Fonterra’s 2016/17 base milk price calculation Workshop details dated 30 May 2017.

- a. More detailed evidence of the extent to which firms in the comparator sample transfer commodity price risk to farmers, and how this compares to a notional producer that fully passes through that risk. The Commission understands that some companies in the comparator sample may employ different pricing mechanisms to those employed in NZ. However, the key issue is the ability to transfer commodity price risk to farmers, regardless of the specific pricing mechanism;
- b. Are there other material components of the milk price whose fluctuations are systematic or non-systematic in nature? Also, how does the allocation of these risks differ between the notional producer and companies in the comparator sample and what is the impact on asset beta?; and
- c. What is the impact on the estimate of the notional producer's beta if Fonterra is excluded from the comparator sample?

Limitations on the Scope of our work

- 2.3 The scope of Auckland UniServices' work is limited to comments on specific points relevant to paragraph 2.2 above.
- 2.4 This report is also subject to our disclaimer and "Important Notice" on page 2 of this report.

3 Auckland UniServices' Prior Reports

References to our Prior Reports

- 3.1 We refer to our:
 - a. Report titled "Asset beta for Fonterra's New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra's Notional Business" dated 2 December 2014 as "**Auckland UniServices Report No 1**" or "**Report No 1**"; and
 - b. Report titled "Update on Asset Beta for Fonterra's New Zealand-based Commodity Manufacturing Businesses and Specific Risk Premium for Fonterra's Notional Business" dated 10 April 2016 as "**Auckland UniServices Report No 2**" or "**Report No 2**".
 - c. Report titled "Asset Beta for Fonterra's Notional Business: Further Comments" dated 12 May 2017 as "**Auckland UniServices Report No 3**" or "**Report No 3**".

4 Structure of the remainder of our Report

- 4.1 The rest of our report is structured as follows:

- a. Section 5 provides further comment on the sample of “comparator” companies that may be relevant to the determination of an appropriate asset beta estimate for Fonterra’s Notional Businesses.
- b. Section 6 considers whether or not there are other material components of the milk price whose fluctuations are systematic in nature?
- c. Section 7 examines the impact on the estimate of the notional producer’s beta if Fonterra is excluded from the comparator sample.
- d. Section 8 concludes.
- e. Appendix 1 provides the empirical beta estimates of the compactor sample set as provided in Auckland UniServices Report No 3, but excluding Fonterra.

5 Comparator beta estimates for Global Dairy Businesses

Comparative betas

5.1 In Auckland UniServices Report No 3 we provided:

- a. Updated beta estimates of companies with “material commodity exposure”, “commodity & brand exposure” and “brand exposure” as set out in Auckland UniServices Report No 2.
- b. A table of the sub-sample of asset betas for listed New Zealand and Australian entities being Fonterra, Synlait, Murray Goulburn Co-operative, Bega and Graincorp.

5.2 We commented (based upon advice and discussions with Fonterra) on the extent to which Fonterra, Synlait, Murray Goulburn Co-operative and Bega may transfer commodity price risk to farmers and concluded that we are not aware of any listed companies (excluding Fonterra) in our comparable company set, other than potentially Synlait and Murray Goulburn, which have the ability to make ex-post adjustments to pass through all material revenue⁵ variances between forecast and actual performance to the milk price.⁶

5.3 The Commerce Commission (2017) in the Milk Price Workshop, however, raised the question on the ability of Glanbia to pass through revenues variances to the milk price.

⁵ Castalia (2016, Sept, page 1) also stated that:

“Dr Marsden and Dr Lally estimate the asset beta based on the notional processor being ‘close to riskless’—on the basis that Fonterra passes on almost all commodity price risk to farmers. However, Dr Marsden and Fonterra both acknowledge that no processor replicates Fonterra’s approach of passing on almost all commodity price risk to farmers. While there are some exceptions, our research finds the same result.”

⁶ As highlighted in Auckland UniServices (2017b) we should have added the word “revenue” to this statement.

- 5.4 In summary, the Commerce Commission appears to be querying the extent and level of systematic risk facing commodity processors both in New Zealand and offshore. Auckland UniServices understands, however, that none of the comparator company set are pure commodity businesses. This includes Fonterra, Murray Goulburn and Synlait, which we understand have both processing businesses and value-add businesses. The empirical beta estimates for these companies will reflect a weighted average beta (based upon value weights) for their commodity / processing and value-add businesses.
- 5.5 We understand Fonterra in a separate submission to the Commission will address in further detail the extent to which Glanbia and the other companies in the comparator set (where empirical beta estimates are available) can transfer commodity price risk to farmers.

6 Are there other material components of the milk price whose fluctuations are systematic in nature?

- 6.1 The Commerce Commission (2017) has also requested views on:
- a. Whether or not there are other material components of the milk price whose fluctuations are systematic in nature?
 - b. How does the allocation of these risks differ between the notional producer and companies in the comparator sample? and
 - c. The impact of these risks on asset beta?

Components of the milk price where fluctuations may impact on milk price differences between Fonterra's Notional Business and other notional processors.

- 6.2 Castalia (2017b) and Synlait (2017) provide a bridge diagram between the Synlait farmgate milk price and the milk price in the Milk Price Statement. This shows an overall one cent variance for the 2014/15 Milk Price Fonterra paid in comparison to Synlait's milk price as a "notional producer". However, there were a number of variations as shown in **Table 1** below.

Table 1			
Milk Price	\$ per kg /ms	Our understanding of type of risk	Comment
Starting Synlait Notional Milk Price	\$4.39		
Bridge factor / Variances			
Milk Tonnes produced	\$0.04	Volume risk.	<p>May be mixture of systematic and non-systematic risk. However, under the Milk Price Manual all volume risk passed back to farmers in setting the farmgate milk price.</p> <p>The independent processors face relative volume risk compared to Fonterra's Notional Business, but in our view this is unlikely to be a systematic risk exposure.</p>
Weighted average price per tonne	-\$0.11	Sales Phasing risk.	In our view, this is a non-systematic risk.
Foreign exchange variances	\$0.09	Foreign exchange rate conversion profile.	In our view, this is a non-systematic risk.
Lactose costs	-\$0.04	Cash flow risk.	May be positive or negative beta. However, in our view, no material difference in systematic risk between Fonterra's Notional Business and the independent processor.
Cash costs	-\$0.01	Cash flow risk.	May be positive or negative beta. However, in our view, no material difference in systematic risk between Fonterra's Notional Business and the independent processor.
Capital costs	\$0.04	Capital structure decision and debt term.	Both Fonterra's Notional Business and the independent processor can adopt different capital structure decisions and mixture of debt and equity funding as set out in the Milk Price Manual.
Milk Price Statement	\$4.40		

UniServices' Comment

6.3 In Auckland UniServices Report No 2 (paragraph 7.19) we noted that:⁷

⁷ Referencing to Auckland UniServices Report No 1.

“In our view, Synlait is correct in its assertion that other processors will face some incremental risk relative to Fonterra, due to other processors’ inability to perfectly match factors such as Fonterra’s sales phasing and foreign exchange rate conversion profiles in the absence of perfect information.” (paragraph 11.4); and

“We note, however, that at least some of this risk may be diversifiable and have both “under” and “overs” depending on the other processors actual sales phasing and foreign exchange conversion rates (paragraph 11.5).”

6.4 We comment below more specifically on the risks highlighted in Table 1 above.

Volume Risk

6.5 In our view volume risk may have systematic and non-systematic components. Milk volumes produced by farmers may increase (decrease) when dairy commodity prices are high (low) and GDP / market returns are also high (low). Non-systematic risk exposure may also be present if milk volumes could fluctuate due to factors such as a localised drought or other adverse weather conditions not related to general macro-economic conditions.

6.6 Under the Milk Price Manual, however, all volume (and price) risk for Fonterra’s Notional Business is passed onto farmers.⁸

6.7 The independent processor may face some volume risk relative to Fonterra’s Notional Business, but in our view this is unlikely to represent a systematic risk exposure.

6.8 To illustrate assume commodity milk prices increase and market returns also increase. In response to higher milk prices and positive market returns, farmers increase volumes of milk produced.

6.9 Total revenues for Fonterra’s Notional Business, which are a function of on and off-GDT prices of RCPs × milk volumes processed, will also increase. However, all this increase in the total farmgate milk price revenue (net of efficient variable processing costs × production volume other than the cost of milk) will flow through to an increase in the milk price (kg/ms) or the annual aggregate price for milk in accordance with the use of actual “ex-post revenues” and the rules in the Milk Price Manual. Thus, net cash flow returns to Fonterra’s Notional Business will not change (assuming no other changes in efficient or actual cash and capital costs).

6.10 The increase in the farmgate milk price from an increases in the volume of milk processed by Fonterra’s Notional Business should similarly not impact the net cash flow returns to the independent processor, to the extent relative changes in milk volumes processed by the independents match the relative change in the volume of milk processed by Fonterra’s Notional Business. This is where any total revenue increase (net of efficient variable costs other than the

⁸ This is other than the ability of Fonterra’s Directors to override the Manual.

cost of milk) is matched or offset by an increase in the annual aggregate price for milk for the independent processor.⁹

Is Sales Phasing Risk Systematic?

- 6.11 Our analysis in Auckland UniServices Report No 2 (paragraphs 7.20 to 7.23) concluded that there was no strong evidence that “**phasing risk**” is systematic in nature. We understand that phasing risk arises due to other milk processors’ inability to perfectly match factors such as Fonterra’s sales phasing and foreign exchange rate conversion profiles in the absence of perfect information
- 6.12 We update below the analysis in Auckland UniServices Report No 2 in relation to phasing risk. **Figure One** and **Figure Two** present plots of the average monthly export prices in NZD¹⁰ reported by Fonterra and other competitor NZ milk processors (in aggregate) for WMP and SMP.¹¹

⁹ In Auckland UniServices Report No 3 (paragraphs 8.11 and 8.12) we also noted that:

“In respect of Castalia’s (2016) comments on a higher asset beta on account of greater growth options for the notional processor compared to ELBs, in Auckland UniServices Report No 2 (paragraph 3.34) we concluded:

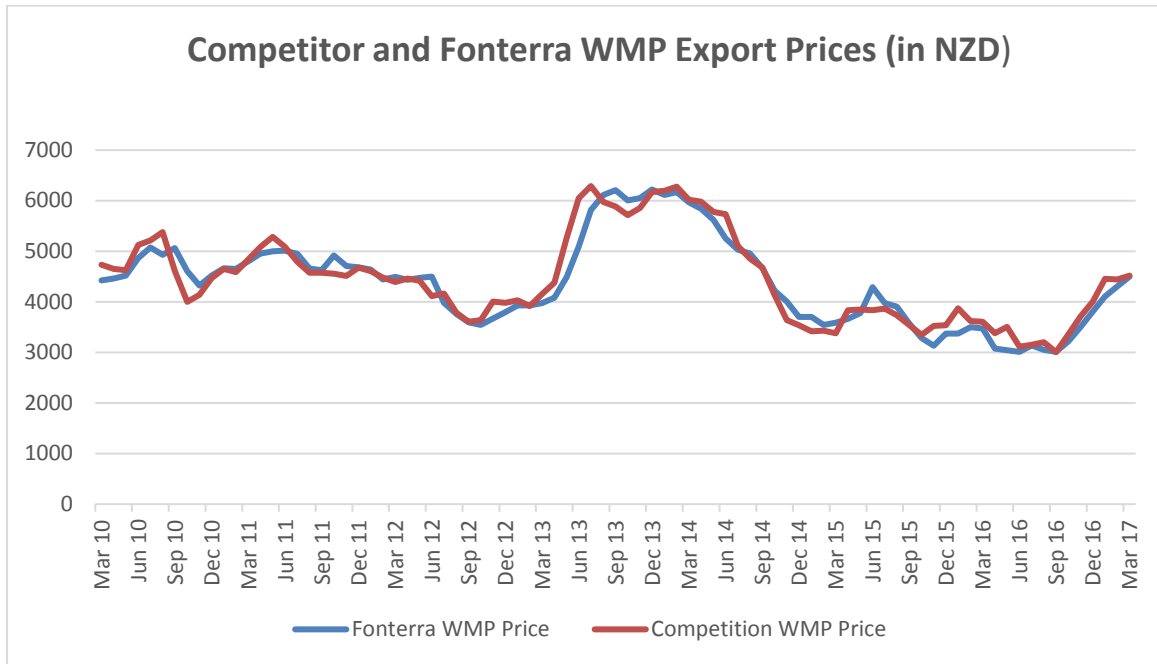
“.....In Auckland UniServices view, any uplift in asset beta on account of expansion options for Fonterra’s Notional and Actual Businesses will be small, where we understand (based on discussions with Fonterra) that at the margin any increase in milk supply is likely to be sold on-GDT.” and

Lally (2016b, page 8) also notes that the growth option to convert land to dairy farming is owned by the owner of the land and not Fonterra. “

¹⁰ USD prices were converted to equivalent NZD using average end of period mid-rates reported by the Department of Statistics. Source: <http://www.rbnz.govt.nz/statistics/tables/b1/>

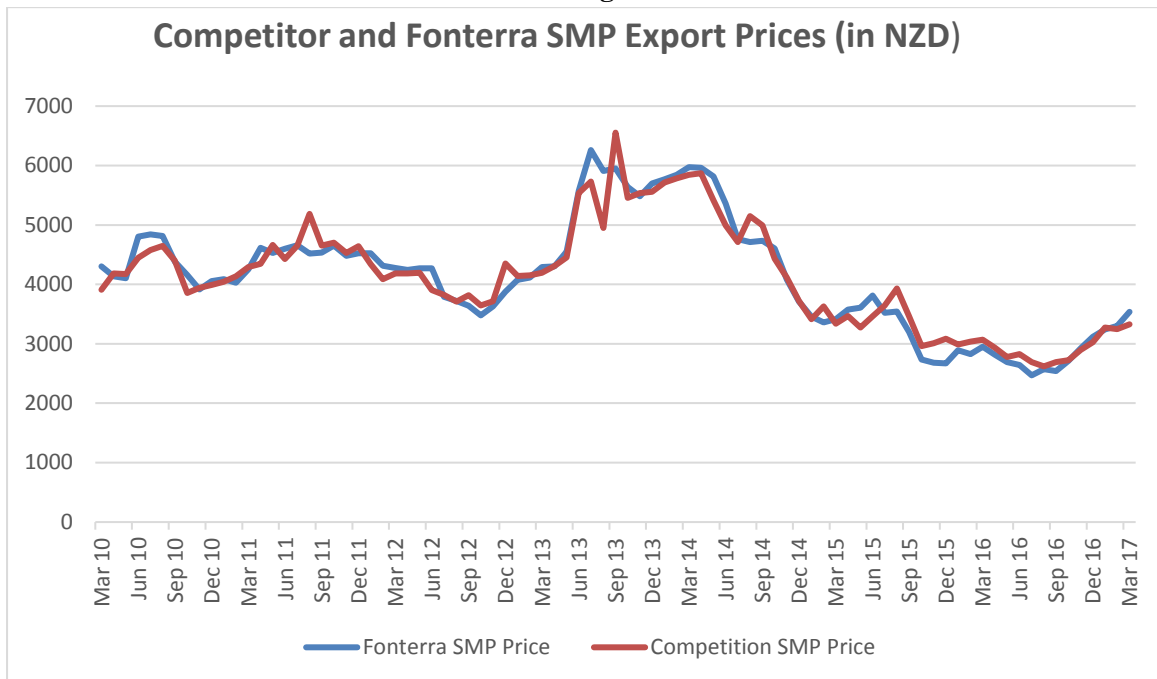
¹¹ All data sourced from Fonterra.

Figure One



Source: Monthly data between March 2010 and March 2017 provided by Fonterra.

Figure Two



Source: Monthly data between March 2010 and March 2017 provided by Fonterra

6.13 Differences between Fonterra’s and other processors’ average prices will reflect some combination of differences in the times at which products were contracted for sale and differences in prices achieved in given contracting months. In addition, whereas Fonterra contracts product

for sale both on and off-GDT, we understand that all other NZ processors contract off-GDT. However, the figures above suggest that Fonterra's export prices for WMP and SMP closely match prices achieved by other NZ processors.

6.14 We also undertook OLS regressions whereby we regressed:¹²

$$\frac{(\text{Competitor WMP NZD export prices} - \text{Fonterra's WMP NZD export prices respectively})}{\text{Fonterra's WMP NZD export prices}} = \alpha + \beta \times \% \text{ Change in NZX 50 Gross Index} + \varepsilon$$

and

$$\frac{(\text{Competitor SMP NZD export prices} - \text{Fonterra's SMP NZD export prices respectively})}{\text{Fonterra's SMP NZD export prices}} = \alpha + \beta \times \% \text{ Change in NZX 50 Gross Index} + \varepsilon$$

6.15 In our regressions, the "beta" coefficients on the % change in NZX 50 index variable was negative on the regression with WMP as the explanatory variable and positive (0.26) on the regression with SMP as the explanatory variable, but both coefficients were not significantly different from zero at standard statistical confidence levels.¹³ The adjusted R² of the regressions were low.

6.16 In summary, based upon our analysis above, we find no strong evidence that Phasing Risk is systematic in nature.

Is Foreign Exchange Risk Systematic?

6.17 Fonterra has a policy of hedging its net foreign currency exposure, explained in the 2016 Farmgate Milk Price Statement as follows:

Fonterra's policy is to hedge 100 per cent of net recognised foreign currency trade receivables and payables. It also requires hedging of forecast cash receipts from sales for a period of up to 18 months within limits approved by Fonterra's Board. Fonterra uses both forward foreign exchange contracts and currency options to hedge its foreign exchange risk.

Fonterra's hedging policy is designed to provide certainty and to reduce the impact on the Farmgate Milk Price of volatility in the NZD, and results in the spot exchange rate at a particular point in time being reflected in the hedged conversion rate over the subsequent 18 months.

¹² Returns are all calculated using discrete returns.

¹³ Regressions were based on monthly data between March 2010 and March 2017 provided by Fonterra. We also performed regressions winsorizing the dependent and independent variables to the 5 percent and 95 percent values. The beta coefficients were still not statistically significant at standard confidence levels. We also regressed the "delta" (being the percentage change in the difference between the competitor WMP or SMP export prices less Fonterra's WMP or SMP export prices respectively) against the % change in the NZX 50 Gross Index. Again the "beta" coefficients on the % change in the NZX 50 Gross Index variable were not significant at standard statistical confidence levels.

6.18 We understand independent processors are aware of Fonterra’s general policy with respect to foreign exchange hedging and a number of its key parameters, but do not have sufficient information to be able to (if they wished to do so) perfectly replicate it. They are therefore exposed to the risk of an unavoidable difference between their average foreign exchange conversion rates and the exchange rate used by Fonterra’s Notional Business.

6.19 In our view, however, there is no clear reason why this risk might be systematic.

Is Streaming Risk systematic?

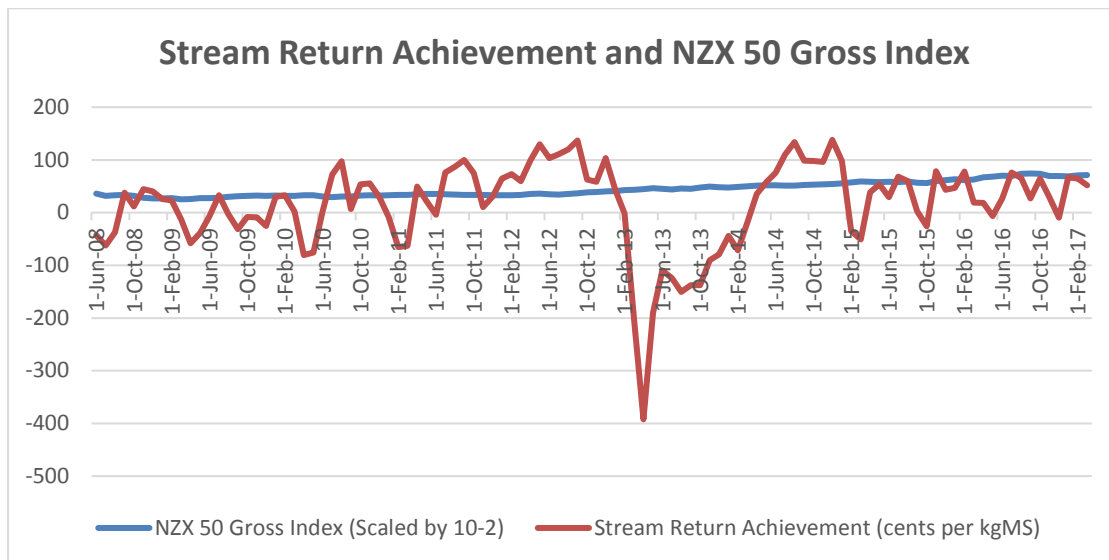
6.20 Fonterra’s broader New Zealand-based commodity or Actual Business¹⁴ and independent notional processors are also exposed to ‘stream return’ risk (“**Stream Risk**”), in respect of variances between returns to commodity products not included in the milk price basket of RCPs and returns to RCPs.

6.21 In Auckland UniServices Report No 2 we defined Stream Return Achievement as follows:

$$\text{Stream Return Achievement} = \text{Weighted average non-RCP price} - \text{Weighted average RCP price}$$

6.22 In **Figure 3** below, we plot the level values of Stream Return Achievement and the values of the NZX 50 Gross index¹⁵ for the period 1 June 2008 to 1 March 2017. The data points are at monthly intervals.

Figure 3



Source: Data supplied by Fonterra and EY New Zealand

¹⁴ See Auckland UniServices Report No 2 for the definition of Fonterra’s Actual Business.

¹⁵ The NZX 50 Gross index has been scaled downwards by dividing by 100.

6.23 To gain further insight on whether or not Stream Return Achievement is systematic or non-systematic risk, we undertake an ordinary least squares (OLS) regression as follows:¹⁶

$$\text{Stream Return Achievement} / \text{Weighted average RCP price} = \alpha + \beta \times \% \text{ Change in NZX 50 Gross Index} + \varepsilon$$

6.24 The “beta” coefficient was negative, but not statistically different from zero at standard confidence levels.¹⁷ The adjusted R² of the regression was low.

6.25 In summary, we find no strong evidence that Stream Return Achievement risk is systematic.

6.26 We also note that the Commerce Commission’s (2015) Final Report 2014/15 noted (para. 6.21) that it was not clear to the Commission that the stream return risk is systematic.

6.27 Castalia (2015, page 3) also consider that stream risk return is likely to be non-systematic. This is because the risk that non-RCP products that Fonterra produces perform better or worse than RCPs is diversifiable.

Cash Costs

6.28 As described in Auckland UniServices Reports No 1, 2 and 3, Fonterra’s Notional Business is exposed to risks of under-recovery or over-recovery of actual costs relative to “efficient costs” prescribed under the Milk Price Manual (some of which, however, may reflect Fonterra’s actual costs).

6.29 In Auckland UniServices Report No 3 we summarised the net cash flows¹⁸ risk faced by Fonterra’s Notional Business as [also see Lally 2016 (a)]:

$$\text{NCF} = \text{EOTH} - \text{AOTH}$$

Where:

NCF = net cash flow.

EOTH = ex-ante efficient costs other than the purchase of milk for a business that sells RCPs with sales on and off GDT.

AOTH = actual costs other than the purchase of milk.

6.30 In our view, this cash flow risk could give rise to both positive and negative beta. We note, however, that Lally (2016, page 9) argues that this cost risk is more likely to be “negative beta”.

¹⁶ Returns are all calculated using discrete returns.

¹⁷ We also performed regressions winsorizing the variables Stream Return Achievement / Weighted average RCP price and the % Change in NZX 50 Gross Index to the 5 percent and 95 percent values. The beta coefficient was still not statistically significant at standard confidence levels. In addition we also performed regressions (with and without winsorizing) of % Change in Stream Return Achievement = $\alpha + \beta \times \% \text{ Change in NZX 50 Gross Index} + \varepsilon$. Again, the beta coefficients were still not statistically significant at standard confidence levels.

¹⁸ For simplicity, this assumes Fonterra’s Notional Businesses has *no assets*. Accordingly, the definition of net cash flow (NCF) allowance does not include any allowance for the return “on” and return “of” capital.

This is because high GDP causes market returns to increase. However, costs also increase when GDP is high and demand for inputs is also high. Thus, NCF risk is negative when market returns are increasing, exerting a downward impact on beta.

- 6.31 Overall, in our view, risks associated with “cash costs” should not result in any material difference in the systematic risk for the notional processor compared to the systematic risk for Fonterra’s Notional Business.

Lactose Costs

- 6.32 In Auckland UniServices Report No 1 (page 18) we noted that 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. In FY14, use of other processors’ average cost resulted in a NZD 60m reduction in assumed lactose costs, compared to NZD 33m in FY13. This is the most significant earnings risk faced by Fonterra’s Notional Business.

- 6.33 Again, in our view, risks associated with “Lactose costs” should not result in any material difference in the systematic risk for the notional processor compared to the systematic risk for Fonterra’s Notional Business, where the farmgate milk price is set under the Manual.

Capital costs

- 6.34 As described in Auckland UniServices Reports No 1, 2 and 3, Fonterra’s Notional Business is exposed to risks of:

- a. The consequences of any differences between Fonterra’s actual RCP asset base and the asset base prescribed in the Milk Price Manual; and
- b. The consequence of differences between Fonterra’s Notional Business’ funding decisions (and therefore its cost of capital) and that assumed in the Milk Price Manual.

- 6.35 Independent processors will also be exposed to these same risks and, like Fonterra’s Notional Business, can choose to adopt a different capital structure and funding decision to that assumed in the Milk Price Manual.

- 6.36 Accordingly, in our view, these risks should not result in any material difference in systematic risk for the notional processor compared to the systematic risk for Fonterra’s Notional Business.

How does the allocation of these risks differ between the notional processor and companies in the comparator sample?

Volume Risk

6.37 As discussed in paragraphs 6.5 to 6.10 of this report, any increase (or decrease) in the milk price from the volumes of milk processed should not impact the net cash flow returns to the independent processor, to the extent relative changes in milk volumes processed by the independents match the relative change in the volume of milk processed by Fonterra's Notional Business.

6.38 Accordingly, in our view, volume risk should not result in any material difference in systematic risk for the notional processor compared to the systematic risk for Fonterra's Notional Business.

Sales Phasing, Stream Risk and Foreign Exchange Risk

6.39 Overall, in our view, the incremental risk for independent processors relative to Fonterra, due to other processors' inability to perfectly match factors in the absence of perfect information such as:

- a. Fonterra's sales phasing;
- b. Stream risk; and
- c. Foreign exchange rate conversion profiles

is likely to be non-systematic in nature.

Cash Costs, Lactose Costs and Capital Costs

6.40 As described in paragraphs 6.28 to 6.36 of this report, in our view, these risks should not result in any material difference in the systematic risk for the notional processor compared to the systematic risk for Fonterra's Notional Business.

Implication of "unders" and "overs"

6.41 Table 1 of this report (which summarises the Castalia's (2017b) bridge diagram between the Synlait farmgate milk price and the milk price in the Milk Price Statement) shows an overall one cent variance for the 2014/15 Milk Price paid in comparison to Synlait's milk price as a "notional producer".

6.42 These risks highlighted by Castalia / Synlait in Table 1 show both "*unders*" and "*overs*". Thus, there is no evidence that overall these risks (which in our view have no material impact on any differences in the asset beta between Fonterra's Notional Business and the independent processors and/or are largely non-systematic) are *asymmetric* downside risks that might justify an increment to the cost of capital for the independent New Zealand processors.

Inclusion of off-GDT sales

6.43 Lastly, we note that Castalia’s (2017a, page 15) states that:

“The use of off-GDT sales will influence capital requirements, including WACC and asset beta calculations. The Commission must insist these are factored in to the WACC calculations and build this into the asset beta review, to ensure that a consistent approach is used throughout”.

6.44 We understand both Fonterra’s Notional Business and the independent processor have capacity to sell both on and off-GDT. It is also not clear the basis upon which Castalia (2017a) considers the use of off-GDT sales will impact the systematic risk of Fonterra’s Notional Business or the systematic risk of the independent notional processor.

6.45 In our view, these risks associated with the inclusion of off-GDT sales should not result in any material difference in the systematic risk for the notional processor compared to the systematic risk for Fonterra’s Notional Business.

7 Impact on the estimate of the notional producer’s beta of excluding Fonterra from the comparator sample.

7.1 The Commerce Commission has also queried the impact on the estimate of the notional producer’s beta of excluding Fonterra from the comparator sample.

7.2 In **Appendix 1**, we provide the original analysis of our asset betas as set out in Auckland UniServices Report No 3, except we exclude Fonterra from the sample of comparator companies. A summary of the results of this analysis is provided in **Table 2** below.

Table 2: Summary of asset beta estimates - excluding Fonterra						
Weekly estimate using 2 years data (No tax)	All periods	Period ended				
		31/03/2017	6/01/2017	14/10/2016	22/07/2016	29/04/2016
Average	0.53	0.51	0.51	0.54	0.53	0.55
Median	0.51	0.50	0.50	0.51	0.53	0.53
25th percentile	0.37	0.35	0.35	0.39	0.37	0.40
40th percentile	0.47	0.45	0.46	0.48	0.48	0.47
60th percentile	0.55	0.54	0.55	0.57	0.55	0.59
75th percentile	0.71	0.68	0.69	0.72	0.72	0.72
Four-weekly betas using 5 years data (No tax)						
Four-weekly betas using 5 years data (No tax)	All periods	Period ended				
		31/03/2017	6/01/2017	14/10/2016	22/07/2016	29/04/2016
Average	0.48	0.49	0.48	0.48	0.52	0.52
Median	0.52	0.50	0.52	0.51	0.52	0.51
25th percentile	0.37	0.37	0.38	0.38	0.41	0.42
40th percentile	0.46	0.45	0.47	0.43	0.47	0.48
60th percentile	0.56	0.57	0.56	0.55	0.56	0.57
75th percentile	0.64	0.65	0.63	0.61	0.63	0.61

Source: EY New Zealand analysis of betas and UniServices analysis

7.3 In Auckland UniServices’ view exclusion of Fonterra from the comparative sample analysis makes no change to our conclusions that the empirical point estimate of asset beta (based on

average and median estimates) across the entire comparator sample is circa 0.51 as reported in Auckland UniServices Report No 2.¹⁹

- 7.4 **Table 3** below replicates table 2 in Auckland UniServices Report No 3, except Fonterra is again excluded from the sample. In Table 3, we only provide the summary of the analysis for the combined two and four-weekly empirical beta estimates.

Table 3: Summary of asset beta estimates- excluding Fonterra						
Weekly beta (No tax)	All periods	31/03/2017	6/01/2017	14/10/2016	22/07/2016	29/04/2016
Combined Two and Four-weekly beta	All periods	31/03/2017	6/01/2017	14/10/2016	22/07/2016	29/04/2016
Material Commodity Exposure						
Average	0.53	0.50	0.49	0.54	0.57	0.58
Median	0.53	0.53	0.54	0.54	0.53	0.53
Both Commodity & Brand Exposure						
Average	0.49	0.47	0.47	0.49	0.51	0.52
Median	0.47	0.47	0.47	0.47	0.47	0.47
Brand Exposure						
Average	0.52	0.52	0.52	0.51	0.52	0.52
Median	0.52	0.50	0.51	0.52	0.54	0.55

Source: EY New Zealand analysis of betas and UniServices analysis

- 7.5 There is no change to our empirical point estimate asset beta of between circa 0.49 and 0.52 for companies with both “commodity & brand exposure” and “brand exposure” (based on the average of the combined weekly and four-weekly data estimates).
- 7.6 In summary, the exclusion of Fonterra from the comparator sample of companies with available empirical estimates of beta would not change our conclusions on the asset beta for Fonterra’s Notional Business.

8 Summary and Conclusion

Comparator Companies

- 8.1 Based upon advice from Fonterra, Auckland UniServices is not aware of any listed companies (excluding Fonterra) in our comparable company set, other than potentially Synlait and Murray Goulburn, which have the ability to make ex-post adjustments to pass through all material revenue variances between forecast and actual performance to the milk price.²⁰

¹⁹ Auckland UniServices Report No 2, paragraph 5.11 states “In Auckland UniServices’ view the updated empirical evidence suggests a point estimate asset beta (using the Hamada no-tax formula) for a dairy company with both commodity and value added components would likely fall in the range of between 0.41 and 0.61. This estimate broadly spans the range of the rolling average / median asset betas using daily, weekly and monthly data in the table above for the “Material Commodity Exposure” and “Both Commodity & Brand Exposure” sample groups.”

²⁰ We understand that Fonterra in a separate submission to the Commission will address in further detail the extent to which other companies in the comparator set can transfer commodity price risk to farmers.

8.2 Auckland UniServices understands that Fonterra, Murray Goulburn and Synlait all have processing businesses and value-add businesses. The empirical beta estimates for these companies will reflect a weighted average beta (based upon value weights) for their processing and value-add businesses.

Incremental risks facing the independent notional processor

8.3 In Auckland UniServices' view:

- a. Volume risk should not result in any material difference in the systematic risk for the independent notional processor compared to the systematic risk for Fonterra's Notional Business. This is because any increase (or decrease) in the milk price from the volumes of milk processed should not impact the net cash flow returns to the independent processor, to the extent relative changes in milk volumes processed by the independents match the relative change in the volume of milk processed by Fonterra's Notional Business;
- b. The incremental risk for independent processors relative to Fonterra, due to other processors' inability to perfectly match factors in the absence of perfect information such as:
 - (i) Fonterra's sales phasing;
 - (ii) Stream risk; and
 - (iii) Foreign exchange rate conversion profiles

is likely to be non-systematic in nature; and

- c. The risks related to lactose costs, other cash costs and capital costs should not result in any material difference in the systematic risk for the independent notional processor compared to the systematic risk for Fonterra's Notional Business.

Exclusion of Fonterra from the comparator sample

8.4 The exclusion of Fonterra from the comparator sample of companies does not change our conclusions on the asset beta for Fonterra's Notional Business.

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Appendix 1: Comparable Company Asset Betas – excluding Fonterra

Weekly asset betas using 2 years of data, averaged across each trading day.

Appendix: Detail of Beta Estimates		Weekly estimate using 2 years data (No tax)						
Company	Type of Exposure	Ticker Code	Average all periods	Period ended				
				31/03/2017	6/01/2017	14/10/2016	22/07/2016	29/04/2016
Archer-Daniels-Midland Company	Material Commc	nyse:adm	1.01	0.89	0.91	1.13	1.11	1.03
Bega	Material Commc	ASX:BGA	0.87	0.86	0.89	0.83	0.87	0.91
Bunge	Material Commc	nyse:bg	0.56	0.61	0.53	0.60	0.54	0.49
Glanbia	Material Commc	ISE:GL9	0.55	0.51	0.56	0.56	0.54	0.56
Graincorp	Material Commc	ASX:GNC	0.26	0.27	0.28	0.27	0.27	0.23
Murray Goulburn Co-op	Material Commc	ASX:MGC	0.39	0.45	0.41	0.42	0.26	0.41
Synlait	Material Commc	NZSE:SML	0.33	0.32	0.34	0.27	0.31	0.42
Tate & Lyle	Material Commc	lse:tate	0.51	0.51	0.47	0.50	0.53	0.54
Wilmar	Material Commc	sgx:f34	0.51	0.50	0.51	0.49	0.52	0.53
Associated British Foods	Both Commodity	LSE:ABF	0.79	0.78	0.74	0.80	0.78	0.85
BRF S.A.	Both Commodity	BOVSPA:BRI	0.38	0.37	0.36	0.40	0.38	0.40
Bright Dairy & Food Co., Ltd	Both Commodity	SHSE:600597	0.76	0.82	0.77	0.72	0.72	0.74
ConAgra Foods	Both Commodity	NYSE:CAG	0.37	0.30	0.29	0.43	0.43	0.41
Dairy Crest	Both Commodity	LSE:DCG	0.47	0.47	0.45	0.46	0.47	0.48
Dean Foods	Both Commodity	NYSE:DF	0.37	0.36	0.37	0.35	0.37	0.39
Ingredion Incorporated	Both Commodity	NYSE:INGR	0.67	0.54	0.59	0.72	0.72	0.78
Inner Mongolia Yili	Both Commodity	SHSE:600887	0.82	0.84	0.84	0.79	0.80	0.82
Kerry Group	Both Commodity	ISE:KRZ	0.53	0.46	0.48	0.54	0.55	0.63
NH Foods	Both Commodity	TSE:2282	0.49	0.53	0.51	0.48	0.49	0.42
Olam International	Both Commodity	SGX:O32	0.24	0.21	0.22	0.24	0.27	0.25
Savencia	Both Commodity	ENXTPA:SAVI	0.08	0.05	0.04	0.10	0.11	0.12
China Mengniu	Brand Exposure	SEHK:2319	0.29	0.36	0.32	0.26	0.26	0.24
Chr. Hansen	Brand Exposure	CPSE:CHR	0.70	0.65	0.65	0.72	0.75	0.70
Danone	Brand Exposure	ENXTPA:BN	0.62	0.62	0.65	0.63	0.62	0.60
Emmi AG	Brand Exposure	SWX:EMMN	0.48	0.33	0.50	0.51	0.53	0.52
General Mills	Brand Exposure	NYSE:GIS	0.43	0.40	0.41	0.43	0.42	0.47
Grupo Lala	Brand Exposure	BMV:LALA B	0.77	0.87	0.79	0.74	0.72	0.71
Hershey	Brand Exposure	NYSE:HSY	0.52	0.45	0.48	0.57	0.54	0.55
JBS S.A.	Brand Exposure	BOVSPA:JBS	0.21	0.14	0.15	0.19	0.25	0.29
Kellog	Brand Exposure	NYSE:K	0.36	0.33	0.34	0.38	0.38	0.40
Kraft Heinz	Brand Exposure	NASDAQGS:K	0.58	0.55	0.57	0.56	0.59	0.64
Mead Johnson	Brand Exposure	NYSE:MJN	0.88	0.83	0.84	0.90	0.88	0.96
Mondelez	Brand Exposure	NasdaqGS:MDI	0.62	0.59	0.61	0.63	0.64	0.61
Nestle S.A.	Brand Exposure	SWX:NESN	0.74	0.71	0.74	0.75	0.75	0.76
Parmalat SpA	Brand Exposure	BIT:PLT	0.20	0.20	0.20	0.20	0.19	0.21
Saputo	Brand Exposure	TSX:SAP	0.44	0.40	0.40	0.48	0.45	0.45
Unilever plc	Brand Exposure	LSE:ULVR	0.73	0.74	0.74	0.72	0.74	0.73
Want Want China Holdings	Brand Exposure	SEHK:151	0.25	0.29	0.25	0.24	0.24	0.23
Yakult	Brand Exposure	TSE:2267	0.88	0.83	0.89	0.88	0.89	0.93
Average			0.53	0.51	0.51	0.54	0.53	0.55
Median			0.51	0.50	0.50	0.51	0.53	0.53
25th percentile			0.37	0.35	0.35	0.39	0.37	0.40
40th percentile			0.47	0.45	0.46	0.48	0.48	0.47
60th percentile			0.55	0.54	0.55	0.57	0.55	0.59
75th percentile			0.71	0.68	0.69	0.72	0.72	0.72

Source: Drawn from data and analysis provided by EY New Zealand

Appendix 1 Cont: Comparable Company Asset Betas – excluding Fonterra

Four-weekly asset betas using 5 years of data, averaged across each trading day.

Appendix: Detail of Beta Estimates		Four-weekly betas using 5 years data (No tax)						
Company	Type of Exposure	Ticker Code	Average all periods	Period ended				
				31/03/2017	6/01/2017	14/10/2016	22/07/2016	29/04/2016
Archer-Daniels-Midland Company	Material Commodity Exposure	nyse:adm	0.89	0.89	0.88	0.93	0.87	0.87
Bega	Material Commodity Exposure	ASX:BGA	0.65	0.70	0.71	0.61	0.63	0.61
Bunge	Material Commodity Exposure	nyse:bg	0.63	0.66	0.62	0.61	0.63	0.64
Glanbia	Material Commodity Exposure	ISE:GL9	0.49	0.48	0.48	0.45	0.52	0.53
Graincorp	Material Commodity Exposure	ASX:GNC	0.44	0.42	0.40	0.43	0.48	0.47
Murray Goulburn Co-op	Material Commodity Exposure	ASX:MGC	-0.59	-0.79	-0.88	-0.09		
Synlait	Material Commodity Exposure	NZSE:SML	0.52	0.57	0.57	0.54	0.43	0.51
Tate & Lyle	Material Commodity Exposure	lse:tate	0.56	0.63	0.61	0.55	0.53	0.49
Wilmar	Material Commodity Exposure	sgx:f34	0.56	0.55	0.56	0.56	0.57	0.57
Associated British Foods	Both Commodity & Brand Exposure	LSE:ABF	0.76	0.79	0.78	0.74	0.71	0.76
BRF S.A.	Both Commodity & Brand Exposure	BOVSPA:BR	0.40	0.41	0.41	0.42	0.38	0.38
Bright Dairy & Food Co., Ltd	Both Commodity & Brand Exposure	SHSE:600597	0.65	0.66	0.65	0.65	0.64	0.67
ConAgra Foods	Both Commodity & Brand Exposure	NYSE:CAG	0.35	0.26	0.27	0.37	0.42	0.43
Dairy Crest	Both Commodity & Brand Exposure	LSE:DCG	0.50	0.57	0.53	0.48	0.46	0.48
Dean Foods	Both Commodity & Brand Exposure	NYSE:DF	0.36	0.31	0.35	0.31	0.44	0.41
Ingredion Incorporated	Both Commodity & Brand Exposure	NYSE:INGR	0.68	0.50	0.53	0.71	0.81	0.82
Inner Mongolia Yili	Both Commodity & Brand Exposure	SHSE:600887	0.66	0.65	0.67	0.67	0.66	0.66
Kerry Group	Both Commodity & Brand Exposure	ISE:KRZ	0.52	0.50	0.50	0.51	0.54	0.56
NH Foods	Both Commodity & Brand Exposure	TSE:2282	0.45	0.46	0.45	0.42	0.45	0.46
Olam International	Both Commodity & Brand Exposure	SGX:O32	0.38	0.32	0.37	0.40	0.40	0.42
Savencia	Both Commodity & Brand Exposure	ENXTPA:SAV	0.18	0.15	0.15	0.17	0.22	0.23
China Mengniu	Brand Exposure	SEHK:2319	0.41	0.40	0.41	0.41	0.41	0.40
Chr. Hansen	Brand Exposure	CPSE:CHR	0.54	0.55	0.56	0.58	0.52	0.51
Danone	Brand Exposure	ENXTPA:BN	0.52	0.55	0.52	0.52	0.50	0.49
Emmi AG	Brand Exposure	SWX:EMMN	0.42	0.45	0.47	0.39	0.41	0.41
General Mills	Brand Exposure	NYSE:GIS	0.35	0.42	0.39	0.34	0.29	0.30
Grupo Lala	Brand Exposure	BMVL:ALA B	0.62	0.71	0.69	0.57	0.58	0.57
Hershey	Brand Exposure	NYSE:HSY	0.29	0.34	0.33	0.29	0.25	0.26
JBS S.A.	Brand Exposure	BOVSPA:JBS	0.37	0.29	0.31	0.38	0.40	0.45
Kellog	Brand Exposure	NYSE:K	0.32	0.33	0.32	0.32	0.30	0.31
Kraft Heinz	Brand Exposure	NASDAQGS:K	0.19	0.29	0.26	0.02		
Mead Johnson	Brand Exposure	NYSE:MJN	0.78	0.94	0.87	0.80	0.65	0.65
Mondelez	Brand Exposure	NasdaqGS:MD	0.59	0.63	0.62	0.59	0.56	0.56
Nestle S.A.	Brand Exposure	SWX:NESN	0.66	0.71	0.70	0.66	0.61	0.61
Parmalat SpA	Brand Exposure	BIT:PLT	0.54	0.44	0.48	0.46	0.66	0.66
Saputo	Brand Exposure	TSX:SAP	0.58	0.59	0.58	0.52	0.60	0.59
Unilever plc	Brand Exposure	LSE:ULVR	0.72	0.88	0.79	0.74	0.63	0.58
Want Want China Holdings	Brand Exposure	SEHK:151	0.19	0.21	0.20	0.19	0.19	0.17
Yakult	Brand Exposure	TSE:2267	0.74	0.76	0.75	0.72	0.73	0.74
Average			0.48	0.49	0.48	0.48	0.52	0.52
Median			0.52	0.50	0.52	0.51	0.52	0.51
25th percentile			0.37	0.37	0.38	0.38	0.41	0.42
40th percentile			0.46	0.45	0.47	0.43	0.47	0.48
60th percentile			0.56	0.57	0.56	0.55	0.56	0.57
75th percentile			0.64	0.65	0.63	0.61	0.63	0.61

Source: Drawn from data and analysis provided by EY New Zealand