Asset Beta for Notional Processor: Response to the Cambridge Report

The University of Auckland

Report prepared for:
FONTERRA CO-OPERATIVE GROUP LIMITED
Private Bag 92032,
Auckland
New Zealand

By
Dr Alastair Marsden
Department of Accounting and Finance
The Business School
The University of Auckland
Email: a.marsden@auckland.ac.nz
Ph (64) (9) 3737-599 Ext. 88564

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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.

The University of Auckland
Private Bag 92019
Auckland

Asset Beta for Notional Processor: Response to the Cambridge Report.

Executive Summary

1 Introduction

1.1 Fonterra Co-operative Group Limited ("**Fonterra**" or "**Company**") has requested The University of Auckland ("**UOA**" or "**we**" or "**our**")[1] to review the report titled "Dairy Notional Processors' Asset Beta: New Zealand Commerce Commission" written by Cambridge Economic Policy Associates Pty Ltd in association with Freshagenda Pty Ltd dated 28 March 2018 ("**Cambridge Report**") and consider whether or not this changes the view of Auckland UniServices Ltd ("**Auckland UniServices**", now UOA) on the asset beta for Fonterra's New Zealand-based commodity milk powders manufacturing business (hereafter also "**Notional Processor**").[2] The Notional Processor is assumed to be the portion of Fonterra's New Zealand business that manufactures and sells milk powder-based commodity products (referred to as "**Reference Commodity Products**", or "**RCPs**") both on and off Global Dairy Trade ("**GDT**").[3]

1.2 For the Notional Processor, the raw input "cost of milk" or the farmgate milk price is set in accordance with Fonterra's Farmgate Milk Price Manual (hereafter also "**Milk Price Manual**" or "**Manual**").

1.3 The Cambridge Report has been publicly released by the New Zealand Commerce Commission ("**Commerce Commission**" or "**Commission**") in support of the Commission's current view that the asset beta of the comparator entities as set out in the Cambridge Report ("**CB Sample**")[4] provide more appropriate "comparators" to draw upon as an estimate of the asset beta of the Notional Processor compared to asset betas drawn from regulated Electricity Line Businesses ("**ELBs**").

2 Key Analyses

Review of relative systematic risks

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[2] We adopt the term Notional Processor rather than Notional Business to be consistent with the terminology in the Cambridge Report.

[3] Under this definition, the "Notional Processor" is largely Fonterra's milk powder manufacturing business, scaled up to process all milk supplied to Fonterra in New Zealand. RCPs are set out in the Farmgate milk Price Manual.

[4] This sample is characterised in the Cambridge Report as dairy companies, commodity exposed companies, commodity with price pass through companies and regulated milk price companies and is also drawn from prior reports by Auckland UniServices Ltd.

2.1 The table below compares the Cambridge Report and UOA's view on the relative systematic risks comparing the Notional Processor to the CB Sample and ELBs. The relevant risks are drawn from Table 3.3 of the Cambridge Report (pages 38-41).

Table 1						
Type of Risk	The Cambridge Report			UOA		
	Notional Processor	CB Sample	ELBs	Notional Processor	CB Sample	ELBs
Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**	**Column 6**	**Column 7**
Revenue Risk	No risk	↑ or = similar risk	= similar risk	No risk	↑ Higher risk	Low (but slightly higher)
Exchange rate	No risk	= or ↑ Higher but low risk or = low risk	= low risk	No risk	Unclear	= Low (similar) risk
Opex (excluding raw milk)	Faces risk	= similar or lower or = potentially different risk profile	≠ different	Low risk	Unclear	= Low (similar) risk
Operational leverage	Low risk	= or ↑ Higher (depends on contracting)	≠ to ↓ different	Low risk	↑ Higher risk	Low (similar) risk
Capex / Investment	Faces valuation risk	= similar	↓ Lower	Low risk	↑ Higher risk	Low (similar) risk
Asset stranding	Faces risk	= similar risk profile	↓ Lower (no) risk	Low risk	↑ Higher risk	Low risk but ↑
Counterparty risk	No risk	↑ Higher risk	= no risk	No risk	↑ Higher risk	= low (no) risk
Financing risk	Faces risk	↑ Higher risk	↓ Lower risk	Low risk	↑ Higher risk	Low risk but ↑

Notes to Table 1:

- Column 2 provides the Cambridge Report's systematic risk assessment for the Notional Processor.
- Columns 3 and 4 provides the Cambridge Report's assessment of the relative systematic risk exposure for the CB Sample (Col. 3) and ELBs (Col. 4) compared to the systematic risk exposure for the Notional Processor.
- Column 5 provides UOA's systematic risk assessment for the Notional Processor.
- Columns 6 and 7 provides UOA's assessment of the relative systematic risk exposure for the CB Sample (Col. 6) and ELBs (Col. 7) compared to the systematic risk exposure for the Notional Processor.

2.2 In UOA's view:

a. The Notional Processor has less systematic risk exposure to:
    i) revenue risk,
    ii) operational leverage,
    iii) capex investment,
    iv) asset stranding,
    v) counterparty risk; and
    vi) financing risk

    compared to companies in the CB Sample (which are characterised as dairy companies, commodity exposed companies, commodity with price pass through companies and regulated milk price companies);

b. In respect of revenue risk, the Notional Processor passes back nearly all commodity revenue (both price and volume) risk to supplier farmers. Even where some companies in the CB Sample can pass back price risk, it is not clear from the Cambridge Report if this also extends to the ability to offset or pass back volume risk;

c. In respect of relative exposure to opex (excluding raw milk) and exchange rate risk, the volatility of earnings may be greater for the CB Sample, but any relative risk differential for beta is unclear; and

d. The Notional Processor has a more similar systematic risk profile to that of ELBs. The systematic risk or asset beta for both the Notional Processor and ELBs is also low.

Other findings

2.3 UOA concludes that the Notional Processor compared to the CB Sample:

a. Has low systematic risk exposure to growth options. Growth opportunities are largely "owned" by the land owner (also see Lally (2016b)) and Fonterra's non-RCP business, but are not "owned" the Notional Processor. The returns to the capital providers of the Notional Processor under the building blocks approach in the Manual is targeted to provide a "fair rate" of return (i.e., close to NPV = 0 outcome).

b. Has low exposure to the risk or expected losses of asset stranding. This is because under the Manual, if assets are stranded, the oldest assets are first removed from the asset base. The asset base also includes a prudent level of buffer capacity to cover variations in year on year supply; and

c. Fonterra has a A- credit rating, which is better than most companies in the CB Sample (and with a number of these companies not rated). In addition, the Notional Processor has lower refinancing risk that may impact on the value of V_e (value of the business at the end of a "regulatory period" or "when new milk prices will be set"). This arises in part because (apart from the asset beta and the post-tax market risk premium), the risk-free rate, cost of debt and

corporate tax rate inputs into the weighted average cost of capital ("**WACC**") calculation are reviewed annually.

2.4 In respect of growth options, the Cambridge Report (page 11) also highlights some constraints to milk production growth in NZ. This includes stricter environmental regulation and weather challenges. The Cambridge Report (page 12) then states:

> "*While these constraints may limit the outlook for volume growth, price growth, as demand for dairy products increases will still fuel investor value in the dairy industry.*"

In UOA's view, if prices for dairy products grow but not volumes of raw milk to be processed, investment in new plant (over and above replacement plant) to process greater volumes of raw milk will not be required.

3 Conclusion

3.1 Overall, UOA disagrees with the Cambridge Report with respect to:

a. The relative assessment of the systematic risks faced by the Notional Processor compared to the CB Sample as described in the Cambridge Report; and

b. The use of the CB Sample (or sub-samples of companies within the CB Sample) to best determine the estimate of the asset beta for the Notional Processor.

3.2 In UOA's view, whether or not the Commission's Input Methodologies ("**IM**") approach to primarily or solely draw upon asset beta estimates from the same industry is used is not the "right" question. The key task is to estimate the asset beta for the Notional Processor, which requires judgement as to what is the best evidence to inform that estimate. UOA considers that ELBs provide more reliable and suitable comparators since the Notional Processor and ELBs have a more similar systematic risk profile.

3.3 In other words, regardless of the estimation approach applied (e.g., IM or first principles or otherwise), ELBs provide the best evidence of NP's asset beta, because their systematic risk is most comparable. The CB Sample should receive less weight, because their systematic risk profile differs materially to that of the Notional Processor.

3.4 Lally (2016b) also concludes that ELBs are suitable comparators, where ELBs have similar low systematic risk even although they are different industries and ELBs are regulated.[5]

[5] Lally (2016b, page 8) states:
"So, suitable comparators must have similar systematic risk but this does not require similarity on all (or even any of the) dimensions that underlie systematic risk. The ELBs are of this type in relation to the Notional Business".

3.5 In UOA's view, an appropriate point estimate asset beta for the Notional Processor is still 0.38. An asset beta of 0.38 is within credible percentile bounds of the range of empirical asset betas observed for the CB Sample.

3.6 If the Commission nevertheless remains committed to using the CB Sample as the starting point, because it believes that the IM approach requires this and under the Dairy Industry Restructuring Act 2001 ("**DIRA"**) the IM approach should be applied, then a downward adjustment to asset beta is required. In UOA's view, a significant downward adjustment to the asset betas of the CB Sample (to determine the asset beta of the Notional Processor) is warranted on account of two factors:

a. The CB Sample comprises a mixture of companies with processing operations and a value-added business component. In contrast, the Notional Processor is a 100% processing operation. This warrants a downward adjustment to asset beta in the same manner as the Commission adjusted the asset beta for airports downwards, based on airports owning both aeronautical and non-aeronautical assets; and

b. A further downward adjustment is warranted to reflect that (based upon discussions with Fonterra and our review of the Cambridge Report) none of the companies in the CB Sample have the ability to fully pass back systematic commodity revenue (both price and volume) risk to supplier farmers. In addition, the CB Sample of companies face higher risks of asset stranding, capex / investment risk and are less protected against shocks to the discount rate that increase asset beta.

3.7 This executive summary should be read in the context of our full report.

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Asset Beta for Notional Processor: Response to the Cambridge Report.

4 Introduction

4.1 Fonterra Co-operative Group Limited ("**Fonterra**" or "**Company**") has requested The University of Auckland ("**UOA**" or "**we**" or "**our**")[6] to review the report titled "Dairy Notional Processors' Asset Beta: New Zealand Commerce Commission" written by Cambridge Economic Policy Associates Pty Ltd in association with Freshagenda Pty Ltd dated 28 March 2018 ("**Cambridge Report**") and consider whether or not this changes the view of Auckland UniServices Ltd ("**Auckland UniServices**", now UOA) on the asset beta for Fonterra's New Zealand-based commodity milk powders manufacturing business (hereafter also "**Notional Processor**").[7] The Notional Processor is assumed to be the portion of Fonterra's New Zealand business that manufactures and sells milk powder-based commodity products (referred to as "**Reference Commodity Products**", or "**RCPs**") both on and off Global Dairy Trade ("**GDT**").[8]

4.2 For the Notional Processor, the raw input "cost of milk" or the farmgate milk price is set in accordance with Fonterra's Farmgate Milk Price Manual (hereafter also "**Milk Price Manual**" or "**Manual**").

4.3 The Cambridge Report has been publicly released by the New Zealand Commerce Commission ("**Commerce Commission**" or "**Commission**") in support of the Commission's current view that the asset beta of the comparator entities as set out in the Cambridge Report ("**CB Sample**")[9] provide more appropriate "comparators" to draw upon as an estimate of the asset beta of the Notional Processor compared to asset betas drawn from regulated Electricity Line Businesses ("**ELBs**").

4.4 In this respect, the Commerce Commission (2017) notes (para 2.8 of its report for Fonterra's 2016/17 base milk price calculation) that:

"*Regarding the contestability dimension, we note that Fonterra's approach for estimating asset beta differs from our established approach for doing so, and therefore also from the estimate we would likely get. We have reached the position where we cannot conclude that Fonterra's*

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[7] We adopt the term Notional Processor rather than Notional Business to be consistent with the terminology in the Cambridge Report.

[8] Under this definition, the "Notional Processor" is largely Fonterra's milk powder manufacturing business, scaled up to process all milk supplied to Fonterra in New Zealand. RCPs are set out in the Farmgate milk Price Manual.

[9] This sample is characterised in the Cambridge Report as dairy companies, commodity exposed companies, commodity with price pass through companies and regulated milk price companies and is also drawn from prior reports by Auckland UniServices Ltd.

asset beta estimate of 0.38 for the Notional Producer is not practically feasible for an efficient processor with similar risk exposure."

4.5 The Commission is therefore currently unable to conclude that the point estimate asset beta (0.38) recommended by Auckland UniServices (now UOA) satisfies the contestability requirement.

4.6 The Cambridge Report supports the Commission's view that dairy comparators provide the best approach to draw upon to estimate the asset beta for the Notional Processor. The Cambridge Report (page 3) also concludes there is no strong evidence to decrease the asset beta below the low end of the asset beta range (0.45) for this comparator group

Limitations

4.7 This report is subject to our disclaimer and "Important Notice" on page 2 of this report.

5 Structure of the remainder of our Report

5.1 The rest of our report is structured as follows:

a. Section 6 discusses the Notional Processor and why, in UOA's view, the CB Sample may not be able to shift commodity price risk similar to the ability to shift this risk by the Notional Processor.

b. Section 7 compares and contrasts the view of UOA and the view in the Cambridge Report to relative systematic risk factors.

c. Section 8 considers other aspects of the Cambridge Report that impact on beta.

d. Section 9 concludes.

e. **Appendix 1** provides a summary of the Cambridge Report's analysis of the CB Sample of companies with a focus on the ability to pass back prices and the extent to which key risks include fluctuations to commodity prices.

f. **Appendix 2** provides a summary of the credit ratings of the CB Sample.

6 The Notional Processor

6.1 The Cambridge Report (Section 2.2, page 12) ascribes the (Milk Price Manual) Notional Processor as "…*an entity that is aligned entirely with the milk price manual calculation…*". The Cambridge Report (Section 2.2, page 13) further notes that:

"We note, however, the Commission's view that if Fonterra is able to shift commodity price risk to farmers then there should be no reason why other processors could not do the same.[10] *We have adopted this view in this report, and we note that if this is the case for all processors then it may be reasonable to assume companies in the comparator group can do the same".*

6.2 We disagree with the inferences in the statement above in the Cambridge Report. Our reasons are detailed below.

6.2.1 As noted by Auckland UniServices (2017b) and based upon advice from Fonterra, UOA is not aware of any listed companies (excluding Fonterra) in the CB Sample set, other than Synlait and potentially 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.

6.2.2 Revenues are a function of both price and volume. The rules of the Manual mean that the Notional Processor passes on nearly all milk price and volume risk back to the supplier farmers.

6.2.3 The New Zealand ("**NZ**") milk market is subject to the DIRA framework with review by the Commerce Commission on the extent to which Fonterra's base milk price calculation is consistent with the purpose of the milk price monitoring regime in DIRA. The structure of the milk market in NZ is materially different to other countries in which companies in the CB Sample are domiciled.

6.2.4 In NZ, the Notional Processor is subject to limited competition and may have a high degree of market power in setting the farmgate milk price. That is, even in the absence of "regulation" or other forms of market control, the Notional Processor would have the ability to pass milk price and volume risk and other input costs back to the milk supplier. However, in markets where there are many processors that actively compete for milk supply, the ability to fully pass back milk price and volume risk to suppliers may be more limited.[11]

6.2.5 That is, in markets where processors have less market power or absent specific regulations, then processors may be subject to "hold-up" risk. Investment in dairy processing assets has features of high asset specificity, where assets have little alternative value other than processing of raw milk. In a competitive market with a number of processing companies, to ensure ongoing supply by farmers of milk to a processing factory (and to avoid significant costs associated with idle plant or risk of asset stranding), individual processors may be limited in their ability to pay lower raw input costs or milk prices to supplier farmers in the event of any downturn in the market.[12]

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[10] NZCC (2017b), *Review of Fonterra's 2016/17 base milk price calculation: Dairy Industry Restructuring Act 2001*, September 2017, page 19.

[11] We acknowledge that a co-operative company fully owned by its members, with ownership directly proportional to milk supply may choose not to exercise any market power.

[12] To further illustrate, in the case of Yili the Cambridge Report (page 100) also notes that:

6.2.6 Similarly, in an unregulated environment, a processor may have greater bargaining power than the farmer and subject the supplier farmers to "hold-up" risk, where raw milk cannot be stored but must be immediately processed. In this case the processor can exercise market power not to pass on raw commodity price increases to the supplier farmers, who have little choice but to supply milk to the dominant processor.

6.3 Fonterra (2017) in a separate submission to the Commission provides a more detailed review on the ability of companies in the CB Sample to transfer their exposure to systematic risk in their non-commodity businesses onto suppliers of raw milk. This submission by Fonterra suggests that firms in the CB Sample can substantially differ from Fonterra and the Notional Processor in their ability to transfer risks back to farmer suppliers.

6.4 A recent report by the Australian Competition and Consumer Commission (2018) also analyses the structural characteristics of the Australian dairy market, including analyses of the relative bargaining power of supermarkets, processors and farmers. This report concludes that the major Australian supermarkets have been able to exert their bargaining power to obtain lower wholesale prices from processors. However, most Australian dairy farmers have limited bargaining power and scope to reposition their businesses.

6.5 The Cambridge Report (page 40) states in relation to asset stranding risk that not all companies in the CB Sample have the same obligation to process all raw milk. Fonterra's Notional Processor has a material obligation to process all raw milk produced by its suppliers. Thus, the NZ market is again different to offshore markets where most of the companies in the CB Sample are domiciled.

6.6 In UOA's view, to the extent there are differences in market power across countries between the farmer (supplier) and processor and differences in the obligation to process raw milk, then it is not reasonable to "assume" companies in the CB Sample can transfer both commodity and non-commodity price risks to milk suppliers similar to the Notional Processor under the framework of DIRA and the Milk Price Manual. In addition, Fonterra advise all the companies in the CB Sample have value-added components to their businesses, and that most have only limited (at best) processing components.

6.7 In Appendix 1 we highlight that even where the Cambridge Report identifies companies in the CB Sample to have the ability to pass back prices / costs, a key risk for many companies is still exposure to "fluctuations in commodity prices'. The Notional Processor is not exposed to the risk of fluctuations in milk input costs and prices for RCPs on GDT.

"The group is in a position to pass some changes in product prices to milk producers in monthly milk price adjustments, but that can be moderated depending on competitive conditions as it must compete in some cases with other processors for milk".

6.8 In the sections of this report that follow we highlight further reasons why we consider ELBs are a better comparator to estimate the asset beta of the Notional Processor compared to the CB Sample.

7 Asset beta estimation

7.1 The Cambridge Report (Section 3) adopts a five-step approach (based upon Section 1.4 of their report) to estimate the asset beta for relevant comparators and the weight placed upon different comparators to estimate the asset beta for the Notional Processor.

7.2 Table 3.3 of the Cambridge Report provides a qualitative assessment of the relevant systematic risks for the CB Sample and ELBs compared to the Notional Processor.

7.3 In the tables below, we compare and contrast the view of UOA and the view in the Cambridge Report to these relative systematic risk factors.

Revenue Risk: relative risk assessment compared to the Notional Processor

Table 2			
Revenue Risk	Cambridge Report	UOA	Comment
Notional Processor	No risk	No risk	Agreement between UOA and the Cambridge Report.
Dairy Companies / Commodity exposed	↑ (depends on ability to pass on price/ volume risk).	↑	Some agreement between UOA and the Cambridge Report.
Commodity price pass through	= Similar risk	↑	Disagree: See notes below.
Regulated milk price	= Similar risk	↑	Disagree: See notes below.
ELBs	= Similar risk	Low (but slightly higher) risk	Some agreement between UOA and the Cambridge Report.

7.4 Changes in revenue can lead to significant changes in underlying profit and returns to investors. This is where changes in revenue are not fully offset by price and volume pass through mechanisms. Thus, exposure to revenue risk is likely to have a large systematic risk component.

Notional Processor and Dairy Companies / Commodity companies

7.5 Under the Milk Price Manual, the farmgate milk price for the Notional Processor is determined "ex-post" as a residual amount at the end of the relevant financial year, based upon actual (ex-post) revenues *less* notional (efficient) cash costs and an allowance for a return "on" and "of" capital.

7.6 UOA agrees with the Cambridge Report (page 38) that the systematic exposure to revenue risk faced by the Notional Processor is close to "no risk" under the rules in the Manual.

Dairy Companies / Commodity companies

7.7 The dairy companies / commodity exposed companies identified in the Cambridge Report (Table 3.2) comprise both processing and value-added businesses. Based upon our analysis of the Cambridge Report, the non-NZ sample of companies appear to have less ability than the Notional Processor to pass on final processed prices and /or scope for pass back in relation to systematic revenue risk.

7.8 Some companies in this group of "dairy companies / commodity exposed" have no ability to pass on final processed prices. For example, see Archer-Daniels-Midland, Glanbia, Graincorp, Mead Johnson Nutrition, Olam International, Want China and Yakult Honsha (see Cambridge Report, Annex D.1. and Table 3.2)

7.9 UOA agrees with the Cambridge Report that the systematic exposure to revenue risk of the Notional Processor is lower than the systematic revenue risk of Dairy Companies / Commodity exposed companies.

Commodity price pass through

7.10 For "Commodity price pass through" companies, the Cambridge Report (page 38) considers these companies have similar risk profile, where companies have the ability to pass on price risk rapidly.

7.11 UOA disagrees with this conclusion in the Cambridge Report. The "Commodity price pass through" companies will have less ability to fully or pass on nearly all revenue risk if they are still exposed to volume risk. This compares to the Notional Processor which passes on nearly all price and volume risk to the supplier farmers using actual ex-post revenues. In this respect the Cambridge Report (page 38) notes that:

"if price/ volume risk cannot be passed on this will increase the (positive) systematic risk".

7.12 In UOA's view the conclusion in the Cambridge Report, Table 3.3 that "Commodity price pass through" companies also have similar systematic exposure to revenue risk is difficult to reconcile with the analysis in Annexes D.1.and D.3. of the Cambridge Report.

7.13 To illustrate (also see **Appendix 1** of this report), in Table 3, we consider the sub-sample of the "Commodity cost pass-through companies" in the CB Sample drawn from Table 3.2 of the Cambridge Report.[13]

[13] Readers should also refer to the full description to the scope for pass back and key risks in the Cambridge Report.

Table 3		
Company	Exposure to revenue risk and ability to pass back prices (Source Annex D.3. Cambridge Report)	Do key risks include fluctuations to commodity prices? (Source: Cambridge Report Annex D.3.)
Bright	Position to pass some changes in product prices to milk producers.	Yes
China Mengniu	Position to pass some changes in product prices to its large-scale milk producers.	Yes
Dairy Crest	Position to pass changes in product prices to milk producers.	Yes
Danone	Position to pass changes in product prices to milk producers.	Yes.
Emmi	Not in a free position to fully pass changes in product prices to milk producers.	Yes.
Grupo Lala	Position to pass changes in product prices to milk producers.	Yes.
Yili	Position to pass some changes in product prices.	Yes.
JBS	Scope to pass back price changes.	Yes.
Parmalat	Position to pass changes in product prices to milk producers (excludes US and Canada where regulated pricing exists).	Yes.
Savencia	Position to pass changes in product prices to milk producers in regular milk price adjustments in France (but moderated by agreement with farm unions).	Yes.

7.14 Table 3 shows that in respect of the "Commodity price (cost) pass through" sample of companies:

a. Not all companies have "full" price pass through of commodity input costs but only partial or limited ability to pass through prices / input costs. In addition, exposure to volume risk may still exist;

b. Even in the case where some pass-through exists, for nearly all companies in this sample, key risks highlighted in Annex D.3. of the Cambridge Report include fluctuations to milk / dairy / commodity prices. If the ability to pass on cost or price risk exists, it is not clear why the Cambridge Report considers a key risk factor for most of these companies is exposure to fluctuations in commodity prices. The Notional Processor is not exposed to this risk; and

c. The set of companies in the "Commodity price (cost) pass through" sample comprise a mixture of businesses with processing and value-add activities.

Regulated milk price entities

7.15 The Cambridge Report (Table 3.2, page 32) identifies the "regulated milk price entities" as Dean Foods and Saputo. In Annex D.3. the Cambridge Report states, both in respect of Dean Foods and Saputo, that these entities are exposed to fluctuations in milk prices and are not in a position to pass changes in market prices back to supplying producers.

7.16 In respect of Dean Foods, the Cambridge Report (page 73) notes that:

a. "Key risks" include "*Fluctuations in raw milk prices*"; and

b. Under the heading "Scope for pass back" that:

"*The group is not in a position to pass changes in market prices back to supplying producers due to the existence of regulated milk prices, set according to "classes" in the US industry" (emphasis added).*

7.17 In respect of Saputo, the Cambridge report (page 92) notes that

a. Key risks include "*Fluctuations in milk and commodity cheese prices in global and US markets*"; and

b. Under the heading "Scope for pass back" that:

• *[Saputo] sources milk at the farmgate in several each of the major countries in which it operates.*

• *The group is not in a position to pass changes in market prices back to supplying producers in the US and Canada due to the existence of regulated milk prices.*

• *Milk prices in Australia are set in annual pricing arrangements. Prices are generally increased from a season opening price, but incidences have occurred with step-downs in price with sudden market turns. It competes against a number of other milk buyers in each region, in a tensely competitive farmgate market"* (emphasis added).

7.18 UOA further notes that the Cambridge Report (page 23) states the where it is feasible to pass-through commodity price changes, the asset beta would be reduced. The reason given is there is greater flexibility to adapt to systematic shocks.

7.19 UOA disagrees with the Cambridge Report, which concludes the Regulated milk price entities have a similar systematic exposure to revenue risk equivalent to that of the Notional Processor. As noted above, Annex D.3. of the Cambridge Report state that both Dean Foods and Saputo

cannot pass changes in market prices back to suppliers, or at least not in the manner that the Notional Processor can pass back commodity price risk to supplier farmers.

7.20 UOA also disagrees with the Cambridge report (page 23) statement that:

> *"As the comparators – Dean Foods and Saputo – have fixed sale prices, only their volumes can change with systematic shocks. However, both price and volume of input costs will move. This leads to a reduced beta (margins decrease with a positive macro shock and increase with a negative shock)."*

7.21 To the extent comparators Dean Foods and Saputo have fixed prices, this has features of price-cap regulation. These entities are still exposed to volume risk. Prima-facie the systematic risk faced by price-capped entities would be expected to be greater than the systematic risk faced by a revenue capped entity and the systematic revenue risk faced by the Notional Processor (which uses ex-post revenues to set the farmgate milk price).

7.22 The Cambridge Report (page 15) also agrees with Auckland UniServices / UOA that cost shocks could have both negative and positive impacts on beta. In addition, overall returns (profits) can increase for volume increases, notwithstanding a contraction in margins.

ELBs

7.23 In UOA's view, the exposure of the Notional Processor to systematic revenue risk will be lower than ELBs. This is where, under both price cap and revenue cap regulation, ELBs may still be exposed to some volume risk and cannot fully adjust prices over the regulatory period in respect of any "under" or "overs".

7.24 The Cambridge Report (page 34) also notes that:

> "***ELBs.*** *Asset beta (of 0.35) based on the averages across a broad sample of 72 energy sector companies.*[14] *This includes vertically integrated energy companies and those not subject to a regulatory regime."*

7.25 To the extent that the sample of ELBs includes vertically integrated energy companies and these companies are not subject to a regulatory regime, in UOA's view, the empirical estimate of 0.35 will be a biased upwards estimate of the systematic risk faced by a pure regulated electricity lines business with 100% of its operations subject to a revenue or price cap.

Conclusion on relative systematic exposure to revenue risk

7.26 In UOA's view the systematic risk exposure of the Notional Processor to revenue risk is:

a. Less than the systematic risk exposure of all groups of companies in the CB Sample; and

[14] As per NZCC (2016b, page 684) referenced in the Cambridge Report, page 34.

b. Most aligned to the systematic risk of ELBs.

Exchange Rate Risk: relative risk assessment compared to the Notional Processor

Table 4			
Exchange rate risk	Cambridge Report	UOA	Comment
Notional Processor	No risk	No risk	Agreement between UOA and the Cambridge Report.
Dairy Companies / Commodity exposed / Commodity price pass through	= or ↑	Unclear	See notes below.
Regulated milk price	= Low risk	Unclear	See notes below.
ELBs	= Low risk	= Low (similar) risk	Broad agreement between UOA and the Cambridge Report.

7.27 Unlike the Notional Processor many of the CB Sample of companies appear to have exposure to exchange rate risk based upon Annex D.3. of the Cambridge Report.

7.28 In UOA's view more detailed analysis (beyond the scope of our report) would be required to empirically estimate the systematic exposure to exchange rate risk for each company in the CB Sample.

Conclusion on relative systematic exposure to exchange rate risk

7.29 In UOA's view the systematic risk exposure of the Notional Processor to exchange rate risk is low and aligned to the systematic risk exposure of ELBs.

Opex (excluding raw milk): relative risk assessment compared to the Notional Processor

Table 5			
Opex (excluding raw milk) risk	Cambridge Report	UOA	Comment
Notional Processor	Faces risk	Low risk	See notes below
Dairy Companies	= Similar or lower risk profile	Unclear	Some agreement between UOA and the Cambridge Report.
Commodity exposed	= Potentially different	Unclear	Some agreement between UOA and the Cambridge Report.
Commodity price pass through	= Similar risk profile	Unclear	Some agreement between UOA and the Cambridge Report.
Regulated milk price	= Similar risk profile	Unclear	Some agreement between UOA and the Cambridge Report.
ELBs	Different ≠	= Similar (low) risk	See notes below

Notional Processor

7.30 As noted by Lally (2016a) the net cash flows[15] risk faced by the Notional Processor are:

NCF = EOTH – 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.

7.31 Lally (2016a, page 9) argues that this cost risk is more likely to be "negative beta". However, Auckland UniServices (2016) expressed the view that "cost risk" could be both positive or negative beta.

7.32 In Auckland UniServices (2014, section 4.2) we reviewed the earnings risk to the Notional Processor due to its exposure to potential variances between actual costs and the modelled allowances provided for under the Manual. Fonterra has provided updated estimates of the potential impact:

a. Lactose costs. 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. This is the most significant earnings risk faced by the Notional Business.

[15] Also see Auckland UniServices (2017a). For simplicity, this assumes the Notional Processor 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.

b. Operating costs. The most significant exposure is the number of required units (e.g. required kw of electricity and tonnes of steam per MT of WMP), which is based on manufacturer specifications and confirmed (or modified) by reference to monitoring of actual Fonterra performance. There is both an upside and downside risk dimension. Overall Fonterra estimates an approximate exposure with respect to aggregate operating costs of circa + / - NZD 30m.
c. Admin and other overhead costs. Fonterra considers that exposure to earnings risk from these costs will not be circa greater than + / - 20m.

7.33 In FY2017 lactose and other cash costs were circa 25% of the "cost of milk" and 20% of total revenues.

7.34 Under the Manual, UOA understands that most costs are re-set annually and certain other costs are re-set every four years with a CPI adjustment in the interim. Thus, any cost shocks are corrected relatively quickly.

7.35 Lactose and other cash costs are also much lower than the "cost of milk" (see Auckland UniServices, (2014, Para 4.3).

Dairy Companies / Commodity exposed / Commodity price pass through

7.36 We broadly agree with the Cambridge Report that the CB Sample may have similar systematic risk exposure to opex (excluding raw milk price) to that of the Notional Processor. This is in the absence of being able to easily empirically measure any differences in this systematic risk exposure. We note that the Cambridge Report (page 15) agrees with Auckland UniServices / UOA that cost shocks could have both negative and positive impacts on asset beta.

ELBs

7.37 If cost risk is likely to be "negative beta", Lally (2016a, page 10) concludes the appropriate asset beta for the Notional Processor is:[16]

Asset Beta Notional Processor = 0.34 (0.35) – VR + MR

Where:

0.34 = The Commerce Commission's asset beta estimate for price capped ELBs (now updated to 0.35 in the Commerce Commission (2016) Input Methodologies review decisions);

VR = a deduction for lower demand risk faced by revenue-capped firms compared to price-capped firms; and

MR = an increment for the deletion of milk price risk.

[16] This assumes that Lally (2016a) would increase his asset beta point estimate to 0.35 in line with the increase in the Commission's view of the asset beta for ELBs in the Commission's (2016) Input Methodologies Review Decisions.

7.38 Lally (2016a) also concluded that on the basis that the empirical evidence on any difference between the asset beta for revenue-capped and price-capped firms is inconclusive, the estimated beta for the Notional Processor should equal the Commerce Commission's asset beta for ELBs.

7.39 The Cambridge Report concludes that ELBs have a different systematic risk exposure to opex (excluding raw milk) compared to the Notional Processor, but it is not clear whether this risk is likely to be less or greater.

Conclusion on relative exposure to Opex (excluding raw milk):

7.40 In UOA's view, it may be difficult to empirically test for any significant differences between the Notional Processor, ELBs and the CB Sample in the level of systematic risk exposure to opex (excluding raw milk). This is where cost shocks could have both negative and positive impacts on beta.

7.41 Some of the cost risk faced by the Notional Processor is referenced to actual costs, which will lower overall exposure to Opex (excluding raw milk price) risk. As already noted, UOA also understands that under the Manual most costs are re-set annually and certain other costs are re-set every four years with a CPI adjustment. Thus, costs for the Notional Processor are reviewed and re-set on a more regular interval than ELBs, which are subject to a five-year regulatory review period.

7.42 Notwithstanding that ELBs may have a different mix of opex, we consider this does not invalidate ELBs as a suitable comparator to estimate the systematic risk of the Notional Processor, where overall (in UOA's view) the systematic risk of the Notional Processor and ELBs are similar (low) risk.[17]

[17] Lally (2016b, page 8) states:
"So, suitable comparators must have similar systematic risk but this does not require similarity on all (or even any of the) dimensions that underlie systematic risk. The ELBs are of this type in relation to the Notional Business".

Operational Leverage: relative risk assessment compared to the Notional Processor

Table 6			
Operational Leverage	Cambridge Report	UOA	Comment
Notional Processor	Faces risk	Low risk	Disagree: See notes below
Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price	= or ↑ Higher (although depends on contracting)	↑	Disagree: See notes below
ELBs	≠ to ↓ Different	Low (similar) risk	Disagree: See notes below

Notes to Table 6.
The Cambridge Report (page 35) states "operational leverage" is represented by the "*ratio of variable costs to fixed costs*". This differs from more common definitions of operational leverage. Under most definitions of operating leverage, firms with high operational leverage have high fixed costs to total costs.

Notional Processor

7.43 Revenues and profits of companies with "high operating leverage" will tend to be more sensitive to real GDP shocks.[18] The Notional Processor has significant fixed dairy plant assets and depreciation costs, which prima-facie suggests relatively high operating leverage (where operating leverage is proxied by high fixed costs as a percentage of total operating costs). However, the Milk Price Manual explicitly provides for the consequences of variances in the ratio of fixed costs to revenue or to volume of milk processed to be passed on into the milk price.

7.44 One definition of operating leverage used by the Commerce Commission (2018, page 90) is:

$$Degree\ of\ operating\ leverage = \%\Delta EBIT \%\Delta\ revenue$$

7.45 Under this definition of "operating leverage" the systematic risk exposure of the Notional Processor will be low compared to most other commodity companies. This is because we would expect the percentage change in EBIT to be relatively stable compared to the percentage change in revenue. The reason is that the pricing methodology in the Manual provides for a return to providers of capital, and an allowance for efficient fixed costs[19] and variable costs (other than the milk payment) to be deducted prior to setting the farmgate milk price. Revenues, however, may still exhibit substantial changes due to fluctuations in prices for the RCPs.

[18] See, for example, Brealey, Myers and Allen note that "a production facility with high fixed costs, relative to variable costs, is said to have high operating leverage… Empirical tests confirm that companies with high operating leverage actually do have high betas" as quoted in the Commerce Commission (2018, page 98), sourced from Brealey, Myers and Allen "Principles of Corporate Finance" (11th ed).
[19] We understand some of these costs are also based upon actual costs.

CB Sample

7.46 The Cambridge Report considers that systematic exposure to operating leverage is equal to or higher than the Notional Processor for the CB Sample (depending upon contracting).

7.47 In UOA' view, the average systematic risk exposure of the CB Sample to operating leverage will be higher than the systematic risk exposure of the Notional Processor. This reflects expected higher variability in the percentage change in EBIT to the percentage change in revenue when the companies in the CB Sample have no or imperfect ability to pass back price risk to suppliers and comprise a mixture of commodity and non-commodity businesses.

ELBs

7.48 The Cambridge Report (page 39) states that:

"*ELBs have high operational gearing. A higher level of fixed costs is likely to expose the ELB to different systematic risk. Under a revenue cap the fixed costs are allowed for*".

7.49 UOA agrees that ELBs subject to a revenue cap are expected to recover efficient fixed costs. Also, under revenue cap regulation, if volumes differ from expectations then the price will (partly) adjust to ensure fixed cost recovery.

7.50 As already noted, the Milk Price Manual allows the recovery of efficient fixed costs to the Notional Processor. The term "EBIT" should be relatively stable under the Manual to provide the required (expected) return (WACC) to capital providers. Thus, "operational leverage" defined as $\%\Delta EBIT \%\Delta\ revenue$ will also be low.

7.51 UOA see no strong reasons why the systematic risk exposure to operational leverage for the Notional Processor should be substantially different or be greater than the relative risk exposure to operational leverage faced by ELBs.

Conclusion on relative exposure to operational leverage

7.52 In UOA's view the systematic risk exposure of the Notional Processor to operational leverage is:

a. Less than the systematic risk exposure of the CB Sample; and
b. Most aligned to the systematic risk of ELBs.

Capex / investment: relative risk assessment compared to the Notional Processor

Table 7			
Capex / investment	Cambridge Report	UOA	Comment
Notional Processor	Faces valuation risk	Low risk	Disagree: See notes below
Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price	= Similar	Higher risk ↑	Disagree: See notes below
ELBs	↓ Lower	Low (similar) risk	Disagree: See notes below

Notional Processor

7.53 Lally (2008) notes that the presence of growth options should increase the sensitivity of the firm's revenues and profits to positive economic shocks and hence beta. By contrast, options that permit the firm to contract its operations should lower beta by reducing the sensitivity of the firm's profits to economic shocks.

7.54 Prima-facie, growth options are more likely to be exercised when there are positive economic shocks. This will tend to increase asset beta.

7.55 In respect of exposure to capex / investment risk, the Cambridge Report (page 39, 40) states that:

"The NP invests to respond to long term increases in demand, and the value of the NP responds to changes in demand expectations. Investment increases likely to enhance value".

7.56 In UOA's view, the Notional Processor invests in response to an increase in the supply of raw milk by farmers.

7.57 Lally (2016b, page 8) also notes in respect of growth options and the possible conversion of land to dairy farming that this growth option is possessed by land owners and not the Notional Processor. Thus, Lally (2016b) notes that the Notional Processor faces the possibility, (but not the choice), that the quantity of milk supplied may increase where farmers switch to dairying.

7.58 The value of a company can be expressed as (see Chung and Charoenwong (1991):

Firm Value = Value of Assets in Place + Present Value of Growth Opportunities

7.59 Chung and Charoenwong (1991) note that a "growth" firm is a firm that has the ability to earn returns on investments in excess of the firm's cost of capital. A firm is not a growth firm just because its assets or earnings may grow over time.[20]

7.60 In UOA's view, the present value of growth opportunities to the Notional Processor will be small. First, as noted by Lally (2016b), growth opportunities are largely "owned" by the land owner and not the Notional processor.[21] Growth options are also "owned" by Fonterra's non-RCP business, which is again not the Notional Processor. Second, the returns to the capital providers of the Notional Processor will still be subject to the pricing methodology set out in the Manual. Under this building blocks approach methodology, the returns to the Notional Processor's capital providers are targeted to provide a fair rate of return only (i.e., close to NPV =0 outcome) and not provide for excess profits or abnormal returns.[22]

7.61 In respect of growth options, the Cambridge Report (page 11) also highlights some constraints to milk production growth in NZ. This includes stricter environmental regulation and weather challenges. The Cambridge Report (page 12) then states:

> "*While these constraints may limit the outlook for volume growth, price growth, as demand for dairy products increases will still fuel investor value in the dairy industry*."

In UOA's view, however, if prices grow but not volumes of raw milk to be processed, investment in new plant (over and above replacement plant) to process greater volumes of raw milk will not be required.

7.62 Overall, UOA considers that the systematic risk exposure of the Notional Processor to capex / investment risk will be low.

Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price

7.63 In respect of exposure to capex / investment risk for the CB Sample, the Cambridge Report (page 40) states that:

> "*Comparator companies will invest to meet future demand and replace existing assets. Asset replacement cycle will be similar to NP as historic development of processing facilities similar. Changes in future investment similar to NP as factors affecting demand and the cost of investment are similar*".

7.64 The CB Sample comprises a mixture of commodity and non-commodity businesses. Some companies in this sample are either not dairy companies or are not predominantly dairy companies.

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[20] Growth in assets and earnings will still occur of the firm undertakes NPV = 0 projects and also some NPV< 0 projects.
[21] Also see discussion under ELBs below and Section 8 of our report.
[22] On reason the Notional Processor may still earn a small excess return is where actual costs are less than "efficient" costs. This provides incentives for the Notional Processor to continue to innovate and improve efficiency and is similar to incentives provided to ELBs under a revenue cap or rate of return regulation.

7.65 Growth opportunities may be largely "owned" by the CB Sample and on average have a large positive NPV value when the growth option is exercised. This is where a firm will not rationally exercise a growth option and invest unless the investment is significantly NPV positive and compensates for the loss of any option to delay the investment. Also, as already noted the Notional Processor invests in response to an increase in the supply of raw milk. This suggest that on average the CB Sample will have higher systematic risk exposure to growth opportunities compared to the Notional Processor.

7.66 In summary, in UOA's view:

a. The Cambridge Report offers little evidence to support their statement (page 40) that: (i) The asset replacement cycle of the CB Sample will be similar to the Notional Processor, or (ii) The Notional Processor faces similar changes in future investment as factors impacting demand and the cost of investment are similar; and
b. The systematic risk exposure to capex / investment risk will be higher for the CB Sample than the Notional Processor.

ELBs

7.67 As already noted, Lally (2016b) notes growth options to convert land to dairy farming are possessed by land owners and not the Notional Processor.

7.68 UOA agrees with Lally's (2016b, page 8) conclusions that:

"*In principle, this is no different to ELBs facing the possibility of a significant increase in throughput due to consumers switching from gas to electricity. So, in this respect, the ELBs and the Notional Business are similar*".

Conclusion on relative exposure to capex / investment risk

7.69 In UOA view the systematic risk exposure of the Notional Processor to capex / investment risk is:

a. Less than the systematic risk exposure of the CB Sample; and
b. Most aligned to the systematic risk of ELBs.

Asset stranding: relative risk assessment compared to the Notional Processor

Table 8			
Asset stranding	Cambridge Report	UOA	Comment
Notional Processor	Faces risk	Low risk	Disagree: See notes below
Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price	= Similar risk profile	↑	Disagree: See notes below
ELBs	↓ Lower (no) risk	Low risk but ↑	Disagree: See notes below

Notional Processor

7.70 In Auckland UniServices (2016, page 43) we noted that factors in accordance with the rules in the Manual, which reduce or mitigate the risks associated with asset stranding, include:

a. The asset base is only reviewed every 4 years; and
b. The plant with the earliest deemed acquisition date will be removed from the farmgate milk price asset base.[23]

7.71 The Manual also:

a. Specifically requires that any independent reviewer must consider the necessity of maintaining a prudent level of buffer capacity to cover variations in year on year supply. Thus, a short to medium term fluctuation in demand related to systematic risk factors will not automatically justify an immediate optimisation of assets; and

b. Provides that where assets are removed from the fixed asset base due to a change in the RCPs, the financial implications of removing these reference assets will be deducted from the farmgate milk price.[24]

7.72 In UOA's view, the systematic risk associated with asset stranding is also reduced where the Milk Price Manual provides that a tilted annuity approach is adopted to recover an annual capital recovery amount in respect of each Reference Asset and the annuity recovery for each

[23] In terms of the Manual we understand that Fonterra would allocate any allowance for asset stranding across the oldest North or South Island plant (depending upon which Island is subject to the adverse event).

[24] This is other than where this would result in the farmgate milk price being significantly less than the milk price Fonterra's competitors for milk in New Zealand are able to pay, while still earning a reasonable risk-adjusted return on their invested capital.

asset is recalculated using *an updated WACC and an updated estimate of long-run inflation"* (Manual, Rules 36 and 37).

7.73 We acknowledge, however, Rule 37 in the Manual whereby the Annual Capital Recovery Amount is not adjusted over time on account of a change in the assessed economic life of the asset. This reduces the ability of the Notional Processor to be compensated for the full "risk" or expected losses from asset stranding by an adjustment to the expected cash flows. This is because Rule 37 of the Manual prevents the Notional Processor adopting a lower expected economic life (i.e. changing the economic life to speed up the recovery of capital) and thereby increasing the rate of capital recovery of the asset value. Risks are, however, still mitigated by the rule that the oldest assets (with least remaining life) are first removed from the asset base.

7.74 To compensate for expected losses from asset stranding, the WACC for the Notional Processor includes an increment to the WACC, which UOA understands is currently 0.15% per annum.[25] Part of this allowance may reflect systematic risk exposure. For example, a serious outbreak of "foot and mouth" may have a wide systemic impact across the broad NZ economy.

7.75 Overall, in UOA's view, the risk of asset stranding faced by the Notional Processor is low.

Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price

7.76 The Cambridge Report (page 40) states to support its conclusions that the CB Sample have a similar systematic risk profile to asset stranding as the Notional Processor:

"*Comparators will face asset stranding risks if volumes are significantly different from expectations (and systematic), however most will not have the same obligation to process all raw milk*".

7.77 First, as already noted, many companies in the CB Sample comprise a mixture of commodity and non-commodity businesses, with non-commodity businesses likely having a different risk exposure to asset stranding. Second, Fonterra advise they are not aware of any companies in the CB Sample have a "rule based" Manual or a regulatory regime that substantially reduces the risk or likelihood of expected losses from asset stranding akin to that for the Notional Processor.

7.78 For example, in the case of an economic downturn where milk volumes fall below expectations (systematic risk factor) the Notional Processor is insulated from asset stranding risk until the end of the 4-year period when the asset base is reviewed. As already noted, if assets are stranded the oldest (likely to be least valuable) plant is removed from the asset base and the Notional Processor's WACC includes an increment for the expected losses of asset stranding.

[25] This is based upon an increment to the cost of equity capital of 0.22% and a gearing assumption of 40% debt to total value.

7.79 Overall, in UOA's view the CB Sample set of companies (comprising processing and value-add businesses) will face higher systematic risk exposure to asset stranding risk compared to the Notional Processor.

ELBs

7.80 The Cambridge Report (page 40) states that for ELBs:

"The RAB is effectively guaranteed through regulation".

7.81 In UOA's view, the NZ Commerce Commission as regulator for ELBs does not "effectively guarantee" the risk of asset stranding. Rather we understand the Commerce Commission may provide an allowance for expected losses of asset stranding through an accelerated depreciation allowance. Part of this allowance reflects factors such as the possibility that assets may become stranded with the introduction of new emerging technologies.

7.82 ELBs may still, however, be exposed to "risks" of asset stranding, albeit this may be low risk, similar to systematic asset stranding "risk" faced by the Notional Processor.

Conclusion on relative exposure to asset stranding

7.83 In UOA's view the systematic risk exposure of the Notional Processor to asset stranding is:

a. Less than the systematic risk exposure of the CB Sample; and
b. Equal to or less than the systematic risk exposure for ELBs, where under the rules of the Manual the oldest assets are removed first from the asset base.

Counterparty risk: relative risk assessment compared to the Notional Processor

Table 9

Counterparty risk	Cambridge Report	UOA	Comment
Notional Processor	No risk	No risk	Agreement between UOA and the Cambridge Report.
Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price	↑ Higher risk	↑ Higher risk	Agreement between UOA and the Cambridge Report.
ELBs	= no risk	= low (no) risk	Broad agreement between UOA and the Cambridge Report.

Conclusion on relative exposure to counterparty risk

7.84 We agree with the Cambridge Report with respect to systematic risk exposure to counterparty risk. Overall, in UOA's view the systematic risk exposure of the Notional Processor to counterparty risk is:

a. Less than the systematic risk exposure of the CB Sample; and
b. Similar to the systematic risk exposure for ELBs

Financing risk: relative risk assessment compared to the Notional Processor

Table 10

Financing risk	Cambridge Report	UOA	Comment
Notional Processor	Faces risk	Low risk	Disagree: Fonterra has an S&P A- credit rating. Some parameters in the WACC calculation are reset yearly.
Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price	↑ Higher risk	↑ Higher risk	Agreement between UOA and the Cambridge Report.
ELBs	↓ Lower risk	Low risk but ↑	Disagree: ELBs are assumed to have a BBB+ credit rating under the NZ regulatory regime.

Notional Processor

7.85 Fonterra has an A- S&P credit rating. An "A" credit rating is defined as:[26]

"*An obligation rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories. However, the obligor's capacity to meet its financial commitments on the obligation is still strong"*

7.86 Fonterra advise that their Constitution provides that the total payment made to suppliers each milk season for New Zealand-sourced milk is determined by the Fonterra Board of Directors. This has regard to the income from all activities of Fonterra less its costs, which includes debt obligations. Fonterra's Constitution also authorises the Fonterra Board of Directors to determine interim milk payments which have traditionally been made each month. If the interim payments are made at a rate that is higher or lower than that which later market conditions justify, they can be adjusted in later months and Fonterra makes a further payment or

[26] See https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352

receives a repayment from the supplier. This places Fonterra in the position of being a contingent creditor of suppliers to the extent of any such overpayment.

7.87 This means that, for practical purposes, all milk payments are effectively subordinated to other obligations of Fonterra. This lowers the cost of debt and re-financing risk.

7.88 In addition, in UOA's view, the returns to the capital providers of the Notional Processor are "insulated" at least partly to shocks to the discount rate, where (apart from the asset beta and the post-tax market risk premium) the cost of capital is reviewed annually. This means shocks to the discount rate are "corrected" on a regular periodic basis.

Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price

7.89 Appendix 2 summarises the credit ratings for the CB Sample and Fonterra.

7.90 Most of the companies in the CB Sample have lower credit ratings than Fonterra or are not rated. The evidence is consistent with higher financing risk (on average) faced by the CB Sample compared to the Notional Processor.

ELBs

7.91 Under the regulatory regime for ELBs, the Commerce Commission assumes ELBs have a BBB+ credit rating. This is below the credit rating of Fonterra. In general, companies with a lower credit rating will face higher debt costs and greater financing risk, particularly in the event of a significant negative macro-economic shock.

7.92 Unlike the Notional Processor, the cost of debt for the ELB is only reviewed at each regulatory review period of 5 years. This contrasts to the Notional Processor, where the parameter inputs into the WACC (such as the cost of debt) are subject to annual review.

7.93 We comment further on the impact of shocks to the discount rate on asset beta later in this report.

Conclusion on relative exposure to financing risk

7.94 In UOA's view the systematic risk exposure of the Notional Processor to financing risk is:

a. Less than the systematic risk exposure of the CB Sample; and
b. Less than the systematic risk exposure for ELBs.

8 Additional comments on the Cambridge Report

8.1 We provide additional comments below on the Cambridge Report.

Asset beta and long-run growth prospects

8.2 The Cambridge Report appears to regard long-term growth prospects as an important contributor to asset beta. For example, the Cambridge Report (page 9) states that:

"*While it is plausible that the regulator may continuously err in setting the cost of capital, we consider that the empirical evidence from listed regulated companies supports the proposition that asset betas reflect the longer-run growth opportunities and investment requirements of the industry*".

8.3 In respect of growth options, we have already noted that the Cambridge Report (page 11) highlights some constraints to milk production growth in NZ, being stricter environmental regulation and weather challenges.

8.4 The Cambridge Report (page 14, equation 5) provides the decomposition of the Notional Processors asset beta into its component parts based upon the analysis in Lally (2016a, equation 5).

8.5 The last term in equation 5 of the Cambridge Report (page 14- 15) is: $\frac{Cov\left(\frac{V_e}{V_0}, R_m\right)}{\sigma_m^2}$

Where:

R_m is the rate of return on the market portfolio
σ_m^2 is its variance
V_0 denotes the current value of the business
V_e denote the value of the business at the end of the regulatory period

8.6 The Cambridge Report (page 15) then states:

"We assume changes in margins, or at least investors views on the company's profitability, from variations in volumes and prices are captured in V_e. If commodity prices/ volumes increase due to systematic factors – with competitors being affected by these shocks as well – then the processor will bear this risk until it is able to pass on the changes, which is likely to have a positive impact on the beta; for example, as real income increases (decreases) demand for dairy products is likely to increase (decrease)."

8.7 In our view investors in the Notional Processor face relatively low uncertainty on the value V_e at the end of the regulatory period. These reasons (in part) are outlined in Tables 7, 8 to 10, where we discuss the relative systematic risk of the Notional Processor to capex / investment risk, the risk of asset stranding and financing risk. In this analysis, we concluded that the Notional Processor compared to the CB Sample:

c. Has low systematic risk exposure to growth options;
d. Low risk of asset stranding; and
e. Low refinancing risk that may impact on the value of V_e through shocks to the discount rate.

8.8 The Cambridge Report (page 9) also states that:

"It is worth noting that Lally (2016a) considers, for the NP and the ELBs, that only the value term makes a positive contribution to asset beta in this decomposition, and that this positive contribution is most plausibly caused by errors in setting the cost of capital.[27] *Dr Lally sets out that "plausibly" the biggest source of error in the valuation component is the regulator erring in setting the market risk premium (MRP) in the cost of equity, and the regulator's error would likely contribute positively to the beta"* (emphasis added).

8.9 UOA disagrees with the inferences that the Cambridge Report seems to draw from Lally (2016a). Lally (2016a) did not state the biggest source of error in the valuation component is the regulator erring in setting the market risk premium. Rather Lally (2016a, page 9) stated:

"*In respect of the last term in each equation, if the regulator may err in setting the allowed cost of capital, then V_e will be uncertain. Plausibly, the biggest source of potential error in setting the cost of capital is the risk premium in the cost of equity (the market risk premium and beta).*" (emphasis added).

8.10 UOA agrees with Lally (2016a) that potentially the biggest source of error in setting the "cost of capital" is the market risk premium and the beta. This is because proxies for the risk-free rate and debt margin (other parameter inputs into the WACC) are "observable inputs" based on traded market data.

8.11 However, another source of variation between the expected and actual (ex-post) value of V_e is shocks to the discount rate. For example, this could arise due to unexpected changes in the risk-free rate, which is also an input into the cost of capital and the rate of return that investors require on risky assets. Macroeconomic shocks to the risk-free rate represent a systematic risk factor that can impact all asset prices.

8.12 This means that variation in the difference between the actual value of V_e and the expected value of V_e at the end of the regulatory or price re-set period may reflect the wider impact of macroeconomic shocks to the discount rate rather than just the impact of shocks to the cash flows.

8.13 It is therefore not clear to the UOA on what basis the Cambridge Report (page 9) considers that empirical evidence supports asset betas for listed regulated companies reflect longer-run growth opportunities and investment requirements of the industry.

8.14 Moreover, to the extent that the Cambridge Report (page 9, Footnote No 9) suggests the opex beta component may contribute positively to beta, then in UOA's view the positive "beta" impact of total opex (including raw milk price costs) will be lower for the Notional Processor compared to the CB Sample.

Exclusion of Fonterra from the CB Sample

[27] Lally (2016a), pages 8-9.

8.15 The Cambridge Report (page 21) argues that the measured asset beta for Fonterra is unlikely to represent the business risk for the Notional Processor. This is because the liquidity in Fonterra units is low and the objectives of Fonterra is not to maximise value for its shareholders through dividends and capital gains.

8.16 In respect of liquidity, Fonterra shares are traded on the Fonterra Shareholders' Market and Fonterra Shareholders' Fund Units are traded on the NZX. It is not clear that lack of liquidity for trading in Fonterra is a strong reason for exclusion from the CB Sample in periods between January 2013 and the current date or a reason to "ignore" empirical estimates of Fonterra's beta using recent data.[28]

8.17 In UOA's view under the rules of the Manual the Notional Processor is targeted to earn close to a zero NPV return from new investments. Thus, to maximise value of farmer shareholders, Fonterra has clear incentives to maximise dividends and capital gains for all stakeholders (i.e., farmer suppliers and Fonterra Shareholder Fund unit holders).

8.18 Notwithstanding the above, we expect the empirical beta estimate for Fonterra (that comprises both the business of the Notional Processor and value-added ingredients business) will be an upward biased "empirical" estimate of the beta for the Notional Processor.

8.19 The Cambridge Report (page 23) also states in respect of companies with commodity exposure that:

> *"This group is likely to provide one of the strongest parallels of comparators to Fonterra, with exposure to commodity markets for inputs as well as a significant portion of outputs. Most of these companies make margins arbitraging between inputs and outputs, some of which are processed. A number of comparators in this group undertake some processing –corn, oilseeds, sugar –as well as pure trading activities. The key difference is that price discovery in Fonterra's case is achieved using its own mechanism, while raw material and wholesale prices in most other contexts are discovered using transparent commodity market indicators."*

8.20 UOA understands (based upon discussions with Fonterra) that GDT's integrity and GDT prices are regarded as leading sources of information on commodity dairy prices and prices are transparent.

How comparable is the CB Sample to the business of the Notional Processor (and implications of selecting appropriate comparators)?

8.21 We have already referred to Appendix 1 of this report, where we highlight differences between the exposure of the CB Sample and the Notional Processor to "revenue risk" and the ability to pass through price risk to suppliers.

[28] Using volume data sourced by EY from Capital IQ, trading occurred on all trading days from January 2013 for both shares in Fonterra Co-operative Group Ltd and units in the Fonterra's Shareholders' Fund.

8.22 Overall, UOA considers there are significant differences in the revenue risk and ability to pass through all price and volume risk on total revenue income between the Notional Processor and nearly all companies in the CB Sample.

8.23 In UOA's view, whether or not the Commission's IM approach to primarily or solely draw upon asset beta estimates from the same industry is used is not the right question. The key task is to estimate the asset beta for Notional Processor, which requires judgement as to what evidence is the best evidence to inform that estimate. UOA considers that ELBs provide more reliable and suitable comparators where the Notional Processor and ELBs have a more similar systematic risk profile.

8.24 In other words, regardless of the estimation approach applied (e.g., IM or first principles or otherwise), ELBs provide the best evidence of NP's asset beta, because their systematic risk is most comparable. The CB Sample should receive less weight, because their systematic risk profile differs materially to that of the Notional Processor.

Other analysis

8.25 We take the empirical beta estimates in the Cambridge Report of the CB Sample and analyse the percentile distribution of these estimates. The results of our analysis are presented in Tables 11 and 12 below.

Table 11: Asset beta by company, 15 January 2013

	Period ended		
	Daily	**Weekly**	**4-weekly**
Average	0.50	0.45	0.49
Median	0.47	0.42	0.50
Percentile Analysis			
25th percentile	0.32	0.29	0.31
30th percentile	0.36	0.32	0.33
35th percentile	0.37	**0.36**	**0.34**
40th percentile	0.44	**0.38**	**0.42**
45th percentile	0.45	0.41	0.46
50th percentile	0.47	0.42	0.50

Source: The Cambridge Report and UOA Analysis

Table 12: Asset beta by company, 15 January 2018			
	Period ended		
	Daily	**Weekly**	**4-weekly**
Average	0.58	0.50	0.56
Median	0.59	0.48	0.57
Percentile Analysis			
20th percentile	0.43	**0.36**	**0.37**
25th percentile	0.46	**0.39**	**0.45**
30th percentile	0.47	0.40	0.45
35th percentile	0.49	0.41	0.48
40th percentile	0.52	0.42	0.51
45th percentile	0.55	0.46	0.54
50th percentile	0.59	0.48	0.57
Source: The Cambridge Report and UOA Analysis			

8.26 The results of our analysis based on empirical measures of assets betas for the CB Sample drawn from weekly and 4-weekly measures in the Cambridge Report show that:

a. A point estimate asset beta of 0.38 falls in the 35th to 40th percentile range for data to 15 January 2013; and
b. A point estimate asset beta of 0.38 falls in the 20th to 25th percentile range for data to 15 January 2018.

Analysis in Auckland UniServices (2017a)

8.27 In Auckland UniServices (2017a, paragraph 7.2) we also provided evidence that based upon our empirical estimates of beta in the CB Sample that a point estimate asset beta of 0.38 falls in the circa 25th percentile range. The table presented in Auckland UniServices (2017a) is copied below.

Table 1: Summary of asset beta estimates						
		Period ended				
Weekly estimate using 2 years data (No tax)	**All periods**	**31/03/2017**	**6/01/2017**	**14/10/2016**	**22/07/2016**	**29/04/2016**
Average	**0.52**	**0.50**	**0.50**	**0.53**	**0.52**	**0.54**
Median	**0.51**	**0.49**	**0.49**	**0.51**	**0.53**	**0.52**
25th percentile	0.37	0.33	0.34	0.37	0.35	0.40
40th percentile	0.45	0.43	0.44	0.47	0.46	0.46
60th percentile	0.55	0.53	0.54	0.57	0.55	0.58
75th percentile	0.71	0.67	0.67	0.72	0.72	0.72
		Period ended				
Four-weekly betas using 5 years data (No tax)	**All periods**	**31/03/2017**	**6/01/2017**	**14/10/2016**	**22/07/2016**	**29/04/2016**
Average	**0.48**	**0.49**	**0.48**	**0.48**	**0.51**	**0.51**
Median	**0.52**	**0.50**	**0.51**	**0.49**	**0.52**	**0.51**
25th percentile	0.37	0.34	0.37	0.38	0.41	0.41
40th percentile	0.45	0.44	0.46	0.42	0.46	0.47
60th percentile	0.55	0.56	0.56	0.54	0.56	0.57
75th percentile	0.64	0.65	0.62	0.61	0.63	0.61
Source: EY New Zealand analysis of betas and UniServices analysis						

8.28 An asset beta of 0.38 is within credible percentile bounds of the range of asset betas observed for the CB Sample.[29]

How investors value the Notional Processor

8.29 The Cambridge Report states (page 47) that they consider there are significant differences on how investors value the dairy sector and the energy sector.

8.30 However, at least some brokers in the NZ market may value the Notional Processor as akin to a regulated tolling operation. For example:

a. A Macquarie Research[30] broker report dated 8 February 2017 notes "*Regulated returns shifts some risk to farmers*"; and
b. A Credit Suisse broker[31] report dated 2 February 2017 notes that: "……*we have a better appreciation on the base regulated returns ingredients can generate*……".

9 Report Conclusion

9.1 Overall, UOA disagrees with the Cambridge Report with respect to:

a. The relative assessment of the systematic risks faced by the Notional Processor compared to the systematic risks faced by the CB Sample as described in the Cambridge Report; and
b. The use of the CB Sample (or a sub-sample of companies in the CB Sample) to best inform the estimate of the asset beta for the Notional Processor.

9.2 UOA considers that ELBs provide more reliable and suitable comparators where ELBs and the Notional Processor have a similar systematic risk profile. Lally (2016b) also concludes that ELBs are suitable comparators, where ELBs have similar systematic risk profiles even although they are different industries and ELBs are regulated.

9.3 In UOA's view, an appropriate point estimate asset beta for the Notional Processor is still 0.38.

9.4 We refer to our executive summary for the remainder of our conclusions.

[29] Also see Auckland UniServices (2017a and 2017c) that provides further justification why (in our view) a large difference in the asset beta may exist between the average asset beta of the CB Sample and the Notional Processor.
[30] Macquarie Research Report titled "Fonterra Shareholders' Fund" dated 8 February 2018. Sourced from Fonterra.
[31] Credit Suisse Report, "Fonterra Shareholders' Fund" dated 8 February 2018. Sourced from Fonterra.

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Appendix 1

Dairy Companies / Commodity exposed / Commodity price pass through / Regulated milk price

The table below draws from the sample of the companies in the CB Sample in Table 3.2 of the Cambridge Report. We consider:

- Annex D.1. of the Cambridge Report on the ability to "pass on final processed prices" (Column 3);
- Annex D.3. of the Cambridge Report on the "Scope for pass back (Column 4) and "Key Risks" (Column 5).

Readers should also refer to the Cambridge Report for full description of the scope for "pass back" and "key risks".

Company	Entity Type	Ability to pass on final processed prices (Source: Cambridge Report Annex D.1.)	Scope for pass back (Source: Cambridge Report Annex D.3.)	Do key risks include fluctuations to commodity prices? (Source: Cambridge Report Annex D.3.)
Archer-Daniels-Midland	Commodity	No.	No significant scope for ex-post adjustments.	Yes.
Bega	Dairy / Commodity	No.	Can pass prices changes late in season.	Yes.
Bright	Dairy / Cost pass through	Yes.	Can pass some changes in prices to milk producers.	Yes.
China Mengniu	Dairy / Cost pass through	Yes.	Can pass some changes in prices to milk producers.	Yes.
Dairy Crest	Dairy / Commodity / Cost pass through	Yes.	Can pass some changes in prices to milk producers.	Yes.
Danone	Dairy / Cost pass through	Yes.	Can pass changes in prices to milk producers, bit raw milk only a small percentage of cost of goods.	Yes.
Dean Foods	Dairy / Regulated	No.	No – due to regulated prices.	Yes.

Emmi	Dairy / Cost pass through	Yes.	Partial. The group is not in a position to fully pass changes in product prices to milk producers.	Yes.
Glanbia	Dairy	No.	No	Yes.
GrainCorp	Commodity	No.	No significant scope to make ex-post adjustments.	Yes.
Grupo Lala	Dairy / Cost pass through	Yes.	Can pass changes in prices to milk producers.	Yes.
Yili	Dairy / Cost pass through	Yes.	Can pass changes in prices to milk producers (but may be moderated).	Yes.
JBS	Cost pass through	Yes.	Can pass back price changes to suppliers of raw material.	Yes.
Mead Johnson Nutrition	Dairy	No.	No.	Yes.
Murray Goulburn Co-op	Dairy / Commodity	Yes.	Yes – appears to be partial ability to pass back prices.	Yes.
Olam International	Commodity	No.	No significant scope to make ex-post adjustments.	No
Parmalat	Dairy / Cost pass through	Yes (some geographies).	Yes. In many regions, the group can pass changes in product prices to milk producers.	Yes.
Saputo	Dairy / Commodity / Regulated	No (regulated prices in dominant regions).	No – due to regulated prices.	Yes.
Savencia	Dairy / Cost pass through	Yes (some geographies).	Yes. Can pass changes in prices to milk producers (but may be moderated).	Yes.
Synlait	Dairy / Commodity	Yes – closing prices.	Yes. Can pass changes in prices to milk producers.	Yes.

Tate & Lyle	Commodity	Yes.	Yes. Adjustments (upward only in the UK market) are paid ex-post.	Yes.
Want Want China	Dairy	No.	No.	Yes.
Wilmar International	Commodity	No.	No significant scope to make ex-post adjustments.	Yes.
Yakult Honsha	Dairy	Does not buy raw milk.	No.	No.

Appendix 2 – Credit Ratings of the CB Sample and Fonterra

Credit Ratings of the CB Sample and Fonterra.			
Company	S&P Rating	Moody's Rating	Fitch Rating
Archer-Daniels-Midland Company	A	A2	A
Associated British Foods plc	NR	NR	NR
Bega Cheese Limited	NR	NR	NR
BRF S.A.	BB+	Ba2	BBB-
Bright Dairy & Food Co.,Ltd	NR	NR	NR
Bunge Limited	BBB	Baa2	BBB
China Mengniu Dairy Company Limited	BBB+	Baa1	NR
Chr. Hansen Holding A/S	NR	NR	NR
Conagra Brands, Inc.	BBB	Baa2	BBB
Dairy Crest Group plc	NR	NR	NR
Danone SA	BBB+	Baa1	NR
Dean Foods Company	BB-	B1	Withdrawn
Emmi AG	NR	NR	NR
Fonterra Co-operative Group Limited	A-	NR	A
General Mills, Inc.	BBB	Baa2	BBB
Glanbia plc	NR	NR	NR
GrainCorp Limited	NR	NR	NR
Grupo Lala, S.A.B. de C.V.	NR	NR	NR
The Hershey Company	A	A1	NR
Ingredion Incorporated	BBB	Baa1	BBB
Inner Mongolia Yili Industrial Group Co., Ltd	NR	NR	NR
JBS S.A.	B (under watch)	B3	BB- (under watch)
Kellogg Company	BBB	Baa2	BBB
Kerry Group plc	BBB+	Baa2	NR
The Kraft Heinz Company	BBB	NR	BBB-
Mondelez International, Inc.	BBB	Baa1	BBB
Nestlé S.A.	AA-	Aa2	AA-
NH Foods Ltd.	NR	NR	NR
Olam International Limited	NR	NR	NR
Parmalat S.p.A.	NR	NR	NR
Saputo Inc.	NR	A3	NR
Savencia SA	NR	NR	NR
Synlait Milk Limited	NR	NR	NR
Tate & Lyle plc	BBB	Baa2	NR
Unilever PLC	A+	A1	A+
Want Want China Holdings Limited	NR	A3	A-
Wilmar International Limited	NR	NR	NR
Yakult Honsha Co.,Ltd.	NR	NR	NR
NR = Not rated			
Source: Data supplied by EY sourced from Bloomberg and Capital IQ.			