ISBN 978-1-869455-95-8
Project no. 15.03/15837

Public version

Review of Fonterra's 2016/17 base milk price calculation

Emerging views on asset beta

Date of publication: 20 July 2017

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Introduction

Purpose of this paper

1. The purpose of this paper is to:

   1.1 Outline our emerging views on the asset beta;

   1.2 Provide you with the opportunity to comment on our emerging views in this area and comment on Fonterra's Reasons paper, prior to us publishing our draft report on 15 August 2017.

Invitation to make submissions

2. We invite submissions by 5pm on Monday 31 July 2017 on the following topics:

   2.1 our emerging views on asset beta; and

   2.2 Fonterra's reasons paper.

3. Please address submissions:

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Emerging views on the practical feasibility of the asset beta

Background to asset beta

1. In our Final Report on the 2015/16 Base Milk Price Calculation review (15 September 2016), we were unable to conclude on the practical feasibility of the asset beta used by Fonterra in its calculation of the base milk price, as we considered there was insufficient evidence to justify a downward adjustment to 0.38 from the midpoint estimate of beta from the comparator companies (0.51).

2. We subsequently signalled in our Final Report on the 2016/17 Milk Price Manual review (14 December 2016) that we would seek to resolve the asset beta issue in the 2016/17 Base Milk Price Calculation review, including whether we should assume a shifting of the commodity price risk to farmers in a way that would justify the indicated downward adjustment in the asset beta.[1]

3. As part of our current review, we obtained further information from Fonterra and independent processors on the asset beta issue, held a workshop with them on the issue, and received follow-up submissions.

4. This paper sets out our emerging views on the issue of the asset beta used by Fonterra in the calculation of the base milk price.

Our emerging view on the practical feasibility of the asset beta

4. We have an established approach for calculating and assessing WACC, which was established following extensive consultation with interested parties and testing of the approach in merits appeals to the High Court. We do not depart lightly from it. This approach places most weight on the comparator sample. It allows for departures from the sample mean.

5. Fonterra has maintained last year's asset beta estimate of 0.38 for the Notional Producer. Our task this year is to consider whether this estimate is practically feasible for an efficient processor (ie the contestability dimension).[2]

6. The asset beta estimate of 0.38 for the Notional Producer is a material departure from the sample mean of 0.48-0.52, albeit within a standard deviation. Our assessment to date suggests that there may be good reasons to go below the sample mean, whether through use of a sub-sample, adjustment, or other. However, we do not consider the evidence is robust enough to support the specific departure implied by Fonterra's estimate at this point.

7. Instead, we have reached a position where we cannot conclude that an asset beta estimate of 0.38 for the Notional Producer is not practically feasible for an efficient processor with similar risk exposure.

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1 Footnote 22 of Final Report on the 2016/17 Milk Price Manual review (14 December 2016)

2 Last year we concluded that Fonterra's asset beta was consistent with the efficiency dimension.

8. To explain, there is insufficient information about the sample to support a positive finding. The evidence, however imperfect, does provide some support for Fonterra's view that the asset beta for the Notional Producer should be lower than the sample mean, but is not in our view sufficient to positively conclude that Fonterra's point estimate of 0.38 is practically feasible. This is because we place a low level of confidence on the accuracy of the asset beta estimates from the sub-sample of businesses which pass on pricing risk to farmer-suppliers, given our doubts on the quality of the information upon which we constructed the sub-sample.

9. Furthermore, we are not convinced on the appropriateness of placing weight on EDBs as part of the comparator sample, but do consider they provide a useful reasonableness check.

10. We consider this emerging view as a step forward compared to last year, when we were unable to conclude. This reflects an improved (yet insufficient) information set on which to base a decision.

Further information to help reach a more definitive conclusion

11. We consider the following information will likely help us reach a more definitive conclusion:

    11.1 Detailed evidence of the extent to which firms in the sample transfer price risk to farmers, and how this compares to a Notional Producer that fully passes through that risk. We need to be satisfied that stakeholders have made all reasonable efforts before concluding that obtaining this information is not possible or proportionate.

12. We would welcome IP's engagement in the empirics. It would also be helpful for a third party, such as IPs, to validate Fonterra's statement that:

    "no other jurisdiction are the milk prices paid by any processor, let alone the market-leading processor, governed by a milk price mechanism like the Milk Price Manual which results in the mechanistic translation of average realised commodity prices into a milk price."[3]

Allocation of commodity price risk for purposes of DIRA

Consistency with section 150C and section 150A

13. In our reviews to date of Fonterra's Milk Price Manual, we have concluded that the Manual has been largely consistent with the statutory purpose set out in section 150A of the Dairy Industry Restructuring Act 2001. Inherent to the Manual is an assumption that the Notional Producer (or any other New Zealand commodity milk processor) could shift the risk of changes in international commodity product prices to farmer suppliers via changes in the farmgate milk price.

[3] Fonterra "2016/17 base milk price calculation review workshop – responses to Commission's request for follow-up comments: Attachment A", page 7.

14. This risk allocation under the Manual is consistent with the basis on which the farmgate milk price is required to be determined under DIRA, namely, the difference between the revenues achieved for sales of commodities and the efficient costs of producing and selling those commodities. In particular, section 150C(1) requires:

> For the achievement of the purpose set out in section 150A, the base milk price must be set in a way that is consistent with the following principles:
>
> (a) revenue taken into account in calculating the base milk price is determined from prices of a portfolio of commodities at the times that those commodities are contracted to be sold by [Fonterra]:
>
> (b) price include costs (including capital costs and a return on capital) of—
> (i) collecting milk; and
> (ii) processing milk into the same portfolio of commodities as the portfolio adopted for the purposes of paragraph (a); and
> (iii) selling those commodities …..

15. As a result of this mandatory requirement, the actual commodity prices achieved by Fonterra go into milk price. The risk of changes in commodity prices also goes into the milk price and is therefore borne by its farmer suppliers.

16. We therefore consider that it is a necessary implication of the mandatory principles in section 150C that the Notional Producer should be assumed to transfer the commodity price risk to farmers. As the notional producer constructed by Fonterra under its Manual transfers commodity price risk to farmers in the way directed by section 150C we consider that the purpose of section 150A will be met if Fonterra's asset beta can be achieved by or is appropriate for the Notional Producer.

17. We note that the independent processors disagree with our interpretation of the effect of section 150C. We have therefore also considered the level of commodity price risk that can reasonably possibly be achieved by a New Zealand processor without assuming this follows automatically from section 150C. In our view this assessment does not require a real world processor in New Zealand that actually assumes that level of commodity price risk, but only that it is reasonably possible.

18. Dr Alastair Marsden, on behalf of Fonterra, argues that "the Manual process results in all NZ processors being able to pass through to suppliers their milk price benchmark levels of commodity price risk, foreign exchange risk, milk supply (or volume) risk and the industry-wide cost risk".[4]

19. Fonterra in its Reasons Paper in support of Fonterra's base milk price for the 2016/17 season makes essentially the same argument:

> "Fonterra's milk price, and by extension the milk price paid by Synlait, is established under a quasi-regulatory 'building block' mechanism that by design passes most sources of variances in total

[4] Dr Alastair Marsden "*Asset Beta for Fonterra's Notional Business: Comments on questions raised by the Commerce Commission in the Milk Price Calculation Workshop"* available at page 1 of Attachment A.

> returns which might be expected to be systematic through into the milk price. In no other jurisdictions are the milk prices paid by any processor, let alone the market-leading processor, governed by a milk price mechanism like the Milk Price Manual which results in the mechanistic translation of average realised commodity prices into a milk price.[5]

20. Consistent with Fonterra's position, our provisional view is that there is no reason why it would not be reasonably possible for an efficient commodity processor in New Zealand to assume substantially the same commodity price risk as the Notional Producer. In particular, if Fonterra is able to shift commodity price risk to its farmer suppliers, there does not appear to be any reason why other processors could not do the same.

21. The commodity price risk has to be borne by either the processor or the farmer. So if one party reduces risk, the other party bears more. If a processor transfers risk to the farmer and can therefore pay the farmer a higher price, then the higher price received by the farmer is subject to greater risk. I.e., the risk-adjusted price received by the farmer has not changed. This means many possible combinations of risk borne by the farmer versus the supplier are possible, and each is feasible.

22. Whether an actual processor elects the same commodity price risk exposure as the Notional Producer is another matter. We would expect that if it chose to structure or organise itself differently, it would be because that affords a competitive advantage over the Notional Producer (eg, it may be able to attract more risk averse farmers by offering a less volatile, but lower, price) and so the risk exposure assumptions of the Notional Producer are consistent with promoting contestability.

23. Our provisional view is that it is reasonably possible for a processor to transfer the commodity price risk to its farmer suppliers in the same way as the Notional Producer.

24. Our above position is also supported by evidence that some processors are in fact able to transfer commodity price risk to farmers by paying them *ex post* a milk price that is residual of commodity revenue and notional costs for the year. This fact appears to be accepted in the previous submissions of an independent processor, although it asserts this is only the case for a limited subset of processors (co-operatives or a narrow set of contract processors).[6]

25. There are currently New Zealand dairy processors besides Fonterra who operate in a co-operative structure such as Westland. We have also observed dairy processors in addition to Fonterra that transfer commodity price risk to farmer suppliers by paying

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5 Fonterra *'Reasons' Paper in support of Fonterra's base milk price for the 2016/17 Season*, page 42.

6 Open Country, Miraka, Synlait "*Milk Price Calculation Workshop: Follow-up Comments*", page 5.

them *ex post*, or adjusting their prices both during the season and at the end of the season, like Synlait and Murray Goulburn.[7]

26. We further note Fonterra's views that a commodity milkpowder manufacturer would be exposed to higher earnings volatility than Fonterra or the Notional producer because it would be unable to perfectly replicate Fonterra's (or the Notional Producer's) sale phasings, contract phasings or FX hedging profile, but that this is not systematic risk.[8] However, in our view, even if Fonterra is wrong, we do not consider that the DIRA anticipates or requires a processor to mimic Fonterra's sales schedule. In particular, we consider that there is no reason why a new large entrant can't achieve what Fonterra can in commodity markets without mimicking Fonterra's sales schedule.

27. As we provisionally consider that it is both required by section 150C and practically feasible for an efficient commodity processor in New Zealand to structure or organise itself so that it substantially matches the commodity price risk exposure as assumed for the Notional Producer, we go on to consider the asset beta proposed for the Notional Producer.

Our approach for estimating asset beta under Part 4 of the Commerce Act

28. Our approach for estimating asset (and equity) betas for sectors regulated under Part 4 of the Commerce Act (electricity and gas networks, and airports) has remained largely unchanged since 2010. It was established following extensive consultation with interested parties and was tested in merits appeals to the High Court, heard in 2012 and 2013.[9] We reviewed and confirmed this approach last year in our review of the Input Methodologies.

29. Beta is not directly observable so we estimate it empirically. We use historic estimates of average betas because beta is expected to be relatively stable over time and historic betas are indicative of future betas.

30. For firms with traded stocks, the beta for the firm can be estimated directly from the historical returns on those stocks, relative to the market's return. However, there are practical difficulties when reliably estimating betas. For example, Fonterra and Synlait are the only publicly listed processors in New Zealand. Therefore, it is beneficial to use a sample of international comparator firms when estimating beta.

31. Under our approach, we follow a six-step process for estimating beta, which is summarised below:[10]

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7 See https://www.nzx.com/companies/SML/announcements/302707, *Synlait revises 2016/2017 forecast milk price*. Murray Goulburn is a co-operative and the largest milk processor in Australia.

8 Ibid footnote 3.

9 See http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/judgments/

10 Commerce Commission "Input methodologies review decisions - Topic paper 4: Cost of capital issues" (20 December 2016), para 266.

31.1 *Step 1*: identify a sample of relevant comparator firms.

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

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

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

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

31.6 *Step 6*: re-lever the average asset beta for the sample to an equity beta estimate using the Commission's assumed notional leverage.

32. Key attributes of our approach to WACC estimation include, where possible, to:

32.1 favour empirical evidence over theory;[11]

32.2 construct as large a sample as reasonably possible with comparators from the same industry. This limits the need to make subjective judgement calls regarding whether each of the companies in the sample should be included;[12]

32.3 use the sample average as a starting point, and only depart from it where there are sound reasons for doing so (as per step five above);

32.4 avoid placing too much weight on a single comparator, including the observed estimate of the company subject to the estimation;

32.5 Account for uncertainty over the risk parameters through the use of an estimate above the mid-point where the consequences of mis-estimating WACC are asymmetric.

How we have assessed Fonterra's estimate

33. The nature of our involvement in Fonterra's WACC is different to our WACC work in other regulated sectors. Here, we do not estimate the WACC and its parameters ourselves, but rather assess whether Fonterra's own estimation is consistent with the DIRA purpose in subpart 5A.

34. Nevertheless, we consider that it is desirable to maintain cross-sectoral methodological consistency in how we estimate (or assess others' estimates) of

[11] In the IM review, we did not change EDBs asset betas as a result of the change in the form of control. We did not find empirical evidence that companies under revenue caps exhibited lower asset betas compared to those under price caps, even though theory suggests asset betas should be lower.

[12] Commerce Commission "Input methodologies review decisions - Topic paper 4: Cost of capital issues" (20 December 2016), para 277.

WACC parameters. Among other benefits, this promotes regulatory predictability and certainty.

35. Fonterra's comparator sample of other dairy firms was the starting point of our assessment. As discussed, relying on market evidence is our standard practice and consistent with our WACC assessments for other regulated sectors, where we rely on market evidence from a sample of businesses from the same industry. Our starting point is the sample mean.

36. We rarely find a comparator sample that is a close match to the business of interest, but we consider that it is a reasonable first approximation. However, step five of our approach does allow adjustments for differences in systematic risk between the business of interest and the average asset beta for the sample.

37. The descriptive statistics of Fonterra's sample are as follows:

Number of companies: 40	**Weekly observations over a two-year period**	**Four-weekly observations over a five-year period**
Mean	0.52	0.48
Median	0.51	0.52
Standard deviation	0.23	0.24

38. Looking at the market evidence, we cannot conclude that Fonterra's point estimate is not practically feasible. The sample mean is between 0.48 and 0.52, with a large measurement error (standard deviation of 0.23 to 0.24).

39. At the same time, we consider that a 0.38 point estimate is a substantial departure from the sample mean of 0.48 to 0.52. In particular, we estimate that this deviation has an impact on the milk price of around five cents. We consider this to be material.

40. As per step five of our approach, we have considered whether there are differences in systematic risk between the Notional Producer and the sample mean. We think that Fonterra has provided some valid reasons (and other which we consider less relevant)[13] that provide support to the view that the asset beta for the Notional Producer is likely below that of the sample mean. In particular:

> "Put differently, in no other jurisdiction are the milk prices paid by any processor, let alone the market-leading processor, governed by a milk price mechanism like the Milk Price

[13] In Fonterra's view, the comparator's differences in their relative weightings of the commodity and non-commodity business is likely to be a far more significant source of variation in observed asset betas. We consider that the key driver is the ability to transfer downstream price risk (of whatever end product) to upstream suppliers (farmers).

Manual which results in the mechanistic translation of average realised commodity prices into a milk price."[14]

41. We have not verified this assertion. However, if correct, then it would be unlikely that any of the comparators in the sample would have a greater ability than the Notional Producer to transfer systematic risk to farmers. Therefore, if correct, this argument suggests the observed beta estimate for dairy processors internationally is likely closer to the top-end of the plausible range of beta for the Notional Processor.

42. Nevertheless, in itself, this factor does not allow us to reach a view on the size of any reasonable adjustment to the sample mean. To inform the reasonableness of Fonterra's adjustment, we attempted to refine the sample.

43. Fonterra provided us with additional pricing information for some of the comparators in the sample (ie how they transfer systematic risk to farmers).[15] It is not clear to us whether this information is as complete or accurate as it could be.[16] We used this information to attempt to identify those comparators in the dairy sample with either:

    43.1 Some mention of monthly pricing: the idea being that if a processor can change prices monthly, then it likely has the ability to pass through downstream price changes to upstream farmers; and

    43.2 An ability to change prices throughout the season (ie NZ and Australian firms): again, the idea being that if a processor can change prices through the season in response to changing market conditions, then it likely has the ability to pass through downstream price changes to upstream farmers.

44. The table below contains the results.

Firm	**Asset beta**	
Monthly prices	Weekly betas using 2 years of data	Four-weekly betas using 5 years of data
Glanbia	0.55	0.49
Dairy Crest	0.47	0.5
Kerry Group	0.53	0.52
Dean Foods	0.37	0.36

[14] Fonterra "2016/17 base milk price calculation review workshop – responses to Commission's request for follow-up comments: Attachment A", page 7.

[15] Fonterra "2016/17 base milk price calculation review workshop – responses to Commission's request for follow-up comments: Attachment A".

[16] The information was high-level and covered only 20 out of 40 firms in the sample, and for those, only included some information on prices.

Variable prices (ie changing through season)		
Synlait	0.33	0.52
Bega	0.87	0.65
Murray Goulburn	0.39	-0.59
Fonterra	0.1	0.29
Some ability to transfer risk through price		
Grupo Lala Mexico	0.77	0.62
Average	**0.49**	**0.37**
Median	**0.47**	**0.50**
Average (excl Lala)	**0.45**	**0.34**
Median (excl Lala)	**0.43**	**0.50**

Note: data sourced from Marsden's May 2017 report, appendices 1 and 2, column labelled "Average all periods".

45. As expected, the mean asset beta for the sub-sample (0.34 to 0.45) is lower than the mid-point for the whole sample.[17] This evidence, however imperfect, does provide some support for Fonterra's arguments that the asset beta for the Notional Producer should be lower than the sample mid-point given its greater ability to transfer systematic risk to farmers through the setting of the milk price.

46. However, we consider that this evidence is not sufficient to positively conclude that Fonterra's point estimate of 0.38 is practically feasible. This is because we place a low level of confidence of the accuracy of the sub-sample given our doubts on the quality of the information upon which we constructed the sub-sample.

47. We acknowledge the effort by Fonterra and its advisors in providing additional information on some comparators in the sample. This information has helped us refine our understanding of the risk exposure of some of the comparators in the sample.

48. While Fonterra provided some details on milk pricing, it focused its efforts on providing information, for some comparators, about the importance/extent of their commodity versus non-commodity business. Fonterra justified this with the following assertion:

> "…all the non-NZ businesses in our comparator set have extensive non-commodity businesses. Their observed asset betas will therefore reflect the (value) weighted averages of the asset betas for their commodity and non-commodity businesses respectively. **It is our**

[17] We excluded Grupo Lala as it had a noticeably higher asset beta, to control for the possibility that some other factor (like exposure to emerging market risk) was causing the higher estimate. But including it also results in a lower asset beta than the overall sample mean.

> **view** that differences in the relative value weightings of the commodity and non-commodity businesses of the various comparator businesses is likely to be a far more significant source of variation in observed asset betas than differences in the level of systematic risk to which the comparators' commodity businesses are exposed to, whether as a consequence of differences in milk pricing frameworks or other factors."[18] [Emphasis added].

49. We consider that a key driver of asset beta is comparators' ability to transfer systematic risk to farmers through the price paid for milk. To the extent that output prices (be it for commodities or non-commodities) reflect exposure to systematic risk, then comparators transfer systematic risk through the setting of the milk price they pay to farmers.

50. To illustrate, imagine two different processors, one producing only commodity and the other producing only non-commodity products. If they set the milk price in such a way that they transfer all of the output price risk to their farmers, then we would expect them to have the same exposure to systematic risk, and therefore the same beta. If pricing risk is not fully passed on to farmer-suppliers, then differences in systematic risk between commodity and non-commodity products might then affect the asset beta. However, Marsden's estimates for comparators with different levels of commodity exposure are quite similar (all within a range of 0.49 to 0.52). This evidence does not suggest substantially different levels of exposure to systematic risk.

51. We consider that, in order for us to be confident tha the departure from the sample mean based on differences in systematic risk between the Notional Producer and the sample mean is justified, we need better information on the extent to which the comparators pass on systematic risk in the way they set milk prices paid to farmers.

Relevance of EDBs as comparators

52. Fonterra's expert (Dr Marsden) and our expert (Dr Lally) both found EDBs to be relevant comparators. We consider it appropriate to look at a wider range of evidence to get reassurance as to the reasonableness of our (or in this case Fonterra's) estimate, rather than as the main piece of evidence on which to support an estimate.

53. We consider that EDBs' asset beta (0.35) provides a useful reasonableness check. GDBs' asset beta (0.40) or other comparators could potentially also provide a valid check.

54. However, using these businesses as *reasonable checks* is different from using them as *comparators* on which to base an asset beta estimate. We are not convinced on the appropriateness of placing weight on these businesses as comparators. One reason for this is consistency with our WACC assessments in other sectors, where:

[18] Fonterra "2016/17 base milk price calculation review workshop – responses to Commission's request for follow-up comments: Attachment A", page 1.

54.1 we use comparators from the same industry; and

54.2 we favour evidence over theory. We are not convinced that we should place most weight on EDBs as comparator on the basis of theoretical similarities to the Notional Producer. Being in different industries and different regulatory regimes would, in practice, be likely to manifest itself in different betas.

55. Nevertheless, in their role as reasonable checks, these wider observations also support our view that we cannot conclude that Fonterra's point estimate of 0.38 is not practically feasible. However, we consider that we would have to place undue weight to EDBs as a comparator in order to conclude that the point estimate is practically feasible.

Conclusion

56. Our emerging view is that we cannot conclude that an asset beta estimate of 0.38 for the Notional Producer is not practically feasible for an efficient processor with similar risk exposure.