**Attachment 9-8: Response to AER Draft Decision on Equity Beta**

**9.1 Introduction**

The equity beta is a measure of a stock's systematic [risk](http://www.investopedia.com/terms/b/beta.asp) in relation to the overall market. The market necessarily has an average equity beta of 1.0. Beta’s above (below) 1.0 indicate a higher (lower) level of systematic [risk](http://www.investopedia.com/terms/b/beta.asp) relative to the market. The paucity of Australian data and sampling issues make it difficult to generate accurate and statistically reliable estimates of equity beta for the benchmark gas distribution business. Furthermore, analysis tabled by Envestra in its original submission suggested that the AER’s 2009 WACC Review 0.8 estimate equity beta was derived from a data set that exhibited unusually low volatility and this could lead to the under-estimation of equity beta and the rate of return for the benchmark gas distribution business. This, and an array of other evidence, led Envestra to form the view that the value of equity beta lay in the range of 0.8 and 1.1, and that when applied in the CAPM this would result in a rate of return commensurate with the risk involved in providing reference services.

Envestra rejects the AERs Draft Decision that an equity beta of 0.8 is appropriate for the 1 July 2011 to 30 June 2016 regulatory period. Accompanying this attachment is an expert report from CEG titled *WACC Estimation*. Envestra has used the advice contained in this report to evaluate and propose an appropriate value for equity beta for use in the Final Decision. This report forms part of Envestra’s submission, and the submission should be read in the context of that report.

**9.2 Summary of the AER Draft Decision**

In the Draft Decision the AER relied upon the 2009 WACC review analysis to determine that an equity beta of 0.8, when used in the CAPM, will result in a rate of return commensurate with the risk involved in providing reference services. The AER also quoted a recent Grant Samuel independent expert, which was published in 2009,[[1]](#footnote-1) that used an equity beta estimate of 0.8-0.9, MRP of 6% and theta of zero[[2]](#footnote-2). The AER used the Grant Samuel report to support the proposition that the equity beta for energy distribution businesses were un-changed as result of the GFC. Overall, the AER believes that the empirical evidence presented in the 2009 WACC review contains the best available estimate of the equity beta for the benchmark gas distribution network service provider.

* 1. **Envestra Response**
		1. **2009 WACC Review Equity Beta Estimates**

CEG has advised that the AERs estimate of equity beta of 0.8 is flawed on three grounds, namely:

1. The value of 0.8 is derived from reliance on just six, highly volatile, Australian observations for regulated energy distributors’ betas, where:
* most of these firms have a limited time series of available data;
* the AER gives less weight to the highest estimated beta for the Australian sample.
1. The AER’s estimate gives little or no weight to up to 77 other equally relevant observations from US regulated energy distributors – the weight of which strongly points towards a beta of 1.0 or more;

In the expert opinion of CEG, no reasonable person would constrain the information in the manner described in points (i) and (ii) above.

The AER notes in the Draft Decision that in its view, foreign estimates of equity beta should only be used as a cross-check of the domestic equity beta estimates.[[3]](#footnote-3) For the reasons set out above and in the CEG reports relied upon by Envestra, Envestra does not accept that this is the only consideration that ought to be given to foreign estimates. In any event, the AER does not appear to have given any weight to the US estimates of equity beta, either as a cross-check or otherwise. The US estimates are equally relevant and provide a much deeper sample of estimates which support an equity beta close to the market average of 1.0.

Furthermore, CEG point out that the opinions expressed by Professors Grundy, Davis and Handley all support:

* 1. The well accepted empirical fact that the approach to implementing the CAPM used by the AER under-estimates the cost of equity for firms with an estimated beta of less than 1.0. That is, firms have actual returns that are closer to the average of all firms (beta = 1.0) than predicted in the AER’s implementation;*[[4]](#footnote-4)* and
	2. there is a great deal of uncertainty in the theoretical and empirical literature about why this is the case.

These two undisputed facts suggest that to ensure compliance with the NGR the AER should apply the CAPM with an equity beta close to the market average of 1.0, rather than the estimated 0.8 from the 2009 WACC Review. As further support for this view Professor Myers, whoexplicitly advised the New Zealand Commerce Commission that:

Empirical evidence shows that average returns for low-beta firms are higher than predicted by the classical CAPM.[[5]](#footnote-5)

CEG went on to performed a cross-check of the Australian data with the US equity beta data and concluded that:

* + - 1. The average of US equity betas are close to, and, if anything, above 1.0;
			2. This falls within the range of equity betas estimated using Australian data;
			3. The greater number of, and longer time series for, US equity betas gives greater confidence in their average estimate than in the average of the Australian estimates.
			4. Consistent with both the Australian and US evidence an estimate of 1.0 is the best available estimate;

If the estimated beta is 1.0 then that equity beta estimate can be used in the Sharpe CAPM without creating a bias (upwards or downwards) in the estimated cost of equity. The CEG analysis and opinion supports the use of an equity beta of close to 1.0 by the AER in the Final Decision.

**9.3.2 Grant Samuel Report Equity Premium**

The equity premium, in the CAPM context, is the equity beta multiplied by the market risk premium (e x MRP). This equity premium is added to the risk free rate to provide the cost of equity. The equity premium resulting from the Draft Decision is 4.8% (0.8 x 6%) and this incorporates a value for imputation credits of 0.45 derived using a value for theta of 0.65 and payout ratio of 70%.

The Grant Samuel independent expert report quoted by the AER used an equity beta estimate of between 0.8 and 0.9, an MRP of 6% and gamma/theta of zero. As outlined in Envestra’s MRP response, the MRP used by Grant Samuel needs to be adjusted for the value attributable to theta in order to be comparable.

To estimate the value of imputation credits (gamma) Envestra uses a payout ratio of 70% and a theta value of 0.3 to produce a gamma value of 0.2 (70% x 0.3). Adjusting the Grant Samuel MRP of 6% for theta of 0.3 produces an AER equivalent MRP of 6.5%[[6]](#footnote-6). The Grant Samuel equity premium is therefore in the range:

* Equity beta of 0.8 multiplied by 6.5% = 5.2%
* Equity beta of 0.9 multiplied by 6.5% = 5.85%

This indicates that the AER’s equity premium of 4.8% would under-estimate the cost of equity for the purposes of the NGR. Furthermore, the 5.2% equity premium (0.8 x 6.5%) from the 2009 WACC Review is at the low end of the range used by Grant Samuel, indicating that the AER has not provided conservative estimates of the equity beta and/or MRP in the Draft Decision.

* + 1. **Conclusion**

The 5.2%-5.85% Grant Samuel estimate of the equity premium indicates that the AER has under-compensated Envestra in the Draft Decision by determining an  equity beta of 0.8, MRP of 6% and theta of 0.65. The values the AER attributes to these variables should be changed in the Final Decision to bring the Envestra equity premium and associated CAPM cost of equity into line with market requirements.

In addition, CEG present evidence that demonstrates the CAPM under-estimates the cost of equity for low beta companies and that the AERs expert advisers (Handley and Davis) are both in agreement with that point. A solution to the problem is for the AER to estimate the cost of equity with an equity beta closer to the ‘market average’ equity beta of 1.0. This would result in a rate of return commensurate with the risk involved in providing reference services.

Whilst the Grant Samuel material is highly relevant, it is 18 months old, and the lower beta estimate yields a cost of equity that has only a small premium over the cost of debt It is unrealistic to expect equity investors to be attracted to such a minor premium relative to investing in credit securities. Current market conditions would therefore suggest the appropriate equity beta is likely to be at the high end (or above) Grant Samuel’s stated range.

Following a review of the AERs Draft Determination and the updated expert information Envestra has revised its proposal and now submits that the balance of evidence indicates that the most appropriate value for equity beta for use in the Final Decision is around one.

1. Grant Samuel*, Financial Service Guide and Independent Experts Report in relation to the Recapitalisation and Restructure of Babcock & Brown Infrastructure*, 9 October 2009, Appendix 1, p. 8. [↑](#footnote-ref-1)
2. Grant Samuel do not ascribe any to value imputation credit for various reasons. Notwithstanding the circumstances, in discharging their legal obligations they have used a gamma with a value of zero in their valuations. Given the dividend payout ratio of 70%is widely accepted, it necessarily follows that the value for theta implied from the independent expert valuations is zero. [↑](#footnote-ref-2)
3. Draft Decision (SA), Appendix C, page 268. [↑](#footnote-ref-3)
4. The AER implements a version of the CAPM that estimates beta using recent stock recent stock market observations over a period of years. It is important to distinguish between this particular implementation of the CAPM and ‘the CAPM’ in general. This is because, in the AER draft decision and in Handley and Davis’ reports, there is considerable discussion devoted to the fact that that one can’t be sure that the CAPM, implemented in a different manner, would produce such biased results. That is, there appears to be confusion about whether the point at issue is:

Can one be sure that the AER’s method of implementing the Sharpe CAPM will result in bias; versus

Is there some other way of estimating beta such that that implementation of the Sharpe CAPM will be free from bias.

 Clearly, only the first issue is relevant to an assessment of the AER’s decision. The fact that, in theory and with better information, a different method for implementing the Sharpe CAPM might be proved to be ‘right’ is irrelevant. [↑](#footnote-ref-4)
5. Page 27 of “*Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology*” (December, 2008). [↑](#footnote-ref-5)
6. See SFG report section 48 [↑](#footnote-ref-6)