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Mr Tyson Self
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Level 4, Albert Facey House, 469 Wellington Street
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Dear Tyson

CONSULTATION ON PROPOSED AMENDMENTS TO THE ATCO FINAL DECISION

DBP is pleased to provide a response to the ERA's Notice of the 21st of August 2015 (the Notice), which outlines its revisions to its Final Decision for the Mid-West and South West Gas Distribution System (the ATCO Final Decision). Having regard to the short time available to comment on the Notice, this response is, of necessity, brief. We focus on two issues:

- (a) The consistency between debt and equity.
- (b) The ERA's approach to estimating yield curves and collecting data from Bloomberg.

It should be noted that, like DBP's submission #28 made on 16 July 2015, this submission is made to the ERA in relation to both the ATCO Final Decision and the ERA's assessment of DBP's AA Proposal. While DBP understands that the ERA is still considering DBP's AA Proposal and there is no certainty that the ERA's reasoning from the ATCO Decision will be applied in the Draft Decision for the DBNGP, as has previously been the case, we thought it important to highlight to the ERA now (rather than waiting to review the ERA's Draft Decision for the DBNGP) these two issues, as it should assist the ERA in the timely conclusion of all of its remaining decision processes.

Consistency between debt and equity

The discussion of DBP's proposed "consistency test" between debt and equity (the Test) is contained at footnote 591 to paragraph 1378 of the ATCO Final Decision. In the Notice, the ERA has amended that footnote to correct an arithmetic error and has added additional wording in the footnote which leads it to reject the Test. However, there are two errors in this additional wording. As a result, DBP considers the conclusions reached by the ERA in the footnote about the Test to be incorrect.

Firstly, a key parameter in the relationship between the cost of debt and the cost of equity is the elasticity of that relationship; what change in the cost of equity is associated with a given change in the cost of debt. Based upon the analysis of a large number of scenarios, the expert report by SFG (Appendix L to Submission 12 of DBP's AA Proposal) concluded that the best number to use for the elasticity is six. DBP used this elasticity estimate in its AA Proposal, but the ERA has instead chosen a value of seven without giving any reason to reject the value proposed by SFG in its expert report. This leads it to calculate a market risk premium of 10.5 percent, which it concludes is "unsupportable". However, if SFG's recommended value of six were used, the market risk premium estimate, following the ERA's methodology, would be only 9 percent. We note that, in the ATCO Final Decision (page 254) the ERA's range of market risk premia, which it says is supported by the evidence, is 5.6 to 9.7 percent.

The second error is a far more important and fundamental error - which is in the ERA's implicit assumptions that it uses to obtain what it concludes to be the "unsupportable" market risk premium of 10.5 percent. In order to obtain this market risk premium estimate, the ERA does the following sum:

$$MRP = 10.5 = \frac{7 \times (1.868 - 0.82)}{0.7}$$

The denominator on the right hand side of the above equation - 0.7 - is the ERA's estimate of beta for the Benchmark Efficient Entity. Thus, the ERA's conclusion that the Test is not appropriate is premised on two assumptions:

- (c) that the SL-CAPM which produces a beta estimate is the correct model to use; and
- (d) that 0.7 is the correct estimate for beta within the SL-CAPM.

This is a key issue because these are precisely the matters which are in contention, and which DBP has elaborated upon in its AA Proposal. In particular, DBP has provided considerable empirical evidence, which shows that the SL-CAPM, as implemented by the ERA, cannot estimate a return on equity which contributes to the ARORO, which would mean that any assessment based on an assumption that the SL-CAPM as implemented by the ERA does meet the ARORO would yield false conclusions. One cannot robustly undertake an assessment by assuming something, upon which the outcomes of the assessment hinge, is true without robustly testing the assumption.

DBP does not take issue with the ERA's calculation of a beta of 0.7. However, getting the "right" inputs to a model is not the same thing as getting the right output; here, a return on equity which contributes to the achievement of the ARORO (as required by Rule 87(6), read with Rules 87(2) and (3)). The ERA has undertaken numerous theoretical discussions as to why this ought to be the case, and it has tested the various inputs to the SL-CAPM in the ATCO Final Decision, but it has never tested the results of this model in any meaningful way. It is this shortcoming that the "model adequacy test" developed by DBP was intended to address and DBP has provided substantial, robust evidence, consistent with a great deal of other empirical evidence,¹ that the SL-CAPM, as implemented by the ERA, produces results which are statistically and economically significantly biased downwards and thus cannot contribute to the achievement of the ARORO.

The ERA has yet to address DBP's evidence on this point. Until the ERA does so, it cannot assess DBP's Test by simply assuming that its own implementation of the SL-CAPM is correct. As such, the Notice does not provide a refutation of DBP's Test per se, but rather it provides evidence that the results of the Test are inconsistent with the ERA's implementation of the SL-CAPM as a model of the cost of equity. That is to be expected, and indeed DBP makes this point in its AA Proposal. There are two, equally valid, conclusions which flow from this finding of inconsistency:

- (e) DBP's Test is flawed.
- (f) The ERA's implementation of the SL-CAPM as a model of equity cost is flawed.

Which of these conclusions is correct has yet to be meaningfully ascertained by the ERA. However, it is worth pointing out that, if DBP's model adequacy test results are found to be robust, then, by the process the ERA employs to get from DBP's final cost of equity estimate to a beta in its Issues Paper for DBP's AA Proposal, the equation above becomes:

$$MRP = \frac{7 \times (1.868 - 0.82)}{1.26}$$

This gives a market risk premium of 5.8, which sits towards the bottom of the range of estimates which the ERA believes are supported by empirical evidence in respect of the market risk premium.²

On the basis of the available evidence, rather than assumptions, it would appear that the ERA's "test" of DBP's Test in the Notice, when appropriately parameterised, actually provides further evidence that the ERA has erred in modelling the cost of equity, because basing the test on the ERA's assumptions about the validity of the SL-CAPM produces a market risk premium which is unsupported by the evidence, but

¹ See DBP's AA Proposal dated 31 December 2014, including the "model adequacy test" at Chapter 5 of Submission 12, and the more recent response to the ERA's issues paper on our AA Proposal (Submission 26 dated 2 June 2015).

² Note that DBP actually uses an MRP of 6.5 percent. Differences arise because the input numbers are different, and because DBP does not follow a mechanistic approach like this.

basing the test upon a parameterisation grounded in both theoretical assumptions and empirically-supported evidence produces a market risk premium which is supported by the ERA's own evidence.

Annual updating

Most of the Notice addresses the annual updating mechanism and, more particularly:

- (a) How the ERA proposes to extract data from Bloomberg to estimate yield curves.
- (b) How the ERA proposes to estimate yield curves.

The ERA has provided a considerable level of detail in explaining how it proposes to undertake these two tasks and this level of transparency is a welcome addition to the regulatory process. In the very short time available to us to comment on the discussion paper, DBP has not been able to go through the ERA's proposed approach in detail to understand if it contains any errors, and thus we provide no comment on the veracity of the approach. Instead, we focus on the two issues above.³

In respect of the first issue, although it is appropriate for the ERA to lay out in detail how data are to be extracted from a Bloomberg terminal, DBP would be concerned if this meant a service provider would be required to purchase a Bloomberg terminal in order to implement its cost of debt methodology. In particular, DBP has access to Thompson-Reuters data, and would propose to use this in lieu of Bloomberg. We would not anticipate this being an issue with the ERA.

In respect of the second point, we understand the ERA had previously used the R-software to estimate yield curves. DBP has done the same in its AA proposal, and cannot see the benefit of moving to an Excel base. In the first instance, Excel is not really optimised for regression analysis; which is why it is rarely used in academic papers in statistics or econometrics. In the second instance, using Excel appears to be very complex and prone to errors as one works through the various steps. By way of an example, it takes almost 13 pages in the Notice just to explain the steps to undertake the Gaussian Normal, Nelson Siegel and Nelson-Siegel-Svensson approaches. DBP has provided the regression code it used to undertake the same estimation, which is less than half as long (with all the spaces, commentary and additional estimation not required for the core task). Actually using the code is much simpler, and 13 pages of instruction could be reduced to a single sentence; "load the package and press the "knitr" button in R-studio".

Whilst we believe the R-code we have provided to the ERA could be improved and streamlined, we also believe that such a streamlined code would be much less susceptible to operator error than 13 pages of steps. Moreover, since the R software (and the more user-friendly R-studio interface DBP uses) is open source and can be freely downloaded, there are no restrictions on anyone replicating the relevant results. DBP would be happy to work with the ERA, and any other interested stakeholders, to develop an annual updating "package" in R.

Should you wish to discuss either of these issues further with us, we would be pleased to do so.

Yours sincerely



Nick Wills-Johnson
Manager – Economic Regulation

³ One exception, which is not so much an error, but a difference in point of view, is in paragraph 59 where the ERA proposes to use Lally's linear extrapolation method to move from effective to target tenor for the Gaussian Normal method. In a submission to the Issues Paper for DBP's AA proposal, UEMG provide evidence from an expert report by Esquant which suggests that the SAPN regression-based extrapolation method is superior to Lally's linear approach, and we would urge the ERA to consider this evidence.