

Queensland Competition Authority: Cost of Debt for SEQ distribution- retail water and wastewater entities

*Queensland
Competition Authority*

*Cost of Debt for SEQ
distribution-retail
water and wastewater
entities - Draft*

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1 Scope of report

1.1 Scope of report

The Queensland Competition Authority (QCA) has engaged PricewaterhouseCoopers (PwC) to estimate a number of components of the cost of debt that it will apply in determining a cost of debt for the SEQ distribution-retail water and wastewater entities for the next regulatory period. The term of the regulatory period is two years (1 July 2013 to 30 June 2015).

The components of the estimated cost of debt that we have been asked to provide are the:

- Nominal risk-free rate for 2 years; and
- Cost of debt margin over the nominal risk free rate for terms to maturity of 2 years and 10 years, which could be estimated using:
 - A methodology consistent with the extrapolated Bloomberg methodology that is currently being applied by the Australian Energy Regulator (AER); or
 - Another appropriate methodology to estimate the cost of debt margin.

You have also requested that we provide you with the spreadsheets that have been employed in generating the results.

2 Cost of debt estimate

2.1 Cost of debt components

2.1.1 Nominal risk-free rate

The 2 year nominal risk-free rate for the 20 day averaging period ending 22 January, 2013 is **2.76 per cent**. The risk-free rate was calculated using Reserve Bank of Australia yields for 2-year Commonwealth Government bonds. The estimate was obtained by interpolating annualised yields of Commonwealth Government bonds maturing on dates two years from each business day over the averaging period.

2.1.2 Cost of debt margin over the nominal risk-free rate for 2 years

We have estimated the cost of debt margin (debt risk premium) for a BBB rated distribution-retail water and wastewater entity for a term to maturity of 2 years to be **2.29 per cent**.

Initially, we obtained an estimate of the debt risk premium sourced from Bloomberg's BBB fair value curve (FVC) data for a term to maturity of 2 years. The cost of debt margin estimate of 1.86 per cent was calculated as the difference between the average Bloomberg fair value curve estimated yield (4.65 per cent) and the average nominal risk free rate (2.76 per cent) over the 20 day averaging period.

In the past, regulators and businesses have considered the Bloomberg BBB curve to be an appropriate indicator of the BBB+ curve. However, currently the average credit rating of the bonds that are used by Bloomberg to construct its BBB fair value curve are predominantly rated BBB, rather than BBB+, and it may therefore be expected to provide a reasonable estimate of the debt risk premium for a BBB rated entity.¹ We cross-checked this assumption by estimating the 2 year debt risk premium employing our own econometric analysis.²

For our econometric analysis we relied on a data base of yields for 70 bonds in the rating categories of BBB, BBB+ and A-, which was drawn from bonds with more than 1 year to maturity that were available in the Bloomberg and UBS services during the averaging period. Where there were yields from both service providers, we averaged the yields, and otherwise used the single available observation. We found that the data base was relatively evenly split between BBB and A- bonds, with a smaller number of BBB+ bonds, which provided greater confidence that regression results would reflect the debt risk premium expectation for a BBB+ bond.³ We applied linear regression, as it has theoretical and empirical support,

¹ We observed that just after the end of the averaging period the bonds that were relied on by Bloomberg to estimate its BBB fair value curve were predominantly BBB. Using a weighting system of 1 for BBB-, 2 for BBB, 3 for BBB+, the average value for the bonds used in Bloomberg's FVC curve analysis was 2.25 (i.e. closest to BBB).

² Further details of the econometric approach applied are provided below.

³ Applying the weightings of 1 for BBB, 2 for BBB+ and 3 for A-, the average value for the sample of 70 bonds was 2.1 (i.e. close to BBB+).

and has performed well against alternative functional forms over the last two years of data.⁴

We found that the average differential between an econometric fair value curve estimate that reflects the BBB+ credit rating (based on observations for BBB, BBB+ and A- yields), and the BBB yield observations in the sample was 38 basis points.⁵ Adding 38 basis points to our econometric (linear regression) estimate of a BBB+ debt risk premium for 2 years to maturity (191 basis points), we derived an estimated 2 year BBB debt risk premium of 2.29 per cent.

We therefore recommend that an estimated value of 2.29 per cent be applied as the debt margin for a BBB rated entity, as the weight of evidence indicates that the Bloomberg BBB FVC significantly under-estimates the yield of a BBB bond yield at a term to maturity of 2 years.

2.1.3 Cost of debt margin over the nominal risk-free rate for 10 years

We have estimated a 10 year BBB debt risk premium of **3.47** per cent for the 20 day averaging period ending 22 January, 2013.

For comparative purposes we first obtained an estimate of 3.20 per cent for the 10 year BBB+ debt risk premium based on the most recent methodology that has been applied by the AER to estimate a BBB+ debt risk premium. In its recent decisions, and in its most recent draft decisions on the Victorian gas distribution businesses, the AER has applied an extrapolated Bloomberg fair value curve methodology to estimate the 10 year debt risk premium.⁶ Bloomberg no longer estimates a 10 year BBB fair value curve, and only provides a curve up to 7 years. The AER's current approach is to take Bloomberg's 7 year BBB fair value curve estimate as the base, and to extrapolate to 10 years based on the annual change in the debt risk premium observed for a set of paired bonds where:⁷

- The paired bonds are in the credit rating bands of A-, BBB+ or BBB;
- The longer dated bond has a term to maturity that is close to 10 years;
- The shorter dated bond has a term that is closest to the shorter term that is of concern (i.e. closest to 7 years); and
- The match is between a pair of fixed coupon bonds, or a pair of floating rate bonds.

Applying these criteria to the Bloomberg and UBS bond yield databases, we obtained paired bond data for Stockland (rated A-), Sydney Airport (rated BBB),

⁴ Our previous analysis of bond yields has shown that a linear function performs strongly. Furthermore, a linear function has theoretical and empirical support in academic papers (e.g. Edwin Elton, Martin J. Gruber, Deepak Agrawal, and Christopher Mann, (February, 2001), 'Explaining the Rate Spread on Corporate Bonds', *The Journal of Finance*, Vol. LVI, No. 1, pp. 247-277, and Marco Sorge and Blaise Gadanecz (2008), 'The term structure of credit spreads in project finance,' *International Journal of Finance and Econometrics*, Vol. 123).

⁵ We also found that the spread of these deviations was approximately uniform with term.

⁶ For example, see Australian Energy Regulator (September, 2012), *Access arrangement draft decision – SPI Networks (Gas) Pty Ltd 2013-17*.

⁷ In its most recent debt risk premium estimation methodology the AER relied on the selection criteria for paired bonds that were developed by PwC (May, 2012) *Electranet Pty Ltd – Estimating the benchmark debt risk premium*, p.iv.

and GPT (rated A-). In Table 1 we show how the 10 year debt risk premium estimate was derived based on Bloomberg fair value curve yield data for the three pairs of bonds. For the averaging period ending 22 January, 2013, these paired bonds showed an average annual increment of 10.8 basis points.

Adding the observed 10.8 basis points annual increment to the 7 year Bloomberg BBB fair value curve estimate of 288 basis points, we derived an estimated 10 year BBB+ debt risk premium of 320 basis points (3.20 per cent).

Table 1 – Estimation of cost of 10 year debt using the current AER methodology – 20 days to 22 January, 2013

Bond Issuer	Short Maturity (years)	Long Maturity (years)	Debt Risk Premium – Bloomberg (basis points)	Debt risk premium - UBS (basis points)	Debt risk premium increment per year (basis points)
Stockland (A-)	3.5	7.9	7.6	5.9	6.7
Sydney Airport (BBB)	2.9	8.9	n/a	19.8	19.8
GPT (A-)	4.84	9.35	6.1	n/a	6.1
Average					10.8
3 times average					32
Bloomberg 7 yr DRP					288
Extrapolated DRP					320

Source: Bloomberg, UBS, PwC

However, the Authority requested that we obtain an estimate of the debt risk premium for a BBB rated bond at a term to maturity of 10 years. To address this task we again applied an econometric regression analysis, as outlined above.

For a term to maturity of 10 years our regression analysis indicated an estimated debt risk premium of 3.09 per cent. This is 11 basis points lower than the 3.20 per cent indicated by the AER's current extrapolated Bloomberg methodology, and provides a cross-check that the AER's methodology delivers a reasonable estimate of the 10 year debt risk premium for the BBB+ credit rating.

As in the case above for the 2 year debt risk premium, to estimate the 10 year BBB debt risk premium we have added the average 38 basis point differential between debt risk premiums for our BBB bonds and the BBB+ curve estimated using our econometric (regression) analysis. This gave an estimated 10 year BBB debt risk premium of 3.47 per cent. Although not estimated by reference to the AER's methodology for estimating the 10 year BBB+ debt risk premium, the estimated value of 3.47 per cent is consistent with the estimate applying the AER's current methodology, as it is significantly higher (as would be expected for a lower credit rating band).

