APPENDIX C

QTC - Debt Risk Premium Analysis

January 2012

QUEENSLAND TREASURY CORPORATION

DRAFT DETERMINATION 2012/13 – 2016/17

DEBT RISK PREMIUM ANALYSIS

PREPARED FOR

POWERLINK QUEENSLAND

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1 SUMMARY

The Queensland Treasury Corporation (QTC) has been engaged by Powerlink Queensland (Powerlink) to provide an expert opinion on the calculation of the debt risk premium for the purposes of its regulatory determination for the 2012/13-2016/17 period.

QTC has analysed the AER's proposed approach to calculating the debt risk premium in the *Draft decision – Powerlink Transmission determination 2012-13 to 2016-17* ('AER draft determination') and compared this to the approach put forward by Powerlink in its regulatory submission.

Our key findings are as follows:

- The decision of the Australian Competition Tribunal in *ActewAGL*[1] regarding the definition of 'debt risk premium' in Chapter 6A of the National Electricity Rules (NER) states that the benchmark BBB+ rated 10 year Australian corporate bond[2] yield can be estimated by reference to yields on representative bonds if these bonds are issued in a robust bond market. In the absence of data from bond trading in a robust, deep market, the *ActewAGL* decision states that AER would have to rely on fair value curves.
- QTC has analysed the available yield data for bonds included in the AER's sample and in our view it is not reasonable to conclude that these prices reflect market data from a robust bond market. It is likely that there is little or no trading in the AER's sample of bonds, and the available data is solely based on indicative (ie, non-executable) prices from a limited number of data providers.
- QTC has analysed the quality of data available for the bonds in the AER's sample to determine whether the available data is capable of producing a reasonable estimate of the benchmark Australian corporate bond yield. As these bonds are very illiquid, it is difficult for providers of indicative prices to make reference to actual traded prices, and given there are limited prospects of future trading margins from these securities there is less incentive to ensure that prices are continually re-assessed to ensure they are reflective of market conditions (eg, some prices have not been updated in nine months). It is not reasonable to conclude that any actual trades would occur at the indicative prices quoted for most of the sample of bonds As such, we consider that the AER's sample of bonds is not capable of providing a sole basis to form a reasonable estimate of the benchmark Australian corporate bond yield.
- There are reasonable grounds to exclude a number of bonds in the AER's sample on the basis that these are not representative of the benchmark Australian corporate bond, including:
  - The Coca-Cola Amatil bond should be excluded because of its small issue size ($30 million) and lack of reliable pricing data (ie, the bond is currently

[1] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraphs 74 to 75

[2] In this report, a reference to the benchmark Australian corporate bond is to a 10 year BBB+ rated Australian corporate bond.

priced in line with much higher rated semi-government issuers such as QTC), which suggest it is not representative of a bond with a credit rating in the range of A- to BBB.

- The SPI Electricity & Gas bond should be excluded because a previous report prepared for the AER concluded its pricing is likely to be influenced by the ultimate ownership of the Singapore Government of 51 per cent of the company, and the bond is trading at a lower yield than bonds issued by higher rated corporates, such as Telstra (rated A).

- Detailed analysis of the available data for the bonds in the AER's sample reveals significant data quality issues, including large differences in prices provided by different parties and very infrequent updating of price data. As such, it would be unreasonable to conclude that the sample approach on its own is capable of producing a reliable estimate of the benchmark Australian corporate bond yield. In particular, we note the following:
  - Corporate bonds are typically priced based on their margin above the bank bill swap rate. Analysis of pricing data for bonds in the AER sample indicates that the margin to swap is adjusted very infrequently. For example, UBS's margins to swap for Sydney Airport, Dalrymple Bay Coal Terminal (DBCT), Brisbane Airport and APA Group bonds were not updated in at least the past six months[3]. The lack of any change in the credit margins during a period when credit margins have clearly changed confirms that these bonds are illiquid and their pricing is not sufficiently reliable.
  - The average difference between the highest and lowest quoted yields for the Brisbane Airport, Stockland Trust and SPI Electricity & Gas bonds is more than 0.33 per cent over the indicative averaging period (ie, more than 10 per cent of the proposed debt risk premium). There is a very limited amount of quality yield data for these securities. These factors indicate that data for these bonds is unlikely to produce a reliable estimate of the benchmark Australian corporate bond yield.
  - The average difference between the highest and lowest quoted yields for the APA Group bond is 0.15 per cent, and among the AER sample it has the highest number of reliable data points. However, the 'BVAL' rating score assigned by Bloomberg indicates that the data is not a sufficiently reliable estimate for present purposes.
  - A comparison of the debt risk premiums for the AER sample with the Bloomberg BBB rated fair value curve[4] sample indicates that a number of bonds in the AER sample have debt risk premiums which are lower than or equal to bonds in the Bloomberg sample which have much shorter terms to maturity. This outcome is inconsistent with normal market outcomes, and given the limited trading data behind the AER's sample and better data for the Bloomberg sample, suggests that the yields on these bonds are not representative of their true value (ie, yields are too low).

[3] Analysis of margins to swap from another data provider indicates that the practice of not updating margins for illiquid bonds is common in the industry.

[4] In this report, references to the Bloomberg BBB rated Fair Value Curve are to the entire curve up to seven years maturity, unless reference is made to specific points on the curve, eg Bloomberg BBB rated 5 year Fair Value Curve or Bloomberg BBB rated 7 year Fair Value Curve.

- The AER's use of a simple average of the debt risk premiums for its sample of bonds is an inferior approach to constructing a yield curve across various terms to maturity, as it is not amenable to statistical testing. As such, it is not reasonable to conclude, even if the underlying bond data was robust, that the simple average approach produces a reasonable estimate of the benchmark Australian corporate bond yield. In light of the significant concerns regarding the suitability of some bonds and data quality for all bonds in the AER sample, it is very unlikely that the use of a simple average approach would eliminate or reduce idiosyncratic features, data errors or biases relating to individual bonds.
- The AER's decision to exclude the Bloomberg BBB rated Fair Value Curve is unreasonable, as it has not provided sound arguments or evidence to support its claim that the estimates are unreliable. In particular:
  - The divergence between the iTraxx index of credit default swaps and the Bloomberg BBB rated Fair Value Curve from 2009 onwards can be explained by the impact of bond pricing factors other than issuer credit risk, particularly liquidity.
  - The performance of the Bloomberg BBB rated Fair Value Curve over the period spanning the global financial crisis is consistent with the average yield of a sample basket of bonds selected by QTC (including bonds which have previously been used by the AER for testing fair value curves or calculating the debt risk premium, ie, the APA Group bond).
  - Having reviewed the letter from Bloomberg in response to the AER's queries, we do not consider that this letter supports the AER's claims that the Bloomberg BBB rated Fair Value Curve is not suitable for calculating the debt risk premium.
  - Contrary to the AER's claim that the Bloomberg BBB rated Fair Value Curve is not a reliable estimate, the recent issue of a BBB rated 7 year bond by Caltex was priced very close to the yield predicted by Bloomberg.
  - The composition of the Bloomberg BBB rated Fair Value Curve has improved significantly in recent months, and the sample now includes two bonds with more than five years term to maturity. The Bloomberg BBB rated Fair Value Curve is likely to be a better estimate of the 7 year yield now than it was in the Victorian final distribution determination last year, when the sample did not include any bonds with more than five years term to maturity.
  - Comparison of the Bloomberg BBB rated Fair Value Curve with survey data obtained by QTC as part of the administration of the Competitive Neutrality Fee (CNF) indicates that the curve is reasonably reflective of the current benchmark Australian corporate bond yield.
- We have used a number of approaches to estimate the increase in the debt risk premium as the term to maturity increases (ie, DRP term premium), including paired bond analysis and examination of CNF survey data, which support the view that the increase is currently in the range of 10 to 15 basis points per annum.
- While in our view the Bloomberg Fair Value Curve provides a better basis for estimating the debt risk premium, given the challenges in estimating the benchmark Australian corporate bond yield and the limitations of any one approach, there may be merit in combining the results of two approaches, eg, a weighted average of the extrapolated Bloomberg Fair Value Curve and the AER

sample approach. However, given the data quality issues affecting the AER sample, the use of the AER sample approach should be subject to the following qualifications:

- The SPI Electricity & Gas and Coca Cola Amatil bonds should be excluded, given that these are not representative of the benchmark Australian corporate bond.
- Bonds from the AER's broader sample of 5 to 15 years remaining term to maturity should be considered for inclusion in the sample (as well as any other relevant bonds), subject to considering whether the bond is sufficiently representative of the benchmark Australian corporate bond (ie, the SPI Electricity & Gas September 2017 bond should be excluded).
- Consideration should be given to the use of more sophisticated econometric techniques to construct a curve using available bond data, rather than a simple average approach.
- In the absence of material improvement in the data quality for bonds in the AER sample (ie, more trading data, broader range of banks providing prices, evidence of margins to swap being updated), a lesser weighting should be applied to the AER sample result.

- The Bloomberg BBB rated 5 year Fair Value Curve average debt risk premium for the 40 trading day period ended 9 December 2011 was 353 basis points. Using a conservative DRP term premium of 10 basis points per annum produces an estimate for the debt risk premium for the benchmark Australian corporate bond of 403 basis points.
- Using the AER's 5 to 15 year sample (excluding SPI Electricity & Gas and Coca-Cola Amatil bonds) and including the Sydney Airport 2018 bond produces an estimate of 357 basis points for the 40 trading days ended 9 December 2011[5]. As the 5 to 15 year adjusted AER sample has an average term to maturity of 9.0 years at 9 December 2011, an additional 10 basis points for DRP term premium should be added to derive a ten year estimate, in which case the outcome of the sample approach is 367 basis points.
- Having regard to the data quality issues affecting the AER sample, a greater weighting should be applied to the Bloomberg BBB rated Fair Value Curve approach, and the debt risk premium should be closer to the upper end of the range of 367 to 403 basis points derived from these two approaches.

[5] Refer to section 3.5.4 for further details regarding the approach used to calculate this figure.

2 BACKGROUND AND APPROACH

2.1 BACKGROUND

Powerlink submitted its regulatory proposal for the 2012/13-2016/17 period on 31 May 2011. The proposal included a debt risk premium of 4.34 per cent, which was based on analysis provided by PricewaterhouseCoopers (PwC)[6]. A copy of the PwC report was attached to Powerlink's submission.

On 28 November 2011, the AER issued a draft determination for Powerlink, which rejected Powerlink's calculation methodology for the debt risk premium and proposed a different approach, which calculated a debt risk premium of 3.19 per cent.

2.2 POWERLINK'S REQUEST

Following the release of the AER's draft determination, Powerlink has engaged QTC to provide an expert opinion on the debt risk premium, including:

- Analyse the AER's proposed approach to calculating the debt risk premium and provide a view on whether the AER's approach is consistent with the requirement in rule 6A.6.2 of the National Electricity Rules
- Analyse the AER's comments on Powerlink's proposed approach and provide a view on whether the AER's decision not to adopt Powerlink's approach was reasonable, and
- Provide advice on whether alternative information sources or estimation methodologies are available which support the reasonableness of Powerlink's proposed approach.

2.3 OUR APPROACH

QTC has analysed the proposed debt risk premiums calculated by the AER and in Powerlink's regulatory proposal in comparison to corporate bond yields data from a range of sources.

The analysis has been undertaken in order to test the quality of the data underlying each of the proposed approaches, in particular whether the data relates to actual trades in debt securities or is estimated by other means.

In the case of Bloomberg's Fair Value Curves, it is not possible to replicate the construction of the curves and their calculation methodology. Instead, we have compared the outputs from the various curves against other sources of data, including bond issuance and proprietary credit margin survey data.

[6] PwC, *Methodology to estimate the debt risk premium (Appendix C – Powerlink Queensland 2013-2017 Revenue Proposal)*, April 2011

QTC has obtained data from a range of sources including:

- Bloomberg
- Thomson Reuters DataStream
- UBS
- Other banks and data providers

QTC has also had a number of discussions with market participants, in order to obtain information on market perceptions of particular securities.

QTC analysed survey data on credit margins which has been provided by a number of banks over the past decade as part of the administration of the Competitive Neutrality Fee (CNF) on behalf of Queensland Treasury.

2.4 OUR EXPERTISE

QTC is the Queensland Government's central financing authority and corporate treasury services provider with responsibility for;

- providing financial and risk management advice and services to the Queensland Government and Queensland's public sector bodies (our customers)
- sourcing and managing the debt funding to finance Queensland's infrastructure requirements in the most cost effective manner, and
- investing the State's short to medium-term cash surpluses with the aim of maximising returns to Queensland's public sector bodies within a conservative risk management framework.

QTC has extensive experience in the Australian financial markets. QTC is the largest Australian semi-government issuer of Australian dollar denominated bonds in both the domestic and offshore markets with around $70 billion outstanding as at 30 September 2011. QTC also issues securities under its Medium Term Note, Treasury Note and Commercial Paper programs.

QTC's Capital Guaranteed Cash Fund manages over $8 billion of investments in medium term floating rate notes, discount securities and cash. Over 99 per cent of investments are high credit quality being rated by Standard & Poor's, or an equivalent rating agency, as A- or better (long-term) or A-1 or better (short-term).

QTC encourages its customers and Queensland Treasury, the major stakeholder, to use QTC as an extension of their resources, by:

- Providing them with access to professional skills and resources to ensure their financial risks are identified and managed on a consistent basis.
- Acting as a central store of knowledge and expertise on financial structures and commercial policy and financial and commercial risks and benefits they encompass.
- Working as a conduit between the Government and the private sector, using our economies of scale and scope to ensure that the best possible solutions are obtained.

3 THE AER'S PROPOSED APPROACH

3.1 OVERVIEW OF THE AER'S APPROACH

The AER has proposed an approach which is based on a sample of nine Australian corporate bonds, using a simple average of the margins over the relevant Australian Government bonds. The sample has been chosen based on the following criteria:

- Australian domestic corporate issuance
- Rated as either BBB, BBB+ or A- by Standard & Poor's
- Between 7 and 13 years remaining term to maturity
- Yield data observed by Bloomberg or UBS during the averaging period
- Fixed interest rate, or floating interest rate where this can be reliably converted into a fixed interest rate equivalent
- Standard bonds (that is, not callable or subordinated debt), or non-standard bond type where this can be reliably converted into a standard bond equivalent
- There are no strong qualitative grounds to indicate that the bond is unrepresentative of a benchmark 10 year, BBB+ rated Australian corporate bond.

The AER states that it has not included in its sample any callable bonds, subordinated debt or the Bloomberg BBB rated Fair Value Curve.[7]

Having determined the bonds to be included in the sample, the AER has then calculated annualised yields from the sample (which includes converting floating yields to fixed), converted these to spreads over the estimated risk free rate, and calculated the debt risk premium as an average of the spreads.

Using this approach, the AER calculates a benchmark debt risk premium of 3.19 per cent over a forty business day averaging period ended 14 October 2011.

3.2 CHANGE IN APPROACH

The AER's proposed approach is a significant departure from previous AER determinations, which were based on fair value curves published by Bloomberg and CBASpectrum, or more recently, a weighting of Bloomberg and a single corporate bond issued by the APA Group. To our knowledge, the AER's proposed approach is the first method which does not include any weighting on a fair value curve from Bloomberg or CBASpectrum.

The decision to change approach has been taken because:[8]

[7] We understand that at the time of the averaging period, the DBCT bond had a call option
[8] AER Draft determination, page 215

> *'The AER considers sufficient market data is now available to form a sample of bonds and to use the observed yields from that sample to determine a reasonable estimate of the benchmark debt risk premium.'*

In particular, the AER notes that following the June/July 2011 gas arrangement decisions, bond data became available for SPI Electricity & Gas, Stockland Trust, Brisbane Airport and Sydney Airport bonds, which are included in its sample.

While the AER's latest approach is consistent with the trend observed in the Victorian distribution decisions and the recent gas arrangement decisions, which reduced reliance on Bloomberg Fair Value Curves from 100 per cent to 75 per cent and 50 per cent, respectively (with the APA Group bond taking up the remainder), the proposal for Powerlink and Aurora is nonetheless a significant step change in calculation approach.

There are a broad range of issues which need to be given detailed consideration in order to be satisfied that the AER's proposed sample approach, including the decision to apply no weight to the Bloomberg Fair Value Curve, provides a result which is consistent with the National Electricity Rules. Given the range of complex issues involved, it would be reasonable for the AER to continue to engage with Powerlink following the submission of its revised regulatory proposal to work through these issues.

3.3 DEFINITION OF DEBT RISK PREMIUM

The debt risk premium is defined in clause 6A.6.2(e) of the National Electricity Rules as:

> *'the margin between the annualised nominal risk free rate and the observed annualised Australian benchmark corporate bond rate for corporate bonds which have a BBB+ credit rating from Standard and Poor's and a maturity equal to that used to derive the nominal risk free rate.'*

The AER states that it considers the sample based approach is consistent with the above requirement because:[9]

> *'The AER's sample based approach closely reflects the observed Australian benchmark corporate bond rate, as the input data is derived from observed yields on Australian corporate bonds.*
>
> *The sample parameters of the AER's approach are chosen to ensure a sufficient number of bonds that is, on average, a close match to the benchmark 10 year BBB+ standard fixed rate bond.'*

Further, the AER states that is approach is consistent with the decision of the Australian Competition Tribunal in *Application by ActewAGL Distribution* (September 2010), where the Tribunal stated[10]:

[9] AER Draft determination, page 222

[10] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraph 74.

'In a robust bond market, it would likely be possible for the AER to calculate the yield based on particular representative bonds issued in Australia in reasonably close proximity to the time of the AER's determination.

In the absence of a deep market for corporate bonds, the AER will likely have to rely on published fair value curves to estimate benchmark debt financing costs.'

The Tribunal also noted, after discussing the previous approach based on Bloomberg and CBASpectrum fair value curves, that:[11]

'Of course, we do not intend to discourage the AER from investigating other ways to estimate the debt risk premium.'

Based on the above comments from the Tribunal, the AER's draft determination concludes that:[12]

'The AER considers that this reasoning supports a view that:

- *Where market data is available, it is possible to estimate the DRP using this data*
- *Where market data is not available, the AER will likely have to rely on published fair value curves to estimate benchmark debt financing costs'*

3.3.1 Comments on general approach

QTC agrees with the AER that consideration should be given to whether the debt risk premium can be estimated by reference to market data relating to individual bonds. Further, we agree with the *ActewAGL* decision that it is reasonable to consider data from bonds which do not have a ten year term to maturity, which are not issued by a BBB+ rated borrower, and which have a floating coupon.

However, in our view, the calculation of the debt risk premium by reference to particular bonds should be subject to the threshold requirement the data is of sufficient quality so that the resulting debt risk premium is reflective of the cost of funds in the market. This is our reading of the Tribunal's statement in *ActewAGL* (quoted above) that in the absence of a robust bond market, fair value curves will continue to be required. The Tribunal's statement to investigate other methods requires an investigation into the quality of underlying data, not merely the existence of any data for comparable bonds.

3.3.2 Requirement for robust data

It is widely acknowledged that the lack of a deep and liquid corporate bond market in Australia has made it difficult to calculate the benchmark corporate bond yield required under clause 6A.6.2(e). While the issue was originally thought to be due to a lack of 10 year BBB+ rated bonds issued by regulated utilities, the decision in *ActewAGL* that a wider range of securities can be considered has proven this view to be incorrect. The problem is fundamentally a lack of quality data. The Tribunal's suggestion for the AER to investigate other means to calculate the debt risk

[11] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraph 79
[12] AER Draft determination, page 222

premium, in our view, requires that the AER scrutinise the available data to determine whether it is sufficiently robust to replace the previous fair value curves. We do not believe this has occurred in the Powerlink draft determination.

The definition of debt risk premium refers to the '*observed* annualised Australian benchmark corporate bond rate' (emphasis added). The use of the word 'observed' in its strictest sense, may require that the yields are calculated from actual traded prices during the averaging period. A requirement for traded prices is consistent with the Tribunal's statements in *ActewAGL* that yields can be estimated from individual bonds '*in a robust bond market*', but '*in the absence of a deep market for corporate bonds*'[13], published fair value curves will continue to be required.

The AER has taken a very different interpretation[14]:

> *'The AER considers its sample based approach is consistent with the requirement under the NER that the DRP be based on the observed annualised Australian benchmark corporate bond rate. This is because observed yield data is the best available source of data on the market perceptions of investors.'*

A similar view was expressed in the draft determination for Queensland distributors, where the AER stated:[15]

> *'Regarding 'observed', neither annualised bond rates for Australian corporate bonds of 10 years maturity with a BBB+ rating nor a 'benchmark bond rate' are directly observed in the market as suggested by CEG. For this reason, the AER considers that the meaning of 'observed' in this context is not intended to mean directly observed but logically also captures a process of analysis or estimation, as is required.'*

These statements imply that published yields of any type, whether based on trades, executable offers, indicative offers, or simply price assumptions used for end of day valuations, are of equal value in assessing the prevailing market views of investors. We do not agree with these views. As discussed in section 3.6.2, the margin to swap data for the four floating rate notes in the AER's sample has not changed in over eight months, while credit spreads on traded securities have changed continually over the same period. Data for illiquid bonds is not likely to represent current market views.

If the NER required that the benchmark corporate bond yield is calculated from robust market data, this could preclude the use of the AER's approach because there is insufficient reliable data for its chosen sample of bonds. Our analysis strongly suggests that there has been very little actual trading among the AER sample of bonds and as a consequence only a limited proportion of the Bloomberg price data is based on executable or indicative quotes. In contrast, the quality of data for the Bloomberg BBB rated Fair Value Curve sample is much higher (refer section 3.6.6).

For the purposes of this report, we have assumed that the AER is allowed to consider other forms of pricing data, in order to assess whether that data is likely to

[13] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraph 74
[14] AER Draft decision, page 221
[15] AER, *Qyueensland Draft distribution determination 2010-11 to 2014-15*, page 266

provide a reasonable estimate of the price at which the benchmark Australian corporate bond would trade. We note that this should not be read as endorsing the use of non-trading data for the purposes of calculating the debt risk premium. We understand that the Tribunal is currently considering applications by the Victorian distributors relating to the debt risk premium calculation in their final determination using a 50 per cent weighting on the APA Group bond. the Tribunal has separately granted leave for APT Allgas Energy and Envestra to consider the AER's calculation of the debt risk premium under the National Gas Rules using the same approach[16]. The decision on the Victorian distributors' application is expected in January 2012, although it may not be available before Powerlink is due to submit its revised revenue proposal. These decisions may contain guidance on the calculation of the debt risk premium which is relevant to the AER's sample approach or the use of Bloomberg Fair Value Curves.

In the *ActewAGL* decision, the Tribunal noted that:[17]

> *'Corporate bonds are generally traded over the counter in private party-to-party transactions. It is not mandatory to report publicly the price paid for a bond. Information regarding the estimated price of corporate bonds is obtained through various commercial information services such as Bloomberg and CBASpectrum and corporate bond traders such as UBS. The prices published by each firm often differ, in part because each firm may know about transactions in a particular bond.'*

As well as reporting prices for transactions, Bloomberg, UBS and other data providers (such as YieldBroker and Thomson Reuters DataStream) also report executable prices and indicative prices. Bloomberg's system also estimates prices for bonds based on comparable securities. The former reflect prices at which a party is willing to trade, although in QTC's experience executable prices are typically only quoted for small parcels, and in most cases the price is discussed between the parties before a transaction is agreed upon. Indicative prices do not reflect prices at which a party is willing to trade, and QTC's discussions with a number of banks indicated that in a situation where the party does not have a position in that security or does not expect to (eg, the bond is illiquid), the indicative price is subject to limited degree of analysis. In a 2009 report for ActewAGL, Dr Tom Hird of CEG noted[18]:

> *'The fact that there are few if any recent trades in these bonds and that it is not possible to know what the prices were for any trades that actually occurred means that one must rely on observed estimates of prices that would exist if there were trades. Naturally it is very difficult to 'test' the accuracy of such estimates in the absence of data on actual trades. On this matter it is important to be very clear – on any given day most, if not all, the quoted yields listed in Bloomberg and CBASpectrum do not reflect yields at which the bonds were traded. Rather they reflect yields at which somebody estimates that the bonds would have traded had there been willing buyers and sellers on that day.'*

The statement above should not be read as inferring that all corporate bond data is of equally poor quality. There are significant differences in liquidity, with much

[16] *Application by APT Allgas Energy Pty Ltd* [2011] ACompT 11; *Application by Envestra Limited* [2011] ACompT 12; *Application by Envestra Limited* [2011] ACompT 13
[17] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraph 17
[18] CEG, *Estimating the cost of 10 year BBB+ debt, a report for* ActewAGL, at page 9

greater activity in bonds which are shorter dated or issued by highly-rated well known corporates. Even among thinly traded bonds, indicative data for bonds which are periodically traded will be of better quality than data for bonds which are not traded at all, as the periodic trades will at least provide some basis for market participants to set their future indicative prices for that security.

The Tribunal in *ActewAGL* did not discuss in detail the different types of price information that may be obtainable as well as actual trade data, however in our view the quality of data was not a critical issue. In that case, the use of bond yield data was for the purposes of comparing Bloomberg and CBASpectrum fair value curves, rather than a primary means of calculating the debt risk premium. As the same bond yield data was being used to compare the two fair value curves, any unreliable data in the sample would not have a direct material bearing on the debt risk premium awarded (unless it was sufficient to sway the choice between the two curves). Indeed, the Tribunal in that case preferred the use of more bonds, even where data was only available from a single source, contrary to the AER's approach:[19]

> *'The Tribunal is of the view, in conformity with the view expressed in the January 2010 Competition Economists Group (CEG) report prepared for Country Energy, that "whether a bond has a yield estimate from all UBS, Bloomberg and CBASpectrum (as opposed to from two or one of these sources) does not make it unreliable or biased as a relevant source of information." Further the inclusion of data from less than three sources can easily be accommodated within the weighted sum of squared errors formula adopted by the AER. Prima facie the AER's decision to exclude bonds with data from less than all three sources seems to be unreasonable.'*

The AER's approach in Powerlink's draft determination uses data for individual bonds (including from a single data source) to calculate the debt risk premium, which is very different to the previous use of bond data as a cross check of the fair value curves, and as such the data should be of a relatively high quality. The AER has used a relatively small sample of thinly traded bonds, and therefore the impact of mis-pricing of even a single bond will introduce error into the debt risk premium awarded to Powerlink (and, based on the extent of pricing information, it is likely that many securities in the sample are affected by data quality issues). In this context, we consider that a detailed analysis of the underlying data used by the AER is required, to determine whether this data is reflective of a robust bond market in those securities.

3.4 COMPARING THE TWO CURVE APPROACHES

3.4.1 The AER sample approach is a curve

Although the AER's approach is not described as a 'curve', it is a curve, albeit one which is directed at calculating a single point and which is based on a simple average approach. Like any curve, the AER's approach involves a number of explicit choices, including the selection of the sample bonds and the use of simple averages, as well as implicit choice to reject the standard curve approach which is commonly used in financial markets to compare yields on securities with different terms to maturity.

[19] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraph 47

One key advantage of the AER's curve approach is simplicity and transparency, because it relies on simple averaging, however in our view this is a lower order criterion than having an approach which is robust, consistent with commercial practice and relies on a broad range of data. Conversely the limited transparency of the exact mathematics behind the Bloomberg Fair Value Curve is not a reason to reject this source, if can otherwise be shown to be a reasonable fit to observed data.

The description of the AER's approach as a sample rather than a curve does not avoid the need to consider whether its result is robust, albeit that these tests (such as the weighted sum of squared errors or statistical outlier tests which were applied to assess the relative quality of CBASpectrum and Bloomberg curves) cannot be applied to a single point estimate. In our view, the lack of ability to test the outcomes using sophisticated statistical analysis is a good reason to consider alternative methods.

3.4.2 Simple average approach

The AER's curve is the combination of three simple averages:

- The average of terms to maturity of the bonds
- The average credit rating (which is achieved by having a broadly equal mix of credit ratings across A-, BBB+ and BBB), and
- The average of the debt risk premiums on each of those bonds over the sample period

The AER assumes that the average of the maturities should produce an estimate which is close to a ten year bond, the average of the credit ratings should produce an estimate which is equivalent to a BBB+ rating, and the average over the averaging period should eliminate any temporary data anomalies (such as yield spikes). This is a significant assumption which the AER has not tested.

In regards to the use of simple averages, we note the Australian Competition Tribunal's comments in the *Jemena* decision[20], where the Tribunal stated:

> *'An average is a blunt instrument unless careful thought is given to the individual components and whether each should be given the same consideration, or weight, in the calculation of the average. A simple unweighted average gives each component the same weight.'*

The simple average approach in this case makes it difficult, if not impossible, to observe the relationship between bonds of different maturities and credit ratings over time, to apply statistical tests of robustness and to confirm that there are no outliers. Given the small sample size, wide disparity between the individual debt risk premiums and concerns over the quality of the underlying data, it is difficult to have confidence in the ability of the AER's averaging approach to produce a reliable estimate.

[20] *Application by Jemena Gas Networks (NSW) Ltd (No 5)* [2011] ACompT 10

3.4.3 Advantages of a curve approach

In the *ActewAGL* decision, the Tribunal described a number of the attributes of a typical fair value curve in the following terms[21]:

> *'A fair value curve plots estimate of bond yields against terms to maturity. Fair value curves provide a summary of how bond yields vary with the bond's term to maturity. Fair value curves are typically upward sloping, reflecting investors' requirement for a higher return for tying up their money for longer and the increased risk of a bond provider defaulting at some point over the life of a longer term bond. The fair value curve for higher rated (ie less risky) bonds is expected to lie below the curve for lower rated bonds, indicating that a higher yield will be paid on a more risk bond at a given time to maturity.'*

One advantage of a curve approach, where the curve is one of a number of curves for securities with different credit ratings (ie, sovereign, semi-sovereign, highly-rated non-government issuers), is that each curve can be informed by the shape of the adjacent curves. This may improve the quality of each individual curve, particularly where the individual curve is based on a limited data sample, although there are limitations to how far this can be taken.[22]

The curve approach also takes into account the yields on bonds with maturities across the length of the curve, because the shape of the curve must be fit within constraints set by its designer. For example, the curve may be to provide an overall upward slope, or so that the slope of the curve does not change significantly or abruptly from one point to the next. An example of the impact of bond yields on other parts of the curve is seen in the Bloomberg BBB rated Fair Value Curve, where the Option Adjusted Spread (OAS)[23]differences are generally positive for shorter maturities and negative for longer maturities.

The benefit of using a curve that conforms to finance theory and empirical studies is outlined in analysis undertaken by CEG for ActewAGL in 2009, which discusses the data and curve design issues in some detail.[24] The report discusses an attempt by NERA in a 2005 report to create a curve using a limited number of data points, and shows that the derived curve is quite different from the actual Bloomberg Fair Value Curve.

We note that the Bloomberg Fair Value Curve is constructed based on duration, which takes into account the impact of yield and coupons, and performs OAS analysis based on the equivalent zero-coupon security. Duration is a better measure, because it takes into account the impact of different coupon rates on each bond and also the impact of the absolute level of rates.

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[21] *Application by ActewAGL Distribution* [2010] A CompT 4 at paragraph 18

[22] For example, the approach taken by CBASpectrum appears to involve simultaneous calculation of a number of curves with complex rules governing their interaction. A visual comparison of the Bloomberg and CBASpectrum fair value curves in paragraph 23 of the *ActewAGL* decision highlights the differences in approach.

[23] Bloomberg Financial Definition: *'Option Adjusted Spread. OAS is a methodology using option pricing techniques to value the imbedded options risk component of a bond's total spread. Imbedded options are call, put or sink features of bonds'.*

[24] CEG, *Estimating the cost of 10 year BBB+ debt*, *A report for Actew AGL,* June 2009, pages 15 to 29

Another benefit of calculating a curve is that the ten year point remains constant while the term to maturity of the sample bonds declines. The average term to maturity of the AER's sample was 9.7 years at the end of the indicative averaging period (14 October 2011), and it will have shortened by the time of Powerlink's nominated (confidential) averaging period before the commencement of the next regulatory period. If it uses a static sample of bonds, the AER would need to consider how the debt risk premium should be adjusted upwards to reflect the fact that the sample average term to maturity could be around 0.5 to 1.0 years shorter than the ten year benchmark set out in the NER. This could include using a sample which, at the time of the draft determination, has an average yield to maturity which is at least 10.5 to 11.0 years. The selection of a sample with an average term to maturity, which will be significantly less than 10 years during the nominated averaging period is unreasonable.

3.4.4 Alternative curve calculation approaches

In light of the benefits of using an explicit curve approach compared to a simple average, it is possible that the AER's approach could be improved by considering the calculation of a curve to fit its sample data. This is subject to being satisfied with the quality of the underlying data, and we note we have concerns around this issue in regards to the AER's sample of bonds, which is discussed in section 3.6.

The AER could have considered whether fitting a curve to its sample of bonds provided a better estimate of the ten year debt risk premium, including addressing issues around testing for statistical robustness of the curve fit and testing for outliers. Instead, the AER has chosen not to consider whether its proposed average is superior to other statistical approaches. We are concerned that the AER appears not to have considered this issue in sufficient detail to conclude that its estimation method is suitably robust for the purposes of adhering to the NER.

In the limited time available to respond to the draft determination, it is not possible for QTC to develop a curve based on the AER's data. In any case, given our concerns regarding the quality of the data for the sample of bonds, we do not think this would be a worthwhile exercise.

We note that the development of a curve involves the exercise of professional judgement, which is typically gained over a long period of time across a range of financial markets. In this regard, we note that Bloomberg's Fair Value Curves were first developed during 1995 to 1997 and the company maintains 438 such curves.[25] We agree with these comments of Dr Tom Hird of CEG, in an October 2010 report for the Victorian Distributors:[26]

> *'The publishers of fair value curves have expertise specific to the task and have access to a wide range of information not available to interested parties to a particular regulatory decisions – including qualitative information associated with their role in financial markets. In my view this creates a presumption in favour of relying on published fair value curves for estimating the*

[25] *Bloomberg Fair Value Market Curves*, presentation by Michael Lee, Fixed Income Specialist, Bloomberg LP, Inetrnational Bond Market Conference 2007, Taipei.
[26] Dr Tom Hird, CEG, *Use of the APT bond yield in establishing the NER cost of debt, A report for Victorian Distribution Businesses*, October 2010, pages 25 to 26.

regulated cost of debt rather than the regulator or other parties arriving at their own estimate of the benchmark cost of debt.

Relying on published fair value curves also has the material advantage of relying on information that has been independently developed for, and which is relied on by, participants in debt markets. By contrast, any estimate developed by parties to regulatory proceedings is inevitably less independent (ie, is unlikely to have been developed without regard to the impact on regulated revenues/prices of that methodology). The independence of the fair value publishers from the regulatory proceedings is a further powerful rationale giving rise to a presumption that their estimates will be adopted.'

3.4.5 Concerns regarding discretion and transparency

Part of the reason for the AER rejecting the Bloomberg Fair Value Curve relates to the lack of transparency regarding Bloomberg's calculations. In particular, the AER states:

'The Bloomberg FVC is an estimate made using a proprietary methodology that is neither transparent nor verifiable. Bloomberg stated that the FVC is not a predictive source of price information. It is therefore not consistent with the AER's approach, comprised exclusively of observed bond data.'

We have a number of concerns with this statement, including in relation to the AER's claim that its own approach is based on observed bond data, while Bloomberg's is not, given the AER has refused to provide its data (see below). In any case, while it may be useful to be able to fully replicate Bloomberg's calculations, in our view this is not a deciding factor in terms of whether the calculations produce a fair estimate of a benchmark bond yield.

Contrary to the AER's claim that the Bloomberg approach is not transparent, there is adequate information available regarding the key elements of its calculation. We refer to a presentation made by Michael Lee, Fixed Income Specialist, Bloomberg LP entitled *Bloomberg Fair Value Market Curves,* which sets out in some detail the calculation approach.[27] This has previously been discussed in some detail in a June 2009 paper by Dr Tom Hird of CEG, which also discusses a previous attempt by NERA to apply the Bloomberg approach (though with no constraints on curve shape).[28]

Not all aspects of the Bloomberg approach are publicly available, such as the approach it uses in regards to the shape of the curve. For example, if there are no constraints on the shape of the curve, it is possible to solve for a curve which produces the lowest OAS, though this is unlikely to be consistent with finance theory or indeed recognisable to market participants (eg, the NERA example cited above). Without knowing the particular constraints which are imposed in order to derive a reasonable curve it is not possible to replicate the calculation, however it is possible

[27] *Bloomberg Fair Value Market Curves*, presentation by Michael Lee, Fixed Income Specialist, Bloomberg LP, International Bond Market Conference 2007, Taipei.
[28] Dr Tom Hird, CEG, *Establishing the cost of 10 year BBB+ debt, a report for ActewAGL*, June 2009, at pages 15 to 29. The NERA example is discussed on pages 22 to 23.

to understand the general approach. Further, it is possible to test the reasonableness of the outcome by plotting bond yields against the Bloomberg curve.

In any case, the AER's proposed sample is not fully transparent. QTC, through Powerlink, requested access to the AER's source data and models upon which its sample approach is based. While the AER has provided the models, most of the relevant data has been removed, citing restrictions on disclosure of proprietary data sources. To our knowledge, this has not previously been an issue in relation to using bond data to test the relative merits of Bloomberg and CBASpectrum. While QTC has been able to source its own data to produce nearly identical results to the AER, it is of concern that the AER is not promoting full disclosure of underlying data to interested parties.

It is our view that, should it wish to use its own sample of bonds, the AER should follow the accepted approach of constructing a curve to estimate the impact of different maturities on the bond yield. (The AER should also provide full disclosure of information used to develop its curve.) However, this would require the AER to develop or acquire sufficient expertise to develop corporate credit curves in a very short space of time. While recognising that Bloomberg's approach will never be fully transparent and replicable, the use of Bloomberg fair value curves has the distinct advantage of using a source that is acknowledged as independent and expert in the field.

3.5 PROPOSED SAMPLE OF BONDS

The AER has proposed the following sample of bonds:

TABLE 1: AER'S PROPOSED SAMPLE OF BONDS

Issuer	*Issuer rating (S&P)*	*Ann. date*	*Maturity date*	*Rem. Term*[29]	*Amount issued $M*	*Fixed or floating coupon*
APA Group	BBB	15/7/10	22/7/20	8.8	300.0	Fixed 7.75%
Brisbane Airport	BBB	23/3/11	9/7/19	7.7	200.0	Fixed 8.00%
Sydney Airport	BBB	5/12/06	20/11/21	10.1	200.0	Floating BBSW+0.31%
Sydney Airport	BBB	8/12/06	11/10/22	11.0	750.0	Floating BBSW+0.29%
Dalrymple Bay Coal Terminal	BBB+	1/6/06	9/6/21	9.7	230.0	Floating BBSW+0.30%
Dalrymple Bay Coal Terminal	BBB+	8/12/06	12/12/22	11.2	200.0	Floating BBSW+0.29%
Coca-Cola Amatil	A-	14/9/11	27/9/21	10.0	30.0	Fixed 5.945%
SPI Electricity & Gas	A-	29/3/11	1/4/21	9.5	250.0	Fixed 7.50%
Stockland Trust	A-	18/11/10	25/11/20	9.1	160.0	Fixed 8.25%

[29] As at end of AER averaging period for the Powerlink draft determination

There are a number of particular features in relation to these bonds that should be noted:

- The coupon on the SPI Electricity & Gas bond steps up or down for each rating downgrade or upgrade from Moody's or Standard and Poor's. A downgrade to Baa2/BBB adds 25 basis points, Baa3/BBB- adds 50 basis points and Ba1/BB+ or lower adds 100 basis points to the coupon.
- The DBCT bonds include a call option.

While we agree that useful information can be obtained by examining bonds which are rated A- and BBB, floating rate and with different maturities, in our view, the AER's proposed sample of bonds is unlikely to provide a sufficiently robust estimate of the benchmark corporate cost of debt, for these reasons:

- there are good grounds to exclude some of the chosen securities, which are outlined further in section 3.5.1
- the quality of the underlying data for most securities is very poor, making it especially difficult to determine whether the published yields reflect the true price of these securities (refer section 3.6), and
- given the data quality issues, the sample size may be too small to be confident that the result is not affected by unreliable estimates for individual bonds.

3.5.1 Exclusion of the Coca-Cola Amatil bond

We consider that the Coca-Cola Amatil bond should be excluded from the sample because:

- The total issuance for this bond is $30 million, making it very illiquid and unrepresentative of the cost of debt for the firm. It is likely that the CCA bond will be closely held by a small number of investors with little or no secondary market trading taking place.
- The average debt risk premium on the Coca-Cola Amatil bond is significantly lower than the debt risk premiums on the other bonds in the sample. The Coca-Cola Amatil bond was issued at a debt risk premium of about 180 basis points and this has narrowed to an average of 94 basis points over the 40 trading day period which ended on 9 December 2011 (based on end of day yields sourced from Bloomberg).
- The current yield on the CCA bond is lower than the yields on some highly rated semi-government securities, suggesting that its pricing information is inaccurate or the credit rating of A- from Standard & Poors does not reflect market perceptions of the credit quality of the issue.
- The Bloomberg data source for this bond is its own 'BVAL' function[30], which calculates a price by reference to other securities, therefore this bond cannot be considered as an independent data point in the sample.

In its rating report for Coca-Cola Amatil, Standard and Poor's commented that:[31]

> *'The ratings on Australian-based soft-drinks and food producer Coca-Cola Amatil Ltd. (CCA) incorporate a level of implied support from the company's 29.5%-major shareholder,*

[30] Refer to section 3.6.5 for a discussion of the Bloomberg's 'BVAL' data source.
[31] Standard & Poors, *Coca-Cola Amatil Ltd*, 1 June 2011, page 1

Coca-Cola Co. (The) (TCCC; A+/Stable/A-1), and reflect our view of CCA's strategic importance to TCCC as one of the most profitable bottlers in the global Coke system.'

We understand from discussions with market participants that major brand names such as Coca-Cola companies are able to issue debt at very competitive margins, given their dominant market position. There is ample evidence of very tight spreads for major brand name issuers in the United States, and if the Bloomberg pricing of this bond, is correct, it is apparently trading in line with semi-government securities. As such, we do not consider that the Coca-Cola Amatil bond is sufficiently representative of a benchmark BBB+ rated Australian corporate bond to be included in the sample. The following table displays the yields for a selection of highly rated state government bonds and the CCA bond as at 29 December 2011:

TABLE 2: COMPARISON WITH HIGHLY RATED SECURITIES

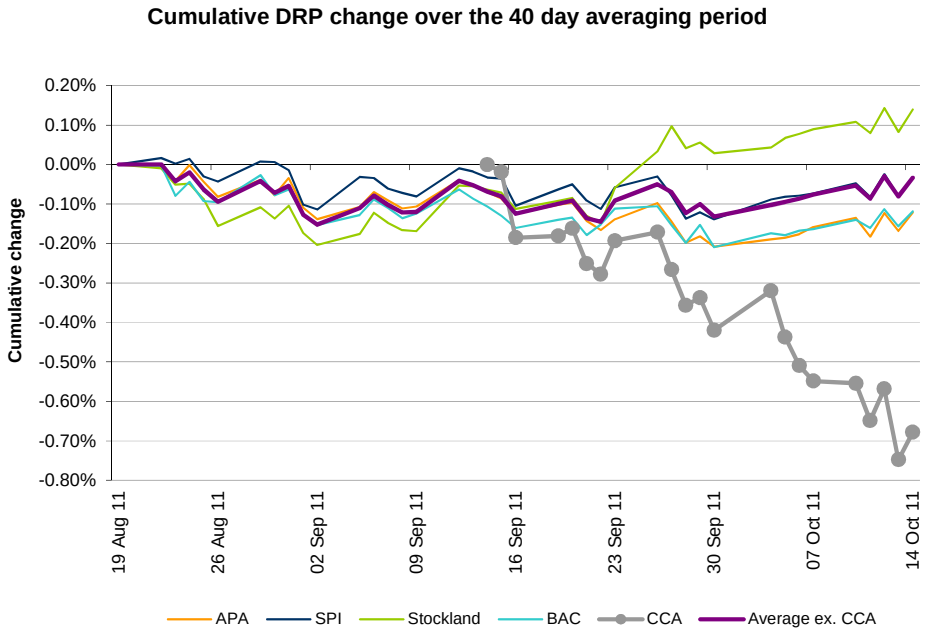
Issuer	*Maturity*	*Credit rating*	*Yield*	*CCA yield margin*
Coca-Cola Amatil	27 Sep 2021	A-	4.73%	--
Queensland Treasury Corporation (QTC)	14 Jun 2021	AAA	4.63%	+0.10%
South Australia Financing Authority (SAFA)	20 May 2021	AAA	5.00%	(0.27%)
Queensland Treasury Corporation (QTC)	21 Jun 2021	AA+	5.10%	(0.37%)
Western Australian Treasury Corporation (WATC)	15 Jul 2021	AAA	4.62%	+0.09%

Given the strong credit ratings of the state government financing authorities, we would expect the Coca-Cola Amatil bond yield to be significantly higher than the yields on ten year state government bonds, however if the Bloomberg estimates are correct this is not the case. The Coca-Cola Amatil yield is only 10 basis points higher than the yield on the QTC 14 June 2021 bond, which has an AAA credit rating and is guaranteed by the Queensland and Commonwealth Governments. Similarly, the Coca-Cola Amatil yield is 27 basis points *lower* the yield on the AAA rated SAFA 20 May 2021 bond.

The issue size for the Coca-Cola Amatil bond is very small at $30 million, compared to an average of $286 million across the rest of the AER's sample. As a consequence, it is likely that the bond will be closely held by a small number of investors with little or no secondary market trading taking place. The Coca-Cola Amatil bond is also the only bond in the AER's sample that is too small to be considered for inclusion in the UBS bond indices.

Chart 1 displays the cumulative change in the debt risk premium for the fixed rate bonds used by the AER over the 40 day averaging period. Historical yields for the Coca-Cola Amatil bond are available from Bloomberg from 14 September 2011:

CHART 1: CHANGES IN DEBT RISK PREMIUMS DURING THE AVERAGING PERIOD



On average, the debt risk premiums for the APA Group, SPI Electricity & Gas, Stockland Trust and Brisbane Airport bonds were relatively stable over the averaging period. In contrast, the debt risk premium on the Coca-Cola Amatil bond fell by about 70 basis points over a 21 day period. At the end of the averaging period the debt risk premium on the Coca-Cola Amatil bond was 114 basis points.

In addition to starting at a much lower level, the debt risk premium on the Coca-Cola Amatil diverged further from the other bonds in the AER's sample. This suggests either there may be unique features associated with this bond that impacted its pricing during this period, or the price information in Bloomberg is unreliable. As discussed in section 3.6.6, there is no Bloomberg Generic ('BGN') or Composite Bloomberg Bond Trader ('CBBT') pricing available for the Coca-Cola Amatil bond, and therefore the Bloomberg data is based solely on 'BVAL' data, which estimates the yield by reference to other pricing sources. In our view, the behaviour of the Coca-Cola Amatil yield is a perfect example of the poor data quality for bonds which are not actively (or at least periodically) traded.

3.5.2 Concerns with including the SPI Electricity & Gas bond

We consider that the SPI Electricity & Gas bond should be excluded from the sample because the bond is unlikely to trade at yields which are reflective of the SP AusNet Group's A- credit rating from Standard & Poors.

Approximately 51 per cent of SP Ausnet is owned by Singapore Power, which is ultimately owned by the Singapore Government. SPI Electricity & Gas is a member of the SP AusNet Group. In its rating report for SP AusNet Group, Standard and Poor's commented that:[32]

[32] Standard & Poor's, *Summary: SP AusNet Group,* 24 October 2011, page 2

'The 'A-' long term corporate credit rating on Australian utility SP AusNet Group (SP AusNet) benefits from the company's 51% majority ownership by Singapore Power Ltd. (SP; AA-/Stable/--). In the absence of SP's ownership, we view SP AusNet's stand-alone credit profile (SACP) to be 'bbb+', underpinned by the group's regulated, monopolistic electricity transmission and electricity and gas distribution networks, which generate stable and predictable cash flow. Also underpinning the SACP is our view of SP's commitment to maintain SP AusNet's financial metrics at levels consistent with our view of the credit profile, as well as maintain control of SP AusNet's board and senior management...

Standard & Poor's Rating Services believes that SP is committed and willing to support SP AusNet in a stress scenario due to the strategic importance and size of SP AusNet wihin SP's portfolio. SP AusNet represents more than one third of SP's assets and almost 20% of SP's cash flow. Although SP does not – and is not expected to – guarantee SP AusNet-related debt, SP's ownership and market reputation assist SP AusNet's access to capital markets.'

While Standard & Poor's has assigned an explicit one notch upgrade to the credit rating to account for Singapore Power's ownership, there is some evidence from trading yields that the market may consider that SP AusNet's credit profile is improved by more than Standard & Poor's has allowed. In this regard, we note that the SPI Electricity & Gas bond has a composite rating (as published on the Bloomberg DES page for the security) of A, comprised of an A1 rating from Moody's Investor Services and an A- rating from Standard & Poor's.

In a recent report for the AER, Oakvale Capital reviewed the attributes of a 2017 bond issued by the SP AusNet Group, noting that:[33]

'Looking at the combination of qualitative and quantitative analysis as previously described, in our opinion, the factors that an investor would have given greatest weight too [sic], therefore dictating that the bond was priced during the averaging period would be, in no particular order:

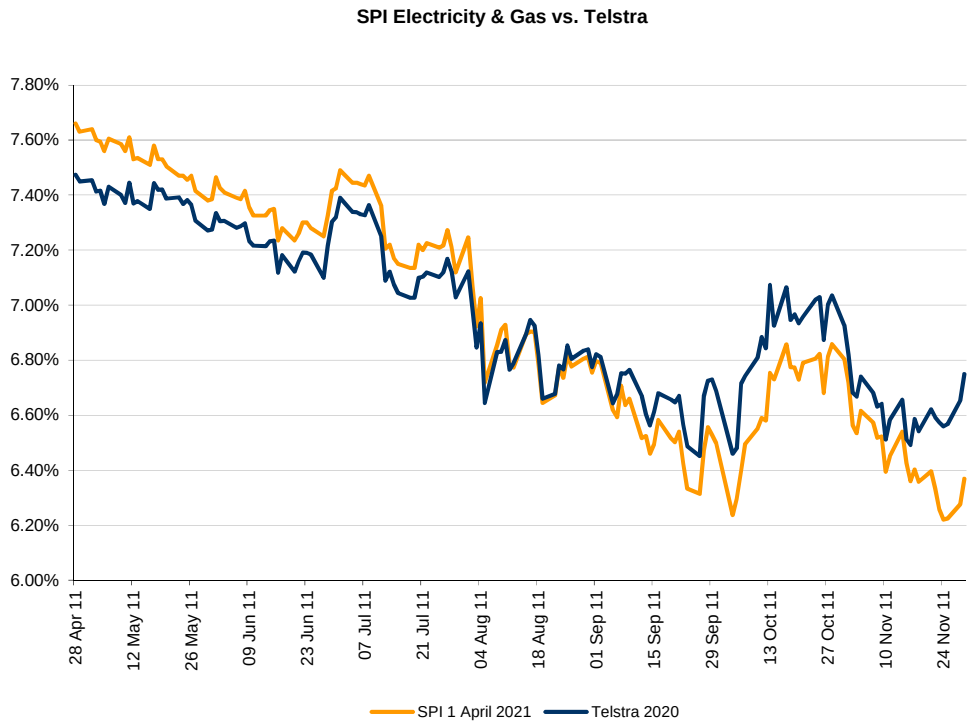
- *Strength of the company guarantee, this was a key driven in where the bond traded as market perception (the qualitative analysis) is that the risk is in fact the risk of the Government of Singapore'*

Oakvale concluded that the *'key feature supporting the bond was the parental support of the issuer's owners and the link to the Government of Singapore'*.[34] Similar comments have been made to QTC in discussions with market participants.

Chart 2 below plots the yield on the A- rated SPI Electricity & Gas 2021 bond compared to the A rated Telstra bond. Since the start of the averaging period the yield on the SPI Electricity & Gas bond has fallen below the higher rated Telstra bond. Discussions with market participants indicated that the Telstra bonds were the most liquid bonds of the non-financial Australian corporates. The lower yield for SPI Electricity & Gas either suggests that either the yield data for the SPI Electricity & Gas bond is unreliable or that it is not representative of the yield on an A- rated security.

[33] Oakvale Capital, *Report on the cost of debt during the averaging period: the impact of callable bonds, prepared for the Australian Energy Regulator,* February 2011, pages 23-24.
[34] Oakvale Capital at page 24

CHART 2: SPI ELECTRICITY & GAS 2021 AND TELSTRA 2020 YIELDS



We consider that the SPI Electricity & Gas bond is unlikely to provide a reasonable basis to estimate the yield on a BBB+ rated benchmark bond, given its yield is trading well below a security which is rated two notches higher.

The coupon on the SPI Electricity & Gas bond is adjusted in the event of a ratings downgrade. The AER has not made an adjustment to reflect the value to investors of the ability of investors to receive a higher coupon in the event of a ratings downgrade. In its report, Oakvale Capital noted that the step up clause may have improved the liquidity of the bond, however it is impossible to calculate the impact on the yield.[35]

While the coupon adjustment in itself may not significantly affect the yield on this security, in combination with the higher composite rating and the perceived beneficial influence of the ultimate Singapore Government ownership, these factors suggest that the yield is not reflective of an A- rated corporate security. In our view, the AER should have considered these factors before deciding whether to include the SPI Electricity & Gas bond in the sample.

3.5.3 Use of a static sample of bonds

As discussed in the following sections, the quality of data relating to particular bonds can change due to changes in market conditions or other factors relating specifically to a particular bond.

[35] Oakvale Capital at page 24

A good example of the change in quality of data is the APA Group bond, which had a BVAL[36] score of 1 until 8 August 2011, but subsequently has had a score of around 6. This change is likely in response to the decision of some institutions to provide indicative prices, or it may be due to actual trades occurring in the bond.

Examination of BVAL data for particular bonds across time also indicates that the BVAL score can decline as traded, executable or indicative prices become stale. This may occur because one or more institutions decide to no longer quote prices on a particular security.

Further, data providers may decide to cease publishing indicative prices on particular bonds altogether. For example, we understand that UBS is no longer publishing a price on the DBCT 2021 bond, following the expiry of its call feature on 12 December 2011.

In the context of changes in data quality or data publication, the specification of a static sample of bonds may prove problematic if changes in the market, or in the liquidity of particular bonds, results in lack of available data during the NSP's averaging period.

This is an advantage of using the Bloomberg Fair Value Curves, as these are updated periodically in response to changes in data quality. For example, as discussed later, a number of bonds appear to have been added to or removed from the Bloomberg BBB rated Fair Value Curve, as there are currently fourteen bonds in the sample compared to nine when Bloomberg responded to the AER. We are not aware of the specific reasons for Bloomberg to begin or cease using these bonds as part of its sample, though we expect it is likely in response to improvements in BVAL scores and commencement of BGN pricing[37], or vice versa.

3.5.4 Alternative AER sample of bonds

The AER has proposed a sample size of nine bonds. In QTC's view, if the underlying yield data was robust and the AER applied a statistically robust method to calculate a fair value curve from this sample, there may be grounds to accept the sample size as being reasonable. However, as discussed elsewhere in this paper we have concerns with both the underlying yield data and the approach used to interpret the data (ie, simple average).

QTC considers that there are strong grounds to exclude the Coca-Cola Amatil and SPI Electricity & Gas bonds on the basis that these are not representative of a BBB+ rated corporate bond (or indeed a bond with a rating in the range of A- to BBB). Excluding these bonds would reduce the sample size to seven. Given the data quality issues discussed in section 3.6 we consider that there is a low probability that the remaining seven bonds in the sample would be representative of the yield on a BBB+ rated ten year Australian corporate bond.

If the AER is required to exclude the Coca-Cola Amatil and SPI Electricity & Gas bonds from its sample, it would be necessary to include other bonds as replacements

[36] BVAL is a pricing methodology used by Bloomberg, and is discussed in section 3.6.4.
[37] BGN is a pricing methodology used by Bloomberg, and is discussed in section 3.6.4.

because a sample size of seven is inadequate. In its draft determination, the AER considered a broader sample of bonds with remaining terms to maturity of 5 to 15 years, which produced a sample of 13 bonds, however it opted to use only bonds with 7 to 13 years remaining term to maturity. The additional four bonds, which are in the broader 5 to 15 year sample are as follows:

TABLE 3: AER ADDITIONAL SENSITIVITY TEST BONDS

Issuer	*Issuer rating (S&P)*	*Ann. date*	*Maturity date*	*Rem. Term*[38]	*Amount issued $M*	*Fixed or floating coupon*
Dexus Finance	BBB+	15/4/10	21/4/17	5.52	180.0	Fixed 8.25%
SPI Electricity & Gas	A-	12/6/08	25/9/17	5.95	250.0	Fixed 7.125%
Dalrymple Bay Coal Terminal	BBB+	1/6/06	9/6/2026	14.65	100.0	Floating BBSW+0.37%
Transurban	A-	26/8/05	10/11/17	6.075	300.0	Floating BBSW+0.34%

The four additional bonds in the AER's 5 to 15 year sample are affected by similar issues in relation to data quality and SPI Electricity & Gas September 2017 bond is not representative of the benchmark Australian corporate bond. In particular, we note the following:

- The DBCT bond is not priced by Bloomberg. While we have not sought pricing information from UBS for this bond, we expect that, similar to the 2021 and 2022 DBCT bonds, this bond is likely to be illiquid.
- The Dexus Finance bond is included in the Bloomberg BBB rated Fair Value Curve. While it has poorer data quality than other bonds in the Bloomberg sample (refer section 3.6.6), its data quality is at least sufficient for Bloomberg to include it in the BBB rated Fair Value Curve.
- It is our view, and the view of Oakvale Capital (see 3.5.2 above) that the Singapore Government's ultimate 51 per cent ownership of SP AusNet has a material bearing on the price of this bond (indicated by the fact that the 2021 bond trades at a lower yield than a Telstra 2020 bond, shown in Chart 2). As such, it is unlikely to be reflective of the benchmark Australian corporate bond, and its inclusion in the AER's alternative sample would undermine the representativeness of that sample.
- The Transurban 2017 floating rate bond has a BVAL score of 3, indicating that Bloomberg estimates its price by reference to comparable securities rather than trading data or executable or indicative prices.

Following the exclusion of SPI Electricity & Gas and Coca-Cola Amatil bonds, and inclusion of three bonds from the 5 to 15 year sample, a broader sample of bonds would be as follows:

[38] As at end of AER averaging period for the Powerlink draft determination

TABLE 4: AER 5 TO 15 YEAR SAMPLE OF BONDS (EXCLUDING COCA-COLA AMATIL AND SP AUSNET)

Issuer	*Issuer rating (S&P)*	*Ann. date*	*Maturity date*	*Rem. Term*[39]	*Amount issued $M*	*Fixed or floating coupon*
APA Group	BBB	15/07/10	22/07/20	8.8	300.0	Fixed 7.75%
Brisbane Airport	BBB	23/03/11	09/07/19	7.7	200.0	Fixed 8.00%
Sydney Airport	BBB	05/12/06	20/11/21	10.1	200.0	Floating BBSW+0.31%
Sydney Airport	BBB	08/12/06	11/10/22	11.0	750.0	Floating BBSW+0.29%
Dalrymple Bay Coal Terminal	BBB+	01/06/06	09/06/21	9.7	230.0	Floating BBSW+0.30%
Dalrymple Bay Coal Terminal	BBB+	08/012/06	12/12/22	11.2	200.0	Floating BBSW+0.29%
Dalrymple Bay Coal Terminal	BBB+	01/06/06	09/06/26	14.7	100.0	Floating BBSW+0.37%
Stockland Trust	A-	18/11/10	25/11/20	9.1	160.0	Fixed 8.25%
Dexus Finance	BBB+	15/04/10	21/04/17	5.5	180.0	Fixed 8.25%
Transurban	A-	26/08/05	10/11/17	6.1	300.0	Floating BBSW+0.34%

The average remaining term to maturity of the sample at the end of the AER's indicative average period is 9.4 years (or 9.2 years at the time of this report). It is worth noting that by the time of the actual averaging period, the average term to maturity of the AER sample may be less than 9 years. Of the ten securities, two are rated A-, four are rated BBB+ and four are rated BBB. There may be other securities which could be included in the broader sample, such as the Sydney Airport 2018 bond (refer Table 10), subject to confirming that these bonds were sufficiently representative of the benchmark Australian corporate bond.

The 7 year Caltex bond issued in November 2011 should not be considered for inclusion because of concerns regarding data quality, including:

- its 'BVAL' score[40] had fallen to 1 within 3 weeks of issue and has remained at that level
- while Bloomberg lists 2 pricing contributors for this security, the 'BVAL' function does not show any indicative or executable pricing data
- Bloomberg has not received pricing data which is sufficient to form a 'BGN' price, and

[39] As at end of AER averaging period for the Powerlink draft determination
[40] 'BVAL' and 'BGN' are discussed in section 3.6.5

- the debt risk premium has fallen from approximately 350 basis points at the time of issue to around 310 basis points, without any pricing data (ie, its price is generated by Bloomberg's 'BVAL' function), which is similar to phenomenon observed in relation to the the Coca-Cola Amatil bond (see Chart 1).

Using the sample shown in Table 4 and the Sydney Airport 2018 bond, and applying the simple average approach put forward by the AER[41], the debt risk premium for the 40 trading day period ended 9 December 2011 is 357 basis points.

TABLE 5: DEBT RISK PREMIUM ESTIMATE – BROADER SAMPLE INCLUDING SYDNEY AIRPORT 2018 BOND

Issuer	*Maturity*	*Years to maturity*	*Debt risk premium*		*Average debt risk premium*
			Bloomberg	UBS	
APA Group	22/07/2020	8.6	3.12%	3.07%	3.09%
Brisbane Airport	09/07/2019	7.6	2.59%	2.85%	2.72%
Sydney Airport	20/11/2021	10.0	-	3.74%	3.74%
Sydney Airport	11/10/2022	10.8	-	4.00%	4.00%
Sydney Airport*	06/07/2018	6.6	3.28%	2.88%	3.08%
Dalrymple Bay Coal Terminal	09/06/2021	9.5	-	4.16%	4.16%
Dalrymple Bay Coal Terminal	12/12/2022	11.0	-	3.93%	3.93%
Dalrymple Bay Coal Terminal	09/06/2026	14.5	-	4.44%	4.44%
Stockland Trust	25/11/2020	9.0	3.30%	3.12%	3.21%
Dexus Finance	21/04/2017	5.4	3.12%	3.14%	3.13%
Transurban	10/11/2017	5.9	-	3.71%	3.71%
Average		9.0			3.57%
Add: DRP term premium		1.0			0.10%
10 year estimate		10.0			3.67%

**Note: this bond is not included in the AER's 5 to 15 year sample shown in Table 4*

As the average remaining term to maturity for the sample is 9.0 years, an adjustment is required to estimate the debt risk premium for the 10 year benchmark Australian corporate bond. As discussed in section 4.4, we consider that an increase in the debt risk premium of 10 basis points is required for each additional year of remaining term to maturity (ie, the 'DRP term premium'). Therefore an increase of 10 basis points is required to estimate a ten year debt risk premium, which produces a result of 367 basis points.

While the broader sample of bonds shown in Table 5 is likely to be more reflective of the benchmark Australian corporate bond yield than the AER's proposed sample, neither sample is capable of providing a sole basis to estimate the benchmark

[41] As discussed in section 3.4.2, a simple average approach may not provide the best approach to estimating the ten year debt risk premium from a sample of bonds.

Australian corporate bond yield because of the data quality issues discussed in the next section. In addition, while the broader sample includes 11 bonds, only 7 different issuers are represented, and as such there is a risk that any idiosyncratic factors relating to particular issuers may not be eliminated. Finally, for six of the bonds, data is only available from one provider (UBS). For these reasons, if the broader sample is included in the estimate of the debt risk premium, it should be given a much lower weighting.

3.6 LIQUIDITY AND DATA QUALITY

As noted earlier, the issue of quality of data is central to the reliable estimation of the yield on a 10 year BBB+ rated Australian corporate bond, and to the assessment of whether the AER's sample approach or the Bloomberg BBB rated Fair Value Curve provide reasonable estimates.

Underlying the AER's decision to use a sample of bonds with a 7 to 13 year maturity without enquiring as to the robustness of the underlying data is an assumption that all yield data points are of equal probative value. (There are numerous references in the draft decision to the AER's approach reflecting 'observed bond yields', which may imply to the casual reader that the data reflects bond trades.) This is clearly not the case.

Based on our experience in the domestic and offshore debt markets, we consider a deep bond market to be one where:

- there is a high level of agreement as to where a particular bond should be priced at a given point in time
- executable bid and offer yield quotes can be obtained from a large number of market makers
- the bid/offer spreads are narrow, and
- trading volumes are high.

In the following sections we present evidence that the market for the bonds in the AER's sample is far from being deep. The size and variability of the difference in yields between the data providers indicates a lack of agreement as to where these bonds should be priced. Accordingly, we consider that it is inappropriate for the AER to rely exclusively on the bond sample to estimate the benchmark debt risk premium.

3.6.1 Impact of liquidity on observed prices

The issue of liquidity affecting the reliability of pricing data was discussed by Synergies Economic Consulting in a submission to IPART on the determination of a new debt risk premium methodology.[42] We agree with the comments made by Synergies (on pages 12 to 14 of their report) in regards to the quality of data, in particular these comments:[43]

[42] Synergies Economic Consulting, *Developing the approach to estimating the debt margin, Submission in response to IPART Discussion Paper*, December 2010

[43] Synergies at page 13 (citations to academic studies are included in the Synergies paper).

'In a situation where there is only a small amount of trading as in the case of a thin market, prices will not be reliable and one should exercise little confidence in the resultant price. A thinly traded market cannot be an efficient market, nor would prices reflect all available information.

There is a plethora of empirical evidence investigating and reporting the effects of thin trading in markets. Empirical research has established that a high volume of liquidity facilitates price discovery. Similarly a low volume of liquidity or thin trading generates inefficient price discovery. The thinner the market the greater the chance of an inefficient price as the price discovery process breaks down so that the resultant price does not correctly reflect supply and demand conditions. The price that is observed in a thinly traded market is far more likely to diverge from the 'true price' that would be expected to emerge from a deep market. This relationship between price discovery and trading has been well researched. For low volume or thinly traded stocks, the efficiency of the price discovery itself is low. The efficiency of price discovery is positively correlated with trading volume.'

The impact of a lack of liquidity on the pricing data for bonds is illustrated by the example of the Coca-Cola Amatil bond in the AER's sample (see Chart 1 and section 3.6.5).

In an illiquid bond market, it is impossible to assess whether actual trades in bonds would occur at, above or below the indicative yields. There are a number of examples in recent months where trades of semi-government securities, which are typically quite liquid but which have more recently been affected by adverse market conditions, have traded at yields which were higher than the market expectations (ie, indicative prices). For corporate bonds, which are less liquid even in favourable market conditions, traded prices may occur well outside the typically wide range of indicative prices. It is not uncommon to see the indicative prices move significantly (or 'gap') once the market becomes aware of a trade.

Synergies concluded that the issue of data quality was significant in the context of the proposal by the NSW Independent Pricing and Regulatory Tribunal (IPART) to use a sample of thinly traded securities, similar to the AER's proposal for Powerlink. The conclusion reached by Synergies is entirely consistent with our concerns in the present case, and is worth repeating in full:[44]

'Bloomberg considers trading activity in determining whether to include a bond in its sample for the purpose of constructing its BBB fair value curve. IPART has not referred to the issue of liquidity or considered the potential characteristics of the bonds it has have included in the sample. The failure to recognise the potential implications of this problem is a fundamental flaw.

The dearth of suitable data is a problem. While IPART are trying to increase the sample size to provide a reasonable estimate of the cost of debt it is imperative that the additional bonds will provide prices/yields that are actually indicative of the cost of debt. The fact that the bonds are reported by Bloomberg does not necessarily mean that the yields are reliable. The vast majority of prices/yields are indicative and do not bind the 'price maker'.

The alternatives posed by IPART do not present appropriate better alternatives to relying on Bloomberg's fair value curve. Indeed, given the significance of these issues and the potential

[44] Synergies at page 14

complexities underpinning them, reliance should continue to be placed on an independent, reputable data provider that has specialist skills and expertise in this area. At the current time, this means placing sole reliance on Bloomberg's fair value estimates.'

While IPART did not accept the criticisms put forward by Synergies, we note that it did decide to adopt a five year benchmark, at which point on the curve the data issues are less severe. We consider that it would be unreasonable for the AER to follow the approach taken by IPART by not having regard to the underlying data, particularly given the material data quality issues identified in this report.

3.6.2 Analysis of yield data for the AER sample

QTC has analysed available yield data for bonds in the AER sample to assess whether this is likely to be reflective of a deep, liquid bond market. We have considered:

- Variations in yields provided by a number of different data providers
- Differences between UBS and Bloomberg price data (which are the two data sources used by the AER)
- Changes in margins to swap applied by data providers to determine bond prices and yields

Variations in quoted yields for the AER's sample

Where the bond prices quoted by different sources are significantly different, this is likely to indicate a lack of liquidity in that particular bond. More generally, a wide spread of prices across the sample of bonds indicates that there is significant range of uncertainty around the values that have been assumed in the sample. We consider it is unlikely that the use of a sample of nine bonds ensures that any potential bias in the individual bond prices is eliminated by the averaging process.

The following table displays the average range between the highest and lowest yield on each day in the averaging period for the fixed rate bonds in the AER's sample. The end of day rates were sourced from Bloomberg, UBS, Datastream and three other providers:

TABLE 6: AVERAGE DIFFERENCES IN QUOTED YIELDS

Issuer	*Maturity*	*Daily yield range during averaging period*
APA Group	22 Jul 2020	0.15%
SPI Electricity & Gas	1 Apr 2021	0.38%
Stockland Trust	25 Nov 2020	0.35%
Brisbane Airport	9 Jul 2019	0.33%

**The Coca-Cola Amatil bond was only priced by Bloomberg*

We have identified data sourced from Bloomberg and DataStream as these are published services, and UBS as this data is being relied upon by the AER. Data sourced from other banks and data providers has been identified as Provider 1, Provider 2 and Provider 3.

Charts 3 to 6 are shown in terms of absolute yield, and for this reason it may appear that the pricing is constantly changing in response to market data specific to the particular bonds. However, banks almost universally price the securities at a margin over the swap curve, which is constantly changing, and plotting the spread to the interest rate swap curve would indicate the relatively static nature of many of these individual prices (refer to Chart 11,Chart 12, Chart 13, and Chart 14 for an example of static margins to swap). The same daily variation would occur if the spread to Commonwealth was plotted, but most of the movement would be attributable to changes in the spread between Commonwealth and the swap curve.

Chart 3 shows the yields from each data provider for the APA Group bond over the AER's sample period. The average daily difference is 0.15 per cent, and the largest difference was 0.27 per cent on 13 October 2011. The UBS data (in red) is generally at or near the lowest yield observation.

CHART 3: YIELD DATA FOR THE APA GROUP BOND

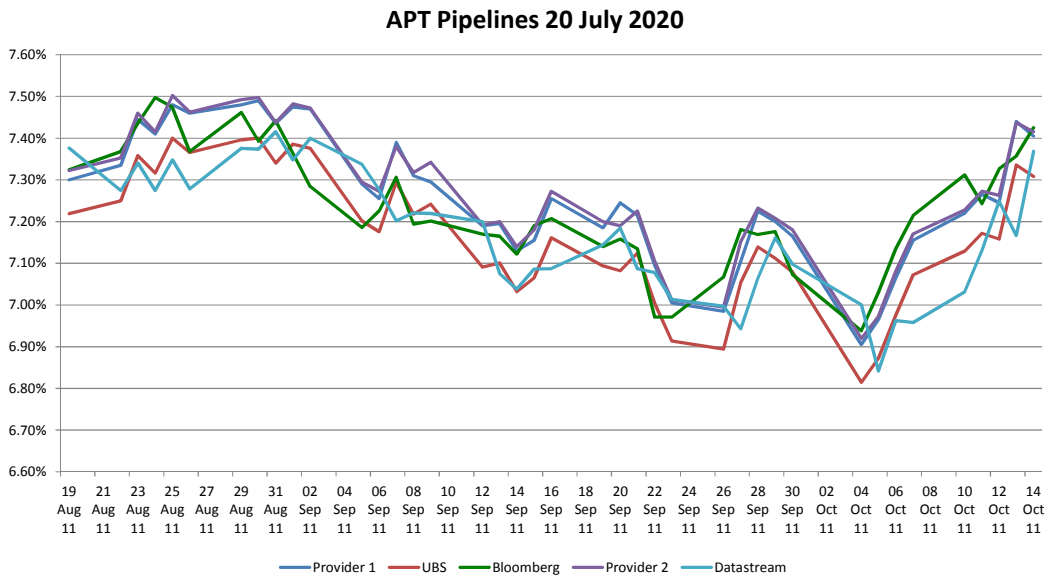
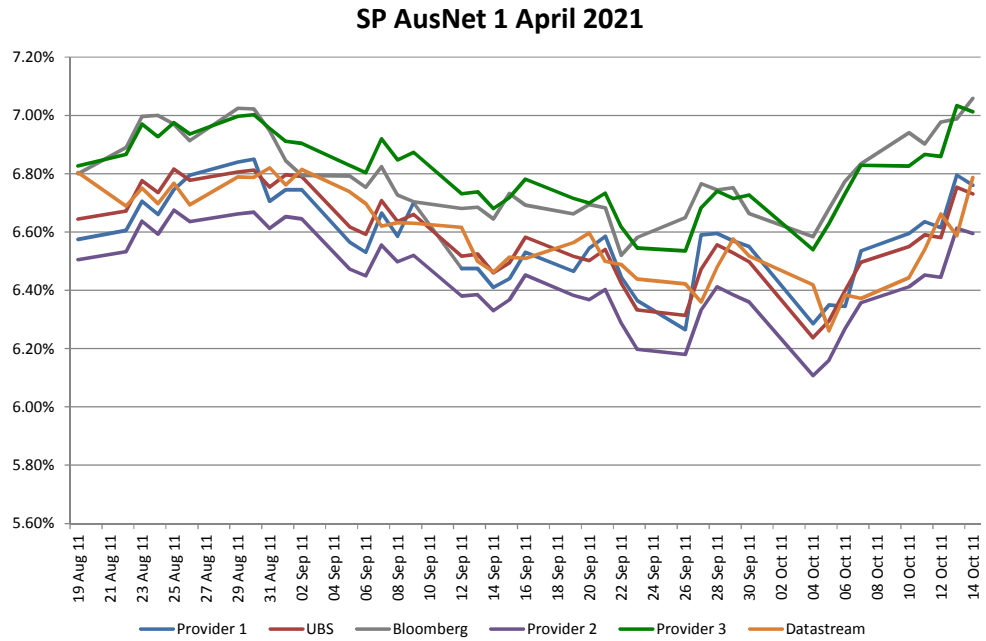


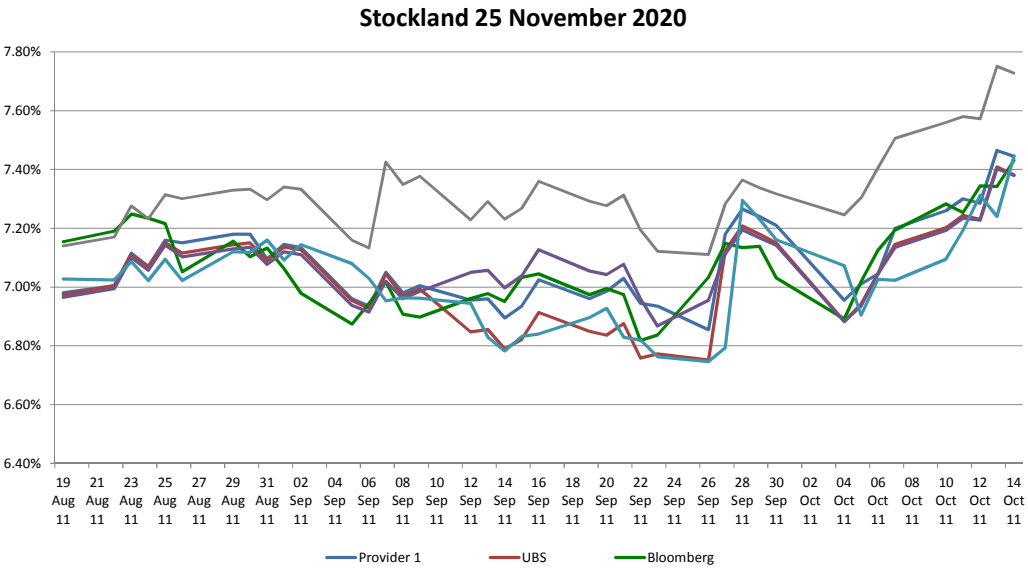
Chart 4 presents the same analysis for SPI Electricity & Gas, which had an average difference of 0.38 per cent and a maximum difference of 0.53 per cent on 12 October 2011.

CHART 4: YIELD DATA FOR THE SPI ELECTRICITY & GAS BOND



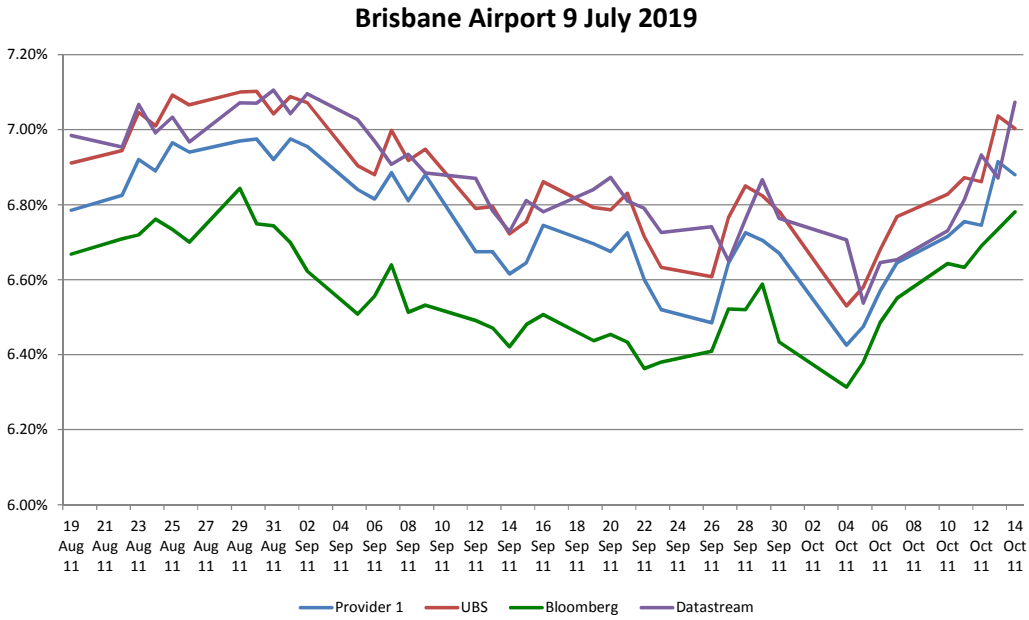
The Stockland Trust bond is shown in Chart 5. This bond had an average range between the highest and lowest data points of 0.35 per cent, and on 16 September 2011 the range reached 0.52 per cent.

CHART 5: YIELD DATA FOR THE STOCKLAND TRUST BOND



The Brisbane Airport bond had an average daily range of 0.33 per cent between highest and lowest data providers. The average yield over the period according to Bloomberg was 6.57 per cent, compared to 6.87 per cent for UBS and Datastream.

CHART 6: YIELD DATA FOR THE BRISBANE AIRPORT BOND



These ranges are very large, with three of the four bonds having average daily variations during the sample period of more than 10 per cent of the AER's proposed debt risk premium. The wide ranges for each bond provide clear evidence that the Australian corporate bond market cannot be viewed as robust or deep despite the increasing number of new issues. Ranges of this size are indicative of thinly traded market where financial market participants disagree on where certain corporate bonds should be priced.

In this context, a common approach has been to take an average or mean of the individual data providers in order to eliminate the outliers. However, this does not recognise the critical point that the existence of wide ranges suggests that there is very little market data (ie, trades) upon which the prices are based, and therefore the reliability of all estimates is limited. There is no assurance that the true price of the security lies at the average or median or even within the range of prices provided. Taking an average of poor quality data does not improve the result.

Differences between UBS and Bloomberg price data

The AER has only sourced yields from two data providers (UBS and Bloomberg) for the SPI Electricity & Gas, Brisbane Airport Corporation, APA Group and Stockland Trust fixed rate bonds. If the market for these bonds is deep, the difference in the daily yields from UBS and Bloomberg for each bond should display the following features:

1. The average daily yield difference should be zero.
2. The standard deviation of the daily yield differences should be low.

Daily yield differences that are significantly different from zero require an average bid/offer spread of the same size to prevent arbitrage from being profitable[45]. Even if the average difference is close to zero, a high standard deviation implies a large bid/offer spread at various points in time. These issues are compounded if the average difference is large *and* the standard deviation is high.

When examining the yield differences between UBS and Bloomberg, we have used the longest time period possible where data is available from both providers. The daily yield differences for each bond are displayed in the following charts.

CHART 7: SPI ELECTRICITY & GAS BLOOMBERG AND UBS YIELDS

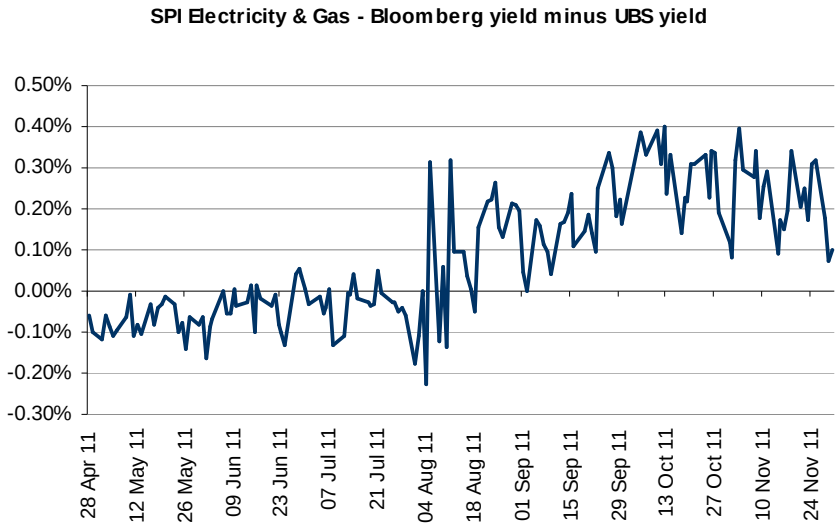
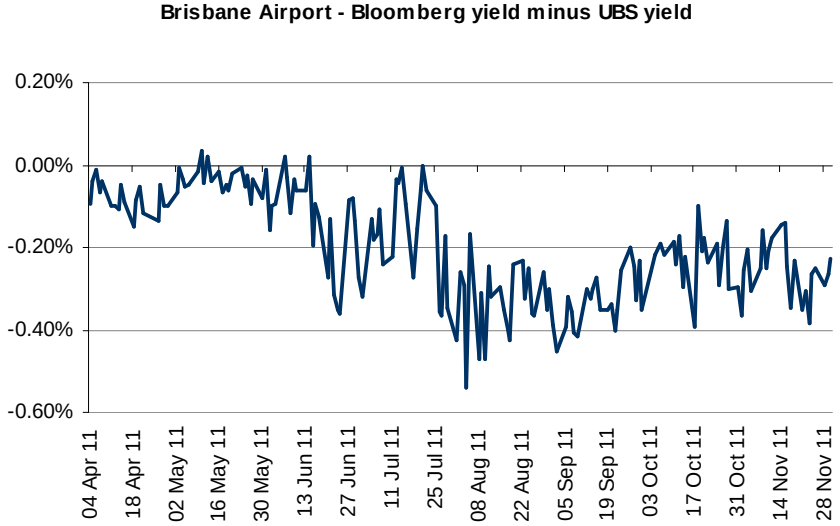


CHART 8: BRISBANE AIRPORT BLOOMBERG AND UBS YIELDS



[45] For example, if the UBS and Bloomberg mid-market yield quotes are 7.0% and 7.2% respectively for a given bond, bid/offer quotes of 7.1%/6.9% and 7.3%/7.1% would be required to eliminate opportunities for arbitrage.

CHART 9: APA GROUP BLOOMBERG AND UBS YIELDS

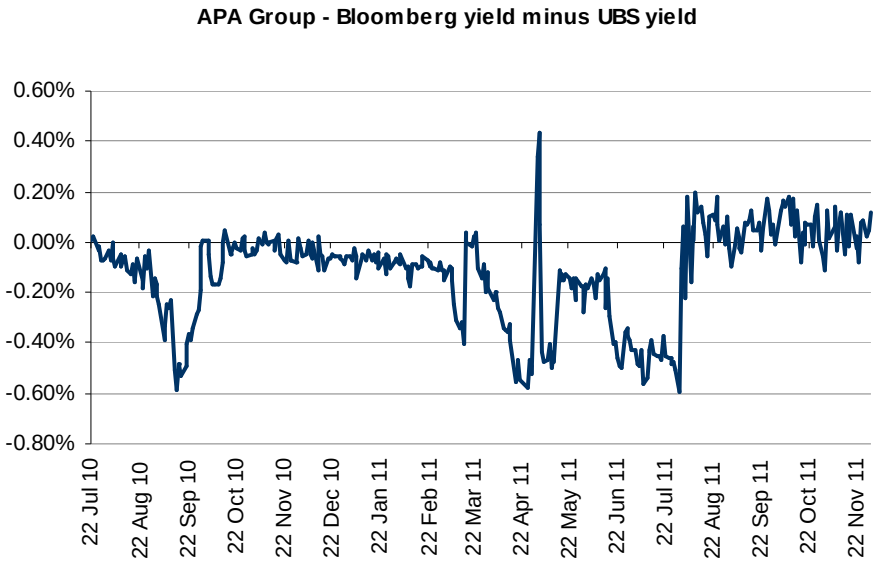
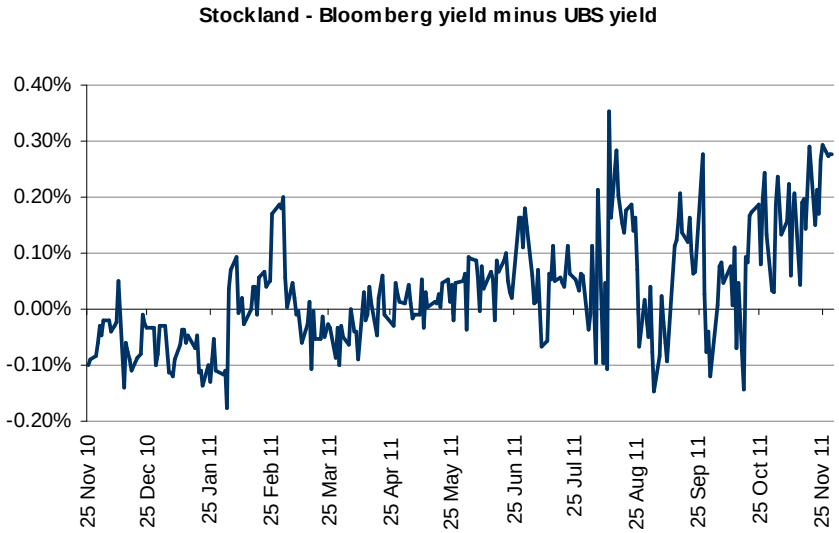


CHART 10: STOCKLAND BLOOMBERG AND UBS YIELDS



The key statistics are summarised in the following table:

TABLE 7: YIELD DIFFERENCE STATISTICS

	SPI	*BAC*	*APA Group*	*Stockland*
Average yield difference	0.08%	(0.20%)	(0.12%)	0.03%
Standard deviation	0.16%	0.13%	0.19%	0.10%
Observations	154	170	352	262
t-statistic (average = 0)	6.7	(19.9)	(12.1)	5.3

The data shows that the average yield differences are large and highly variable. To put these figures into perspective, a yield difference that is 2 standard deviations below the average for the Brisbane Airport Corporation bond requires an average

bid/offer spread of 46 basis points (-20 basis points – 2 × 13 basis points) to prevent arbitrage from being profitable.

Although the statistics are quite different during the 40 day averaging period compared to Table 7, there are still significant differences between the yields provided by UBS and Bloomberg:

TABLE 8: YIELD DIFFERENCE STATISTICS – AVERAGING PERIOD

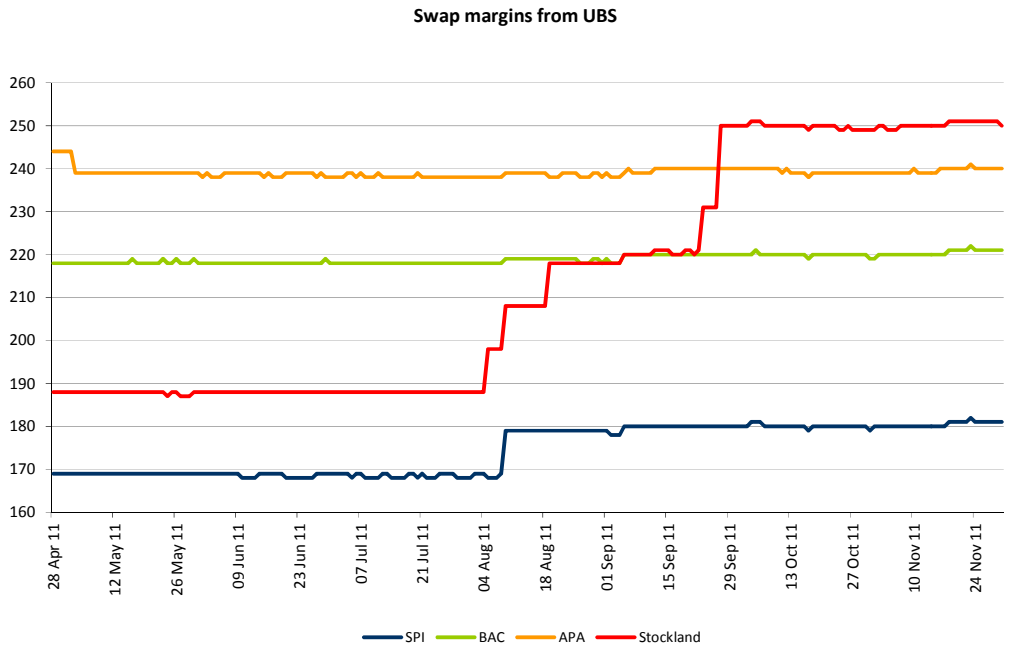
	SPI	*BAC*	*APA Group*	*Stockland*
Average yield difference	0.21%	(0.30%)	0.07%	0.05%
Standard deviation	0.10%	0.07%	0.07%	0.10%
Observations	40	40	40	40
t-statistic (average = zero)	13.2	(25.8)	6.1	3.0

The presence of large average yield differences and/or high standard deviations indicate that there is significant disagreement as to where the fixed rate bonds in the AER's sample should be priced. Large bid/offer spreads are required to offset these differences to prevent arbitrage from being possible. These outcomes are inconsistent with the workings of a deep corporate bond market.

Analysis of changes in spread to swap

Primary issues and secondary trading in corporate bonds is typically priced in relation to the swap curve. While the yield and debt risk premium (ie, spread to Commonwealth bond) will appear to change continually, this is normally driven by changes in the Commonwealth bond yield or swap curve yield. An analysis of the spread to swap will indicate whether a bond is trading or at least whether its price is being continually updated by market participants for market conditions. If the spread to swap for a bond is unchanged over a long period, where there is evidence that credit margins for debt securities as a whole have changed (eg, the iTraxx credit default swap index is changing), this is likely to indicate that the bond pricing is not being updated in light of market conditions. In these circumstances, it is not reasonable to conclude that the yield on a particular bond is reflective of the current yield on the benchmark Australian corporate bond.

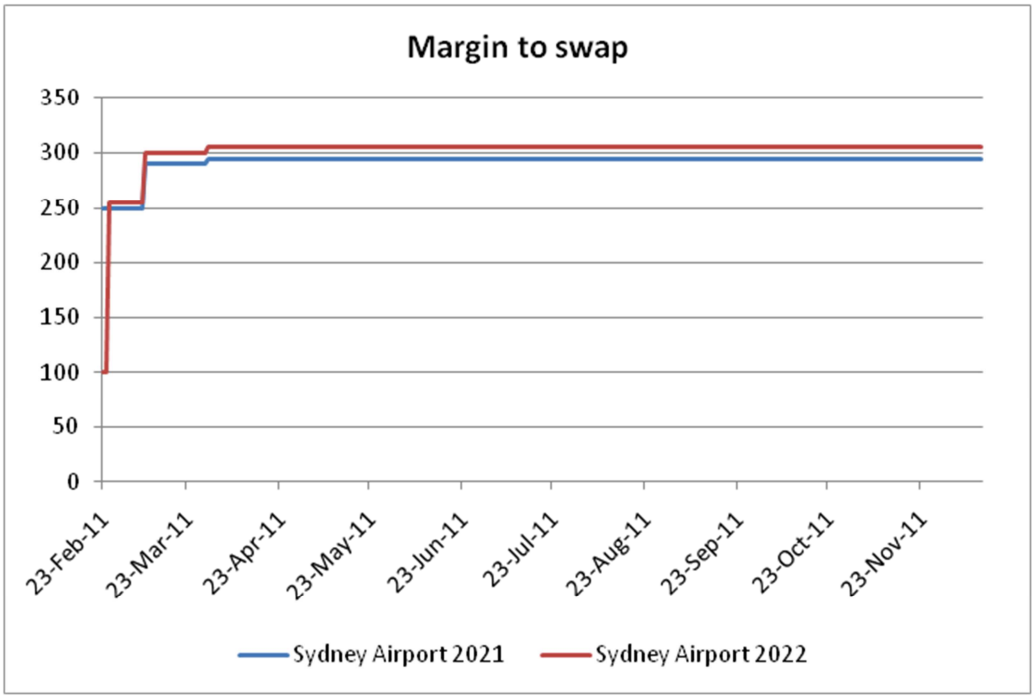
CHART 11: SWAP MARGINS PROVIDED BY UBS



The small frequent variations in the margin to swap (typically one or two basis points) are likely to be due to rounding of bond yields rather than a deliberate change in the margin to swap. For these four bonds, only the margin to swap for the Stockland bond has been updated more than once in the seven month period shown in the chart.

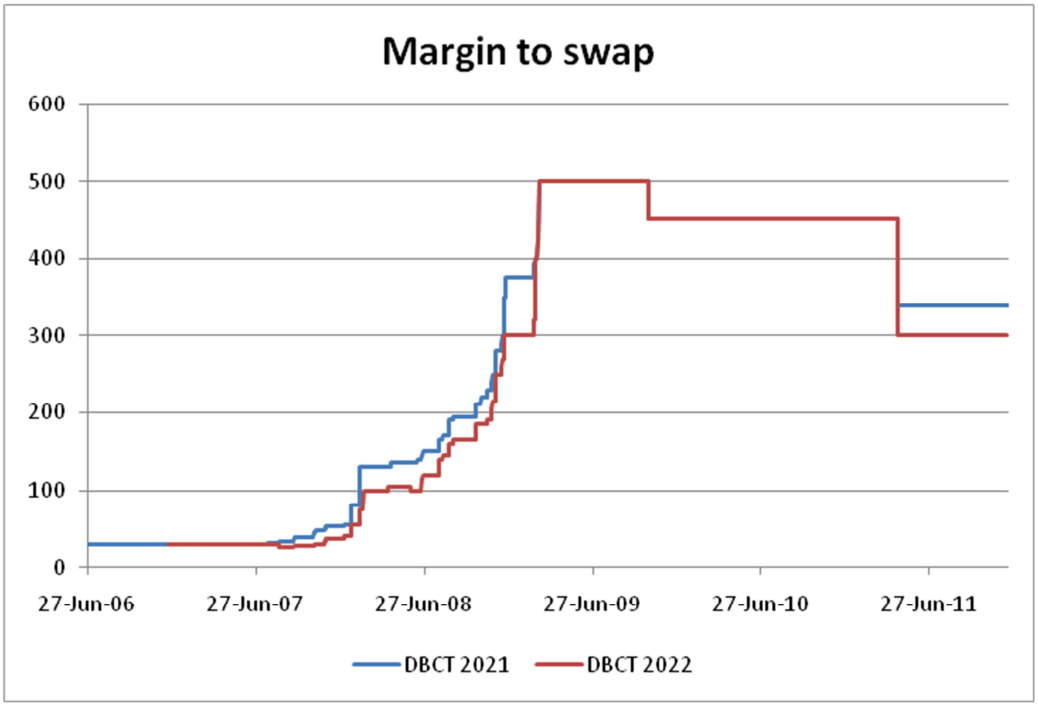
For the floating rate notes used by the AER, for which data has been sourced from UBS, the margin to swap has not changed in some time. Chart 12 below shows the margin to swap for the Sydney Airport bonds since February 2011, indicating that it has not changed since 30 March 2011.

CHART 12: MARGIN TO SWAP FOR SYDNEY AIRPORT BONDS



The margin to swap for the DBCT bonds has not changed since 19 April 2011, as shown in Chart 13 below. Prior to the global financial crisis, the margin data is continually updated, suggesting greater trading (or at least interest) in these bonds, however since the peak of the global financial crisis, the margin to swap has only been updated twice.

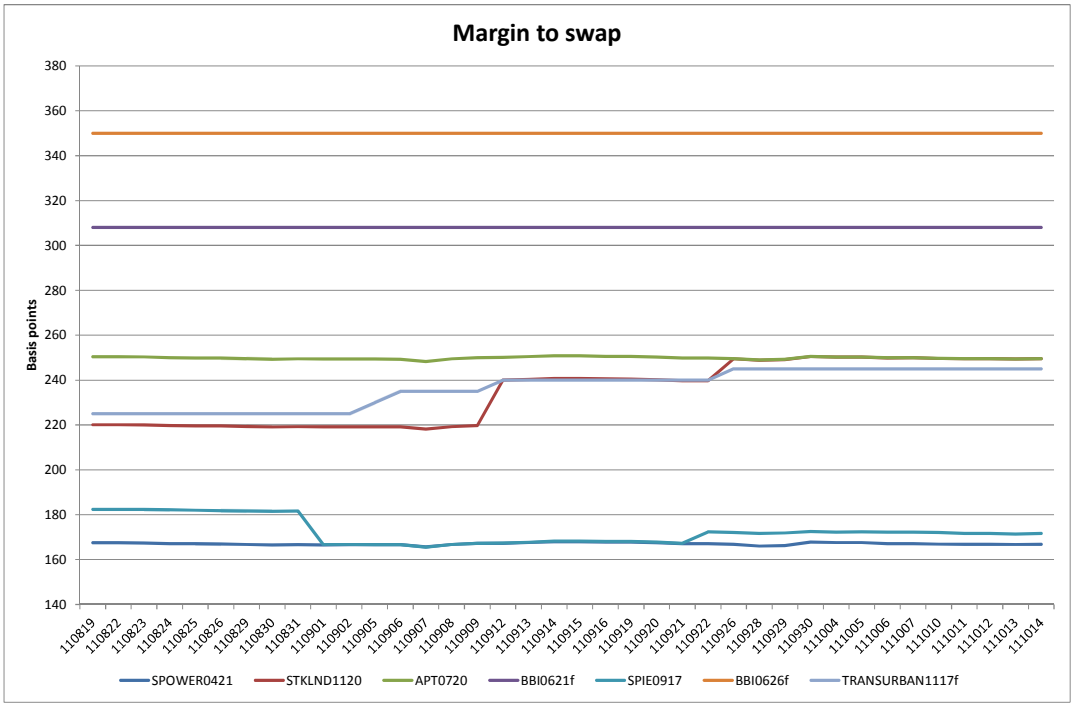
CHART 13: MARGIN TO SWAP FOR DBCT BONDS



Analysis of margin to swap data for the Sydney Airport 2018 bond and DBCT 2026 bonds in the broader sample (refer section 3.5.4) indicates that the margins have not been changed for some time.

We have also analysed daily price sheets from one other data provider to confirm our understanding that the static margins to swap for illiquid securities is not particular to UBS. The chart below shows the margins to swap for the SPI Electricity & Gas 2021, Stockland 2020, APA Group 2020 and DBCT 2021 bonds in the AER sample, as well as the DBCT 2026 and Transurban 2017 bonds in the broader sample (shown in Table 4), during the AER indicative averaging period (40 trading days ending 14 October 2011).

CHART 14: SWAP MARGINS – OTHER DATA PROVIDER



The margins to swap for the APA Group 2020 bond, two DBCT bonds and the SPI Electricity & Gas 2021 bond were not updated during the AER indicative averaging period. Margins to swap for the Stockland 2020, SPI Electricity & Gas 2017 and Transurban 2017 bonds were updated on several occasions. It is notable that the margin to swap on the SPI Electricity & Gas 2017 bond was above the longer dated SPI Electricity & Gas 2020 bond at the start and end of the 40 trading day period, and that changes in the pricing of the 2017 bond did not seem to affect the price of the 2020 bond.

A market cannot be considered to be deep if there is little (if any) trading taking place.

In light of the static pricing data for these bonds, we consider that they are unlikely to provide (whether individually or as part of a sample) a reliable estimate of the yield on BBB+ rated Australian corporate bonds with a ten year maturity. We consider that it is very unlikely that the true margin to swap on many of these securities would not have changed in the past six to nine months, given the observed changes in the

debt risk premium for corporate securities which have actually traded. The lack of changes in pricing data for these bonds is due to their illiquidity, as market makers focus their attention on securities that currently trade or are likely to trade at some point in the future.

3.6.3 Relevance of data quality to fair value curve providers

The availability of yield data of sufficient quality appears to be the threshold question for professional providers in deciding whether or not to publish fair value curves for particular securities and terms to maturity.

CBASpectrum stated that its decision to discontinue the publication of its fair value curve was made for the following reasons:[46]

> *'Sparse and heterogenic data have always made it difficult to produce a broad range of reliable credit curves in Australia. CBASpectrum has sought to overcome this problem in the past through the use of a number of econometric variables and assumptions that take account of additional information such as implied default rates, sector composition, historical relativities and spread performance of other rating bands. However, disparity of the data has increased and many of these relationships have changed over the past few years, meaning that reliability of the models designed to indicate where various credits should trade has receded. Users have also tended to confuse these fair value estimates with alternative models estimating where generic credit curves have actually traded and used the data for purposes other than relative value analysis.'*

Following the decision to cease publication of CBASpectrum, the AER raised these concerns regarding data quality:[47]

> *'A lack of data has recently become a critical issue for CBASpectrum in deciding to cease publishing its fair value estimates. The AER notes that Bloomberg has not made any announcements regarding the reliability of its fair value estimates and still continues to publish its 7 year BBB estimates.'*

As discussed below, the composition of term to maturity of bonds in the Bloomberg BBB fair value curve has improved significantly in recent months. This is consistent with the AER's own assessment of increased data availability at the longer end of the corporate curve, Bloomberg's approach (to include longer dated bonds, but not to extend the curve beyond seven years, at least yet) is more cautious than the AER's approach, and more reflective of data quality. In this regard we agree with PwC's statement regarding calculation of the debt risk premium using the Bloomberg BBB rated Fair Value Curve that[48]:

> *'Importantly, as the quality of market evidence improves, this will automatically be factored into the debt risk premium that is derived from applying the methodology proposed in this report.'*

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[46] Email from Adam Donaldson, CBA, to Chris Downes, QTC, 19 August 2010.
[47] AER, *AER draft approach for measuring the debt risk premium for the Victorian Electricity Distribution Determinations 27 September 2010*, page 2
[48] PwC, *Methodology to estimate the debt risk premium (Appendix C – Powerlink Queensland 2013-2017 Revenue Proposal)*, April 2011, page 4

Given the data concerns expressed by professional providers of fair value curves, which were previously recognised by the AER, it is concerning that the AER seems to assume that its own sample of bonds is immune from the same data quality issues which have seen both Bloomberg and CBASpectrum decide not to publish 10 year fair value curves.

3.6.4 Use of a single data source

The AER has included in its sample bonds for which pricing data is available from either or both of Bloomberg and UBS. Table 9 shows the AER's pricing sources:

TABLE 9: AER PRICING SOURCES

Issue	*Sources*
APA Group 22/07/2020	Bloomberg, UBS
Brisbane Airport 09/07/2019	Bloomberg, UBS
Dalrymple Bay Coal Terminal 9/6/2021	UBS
Dalrymple Bay Coal Terminal 12/12/2022	UBS
Sydney Airport 20/11/2021	UBS
Sydney Airport 11/10/2022	UBS
Coca-Cola Amatil 27/09/2021	Bloomberg
SPI Electricity & Gas 01/04/2021	Bloomberg, UBS*
Stockland Trust 25/11/2020	Bloomberg, UBS

**UBS data is available for the SPI Electricity & Gas bond, however it does not appear to have been used in the AER's debt risk premium calculation*

Two-thirds of the sample used to determine the debt risk premium for Powerlink comes from a single data provider. In light of the divergence between data from different data providers, illustrated in the charts above, this is a significant concern.

In its report to the AER, Oakvale Capital noted that:[49]

> *'While Bloomberg and CBASpectrum provide useful price guidance, the use of a market makers price sheet such as that provided by UBS is the most commonly used guide for pricing of bond instruments, whether fixed, floating or hybrid structures. AFMA pricing sources are increasingly being used by market practicioners.'*

We do not agree with this comment. While UBS is a market maker in a range of fixed income securities, our understanding is that it does not actively make prices in all of the securities listed on its rate sheets. Chart 12 and Chart 13 show that UBS has not updated its margins to swap for Sydney Airport and DBCT Finance floating rate notes. Oakvale Capital also made note of this quote from UBS's rate sheet, which is likely to be relevant to most if not all of the securities in the AER's sample:[50]

> *'For securities in which the market is not currently transparent, each security is priced according to indicators, which include CDS levels, global comparative bonds, customer feedback and*

[49] Oakvale Capital, *Report on the cost of debt during the averaging period: The impact of callable bonds*, February 2011, page 25
[50] Ibid.

market news. We welcome your feedback on the index closing levels and continue to update levels according to market information when market action is sparse.'

3.6.5 Bloomberg measures of data quality

Bloomberg, which is the sole or joint provider of data for five of the AER's sample of nine, has various measures of data quality for its price and yield information. The information below is adapted from Bloomberg publications and from within its information service.

BVAL scores

The Bloomberg Valuation Service (BVAL) score is assigned within a range of 1 to 10, with 10 being the highest quality. The final BVAL Price is derived using a three-pronged approach based on a combined sequence of proprietary BVAL algorithms:

1. Direct observations – uses trades, indicative quotes and executable levels on the target security (maximum BVAL score of 10)
2. Historical tracking – uses the historical correlation of the target security to direct observations of comparable bonds when observable market data on the target security is insufficient (maximum BVAL score of 7)
3. Observed comparable – uses direct observations on comparable bonds to derive a relative value price for the target security when observable market data on the target security is insufficient (maximum BVAL score of 5)

All securities are run through all three steps of the algorithm regardless of the quality of the data achieved at the first step. The results are then appropriately weighted and aggregated based on the relative strength of the information in each category. The more observable data, the higher the final BVAL price. The BVAL score is an innovative metric designed to gauge the level of market data used in constructing the final BVAL price[51].

In QTC's view a score of 8 or more is required in order to have sufficient of confidence in the quoted price (although this is still inferior to traded prices in a deep, liquid market). A score which is based on historical tracking or observed comparables does not reflect a current market price for the security, nor can it be regarded as an independent data point. In our view, the rating scale of one to ten should not be regarded as a linear scale. We understand that a bond can achieve a score of '7' based without having indicative quotes, however a score of '8' or higher requires at least indicative price data from contributors. For this reason a score of 7 should not be viewed as being 'nearly as good as' a score of 8. Also, we note that even where a security has a rating of 8 or more, this can be achieved based on indicative quotes only (rather than executable quotes or actual trades), and a score of 10 does not infer that it is a true price which is based on deep, liquid trading in the bond. While a BVAL score will differentiate bonds with some pricing data from bonds with very little pricing data, a high BVAL score is not sufficient to indicate that the price is a reliable estimate of where the bond would trade.

[51] Bloomberg, *Bloomberg Valuation Service, The BVAL Score,* page 9

Bloomberg Generic (BGN) prices

In its letter to the AER, Bloomberg has confirmed that in order for a corporate bond to be included in the Fair Value Curve, Bloomberg requires that it has a BGN price. We understand that Bloomberg may also include bonds where prices are available from a 'supplemental proprietary contributor', though it is not clear what is meant by this term.[52]

A BGN price is described by Bloomberg in the following terms:

> *'Bloomberg Generic Price (BGN) is Bloomberg's market consensus price for corporate and government bond. Bloomberg Generic Prices are calculated by using prices contributed to Bloomberg and any other information that we consider relevant. Bloomberg does not make a market in any of the securities that we price. The actual methodology we use is proprietary and depends on the type of pricing and the markets involved. The goal of the methodology is to produce "consensus" pricing. To the extent that we are not comfortable that a bond can be assigned a consensus price at any time, we will mark it "not priced". We constantly and vigorously review the performance of the system and alter it as we determine necessary to achieve our goal.'*[53]

Composite Bloomberg Bond Trader (CBBT) prices

A Bloomberg CBBT price is available where there are bid and ask prices available for the bond. Bloomberg defines the price as follows:

> *CBBT is a weighted average bid and ask of price contributions submitted by Bloomberg Dealers. The algorithim has a series of filters (such as time submitted, bid ask spread, inverted markets, etc) which remove bad or stale pricing. The algorithm also uses dealer bid ask spreads to determine the appropriate minimum spread for any security. Many dealers contribute prices to Bloomberg but not all are used in the algorithm. We do not use dealers who source price with CBBT but rather only dealers who contribute their own independent pricing. The algorithm does not require a minimum number of executable dealers*[54].

3.6.6 Data quality of the AER and Bloomberg samples

The following section measures the quality of data for securities in the AER's sample and the Bloomberg BBB rated Fair Value Curve, using information from Bloomberg and a range of other data providers. Our measures of data quality are based on the number of independent data sources for each bond. As noted in section 3.6.1, the only reliable measure of the true price of a bond is from deep, liquid markets. However, in the absence of such a market for Australian corporate debt, we have attempted to find another means to distinguish between poor and adequate data quality.

[52] CEG, *Estimating the cost of 10 year BBB+ debt, A report for Actew AGL,* June 2009, page 15
[53] Bloomberg Frequently Asked Questions, 12 December 2011
[54] Bloomberg Help Desk response, 12 December 2011

Bloomberg BBB rated Fair Value Curve sample

As at 6 December 2011, the Bloomberg BBB rated Fair Value Curve included the following thirteen securities:

TABLE 10: BLOOMBERG BBB RATED FAIR VALUE CURVE SAMPLE

Issuer	*Issuer rating (S&P)*	*Announ. Date*	*Maturity date*	*Rem. Term*	*Amount issued $M*	*Fixed or floating coupon*
Coles Group	A-	15/07/05	26/07/12	0.63	400.0	Fixed 6.00%
Holcim Finance	BBB	31/07/09	07/08/12	0.67	500.0	Fixed 8.50%
CLP Australia	BBB	10/11/05	16/11/12	0.94	325.0	Fixed 6.25%
Transurban Finance	A-	15/03/10	24/03/14	2.29	250.0	Fixed 7.25%
Wesfarmers Ltd	A-	09/04/09	11/09/14	2.76	400.0	Fixed 8.25%
Mirvac Group	BBB	19/03/10	15/03/15	3.27	200.0	Fixed 8.25%
Sydney Airport	BBB	28/06/10	06/07/15	3.58	175.0	Fixed 8.00%
Goodman Australia	BBB	12/05/11	19/05/16	4.45	175.0	Fixed 7.25%
Mirvac Group	BBB	22/09/10	16/09/16	4.78	225.0	Fixed 8.00%
Wesfarmers Ltd	A-	31/10/11	04/11/16	4.91	500.0	Fixed 6.00%
Dexus Finance	BBB+	15/04/10	21/04/17	5.37	180.0	Fixed 8.25%
Sydney Airport	BBB	19/05/11	06/07/18	6.58	100.0	Fixed 7.25%
APA Group	BBB	15/07/10	22/07/20	8.63	300.0	Fixed 7.75%

**The sample has since changed to exclude the APA Group bond, and include a Snowy Hydro 2013 bond (as at 15 December 2011).*

A number of the bonds in the sample have Standard & Poor's ratings which are higher than BBB+, however Bloomberg includes these in the BBB range because the combined rating (ie, including Moody's or Fitch) is within that range.

The AER's proposed sample of bonds is shown in Table 1. The APA Group bond is the only security which is common to both the AER and Bloomberg samples, although we note it has subsequently been removed from the Bloomberg sample. The SPI Electricity & Gas bond is included in the Bloomberg A rated Fair Value Curve.

Comments from market participants

QTC has contacted a number of market participants to obtain pricing information on the AER's sample of bonds. Several market participants have observed that the bonds in the sample do not trade and as a result it is difficult to obtain accurate revaluations of the securities.

Range of data sources

QTC has examined a range of data sources for pricing information for the bonds in the AER's sample. While the Australian Competition Tribunal did not think it was necessary to have multiple pricing sources, we consider that this applies to the testing approach which was under consideration in that decision, and in the context of directly establishing the debt risk premium, a higher standard is required.

QTC sourced pricing from the following providers:

- Bloomberg
- Thomson Reuters DataStream
- UBS
- One other data provider and two other banks active in the bond market

The pricing information is predominantly indicative quotes. Information on DataStream is sourced from a range of data providers, however we have been unable to determine the identity of individual providers.

In relation to the AER's sample of bonds, QTC has obtained the information (shown in Table 11) regarding the number of banks which are currently providing pricing data, as well as the pricing sources:

TABLE 11: BLOOMBERG PRICING SOURCES: AER SAMPLE

Issue	*Number of banks*
APA Group 22/07/2020	4 (ANZ, Nomura, RBS, ML)
Brisbane Airport 09/07/2019	3 (Nomura, RBS, ML)
Sydney Airport 20/11/2021*	0 (BVAL only)
Sydney Airport 11/10/2022*	1 (RBS)
Coca-Cola Amatil 27/09/2021	0 (BVAL only)
SPI Electricity & Gas 01/04/2021	5 (CBA, DB, Nomura, RBS, ML)
Stockland Trust 25/11/2020	4 (CBA, RBS, ML, WBC)

**Bloomberg data was not used by the AER for these securities*

No prices were available from Bloomberg for the DBCT bonds, although the AER used UBS data for these bonds. For the Sydney Airport 2021 and Coca-Cola Amatil 2021 bonds, pricing data is only available from the BVAL function rather than data providers. BVAL prices are generally calculated by reference to yields on comparable securities, and therefore cannot be regarded as independent data points (unless they score over 7). Table 15 below confirms that Bloomberg has not received any pricing data on these securities in the past six months which is sufficient to form a 'BGN' price.

Table 12 shows the range of sources providing pricing information on the bonds which are included in the Bloomberg BBB rated Fair Value Curve.

TABLE 12: BLOOMBERG PRICING SOURCES – FVC SAMPLE

Issue	*Number of banks*
Coles Group 25/7/2012	11
Holcim Finance 7/8/2012	13 (including exchange traded prices)
CLP Australia 16/11/2012	11
Transurban Finance 24/3/2014	6
Wesfarmers Ltd 11/9/2014	13
Mirvac Group 15/3/2015	6
Sydney Airport 6/07/2015	6
Goodman Australia 19/5/2016	4
Mirvac Group 16/9/2016	7
Wesfarmers 4/11/2016	6
Dexus Finance 21/4/2017	3
Sydney Airport 6/7/2018	4
APA Group 22/07/2020	4

With the exception of the Dexus Finance bond, the bonds in the Bloomberg Fair Value Curve sample have at least four independent data providers. This is in contrast to the AER's sample, where only three bonds have four data providers. The existence of pricing from a range of sources in our view indicates a higher quality data source.

The declining number of separate prices provided for longer maturity bonds is consistent with views expressed to QTC that the corporate bond market has some liquidity for shorter maturities but relatively illiquid for longer dated bonds.

Comparison of BVAL scores

Table 13 shows the average BVAL scores for each of the bonds in the AER sample and the Bloomberg sample.

TABLE 13: AVERAGE BVAL SCORES FOR THE AER AVERAGING PERIOD (19 AUGUST TO 14 OCTOBER 2011): AER SAMPLE

Issue	*BVAL Score*
APA Group 22/07/2020	6
Brisbane Airport 09/07/2019	6
Sydney Airport 20/11/2021*	3
Sydney Airport 11/10/2022*	3
Coca-Cola Amatil 27/09/2021	3
SPI Electricity & Gas 01/04/2021	6
Stockland Trust 25/11/2020	6

**The AER has not used Bloomberg pricing data for these bonds*

Note that as no pricing information is available for the DBCT bonds on Bloomberg, no BVAL score is available.

In most cases the BVAL scores were consistent throughout the indicative period used by the AER, moving within a range of one or two scores. However, in the case of the Coca-Cola Amatil bond, its BVAL score declined from 7 to 1 over the period. This indicates that Bloomberg's level of confidence in the BVAL price estimate (which the AER used) fell significantly, most likely because Bloomberg was not able to corroborate the BVAL price estimate of that bond with indicative prices or comparable securities.

Table 14 shows the BVAL scores for securities which are included in the Bloomberg BBB rated Fair Value Curve:

TABLE 14: AVERAGE BVAL SCORES FOR THE AER AVERAGING PERIOD (19 AUGUST TO 14 OCTOBER 2011): FVC SAMPLE

Issue	*BVAL Score*
Coles Group 25/7/2012	9
Holcim Finance 7/8/2012	8
CLP Australia 16/11/2012	9
Transurban Finance 24/3/2014	8
Wesfarmers Ltd 11/9/2014	9
Mirvac Group 15/3/2015	7
Sydney Airport 6/07/2015	8
Goodman Australia 19/5/2016	7
Mirvac Group 16/9/2016	7
Wesfarmers 4/11/2016*	N/a
Dexus Finance 21/4/2017	4
Sydney Airport 6/7/2018	8
APA Group 22/07/2020	6

Note: the sample of bonds has changed since this analysis was undertaken.
**The Wesfarmers 2016 bond was issued on 31 October 2011, after the indicative averaging period.*

Availability of BGN prices

We have analysed the number of days for which BGN prices are available for bonds in the AER sample, compared to the sample of bonds which are included in the Bloomberg BBB rated Fair Value Curve.

Table 15 shows the number of days on which BGN prices are available for the sample bonds during the AER's indicative averaging period and during the last six months (6 June 2011 to 6 December 2011):

TABLE 15: BGN OBSERVATION DAYS – AER SAMPLE

Issue	*Indicative average period*	*Last 6 months*
APA Group 22/07/2020	21	54
Brisbane Airport 09/07/2019	3	18
Sydney Airport 20/11/2021*	0	0
Sydney Airport 11/10/2022*	0	0
Coca-Cola Amatil 27/09/2021 (issued 14/9/11)	0	0
SPI Electricity & Gas 01/04/2021	4	15
Stockland Trust 25/11/2020	6	57

**The AER uses UBS data for these bonds*

The total number of BGN observations for the AER sample during the averaging period is 34, of which 21 observations relate to the APA Group bond. This indicates that very little pricing data was provided in relation to the remaining bonds and most of the pricing data used by the AER (ie, BVAL prices) is calculated within the Bloomberg system.

We note that the SPI Electricty & Gas bond was included in the Bloomberg A rated Fair Value Curve for a period during December 2011[55], which indicates that Bloomberg was satisfied that the quality of data for this bond had improved to a sufficient level (ie, availability of BGN prices) after the indicative averaging period. However, while the data for this bond may have improved, we consider it should be excluded from the AER's sample on the basis that it is not representative of the benchmark Australian corporate bond (refer section 3.5.2)

Table 16 shows the number of days on which BGN prices are available for the securities in the Bloomberg BBB rated Fair Value Curve during the AER's indicative averaging period and in the six months to 6 December 2011:

TABLE 16: BGN OBSERVATION DAYS – BLOOMBERG BBB FVC

Issue	*Indicative average period*	*Last 6 months*
Coles Group 25/7/2012	40	132
Holcim Finance 7/8/2012	40	132
CLP Australia 16/11/2012	14	64
Transurban Finance 24/3/2014	40	132
Wesfarmers Ltd 11/9/2014	40	132
Mirvac Group 15/3/2015	23	102
Sydney Airport 6/07/2015	40	132
Goodman Australia 19/5/2016	16	66
Mirvac Group 16/9/2016	40	132

[55] The composition of the Bloomberg A rated Fair Value Curve accessed on 7 December 2011 showed that the SP AusNet 2021 bond was included in the sample, however it is no longer included. Bloomberg does not provide information on the dates on which bonds are added or removed from its Fair Value Curves.

Issue	*Indicative average period*	*Last 6 months*
Wesfarmers 4/11/2016 (trading from 2/11/11)	N/a	26 (out of 27)
Dexus Finance 21/4/2017	0	13
Sydney Airport 6/7/2018	28	104
APA Group 22/07/2020	20	54

Note: the sample of securities has since changed, eg, the APA Group bond is no longer included.

In stark contrast to the AER sample, most securities in the Bloomberg Fair Value Curve have good BGN price history during both the indicative averaging period and the preceding six months, with the exception of the Dexus Finance 2018 bond. This observation would be expected given Bloomberg's requirement for a BGN price for inclusion in the Fair Value Curve.

Availability of CBBT prices

We have also analysed the number of days for which CBBT prices are available for the securities in the AER sample and the Bloomberg BBB rated Fair Value Curve sample, during the AER's indicative period of 40 trading days starting 22 August 2011 and ending 14 October 2011.

With the following exceptions, there were no CBBT prices for bonds in the AER sample during the last six months:

- CBBT data is available for the APA Group bond on 8 and 9 August 2011
- CBBT data is available for the SPI Electricity & Gas bond on 8 August 2011

In relation to the Bloomberg BBB rated Fair Value Curve, CBBT prices are available as follows:

TABLE 17: CBBT OBSERVATION DAYS – BLOOMBERG FVC

Issue	*Indicative average period*	*Last 6 months*
Coles Group 25/7/2012	33	119
Holcim Finance 7/8/2012	33	107
CLP Australia 16/11/2012	25	62
Transurban Finance 24/3/2014	0	23
Wesfarmers Ltd 11/9/2014	39	131
Mirvac Group 15/3/2015	0	46
Sydney Airport 6/07/2015	0	0
Goodman Australia 19/5/2016	0	0
Mirvac Group 16/9/2016	0	41
Wesfarmers 4/11/2016 (trading from 2/11/11)	0	7
Dexus Finance 21/4/2017	0	0
Sydney Airport 6/7/2018	22	74
APA Group 22/07/2020	0	2

Of the thirteen securities in the Bloomberg Fair Value Curve sample as at 6 December 2011, only five have significant data during the indicative averaging period, although in the preceding six months, eight securities have at least twenty days of CBBT data, and all but two securities have some CBBT data. We note that the number of CBBT observations is much higher for most securities before August this year, which is around the same time that concerns around European economies and banks intensified.

3.6.7 Summary findings on the Bloomberg and AER samples

Based on the assessment of data quality of individual securities in the AER's sample and the Bloomberg BBB rated Fair Value Curve, our findings are as follows:

- The BVAL scores for the AER sample, which are all below eight, indicate that Bloomberg considers that the prices are based on historical correlations and observed comparables. This is supported by the very limited number of 'BGN' and 'CBBT' prices which are available for these bonds. Conversely, most bonds in the Bloomberg BBB rated Fair Value Curve have a BVAL score which is higher than eight. These bonds have extensive 'BGN' and 'CBBT' data in most cases.
- The securities in the Bloomberg BBB rated Fair Value Curve are priced by a much wider range of individual data contributors than the bonds in the AER sample. The range of pricing sources suggests that there is greater liquidity in the bonds in the Bloomberg BBB rated Fair Value Curve, which supports the view that these prices are more reflective of the current cost of debt.
- The wide range of estimated yields among different data providers for the four fixed coupon bonds in the AER sample which are actually priced (ie, the Coca-Cola Amatil bond price is merely a Bloomberg estimate) suggests that there is very little liquidity in these securities. It is not possible to be confident that, were a trade to occur, the price would be consistent with these estimates, or lie outside of the range of estimates.
- The margin to the swap curve of the four floating rate bonds quoted by UBS (but, we note, not priced by other data providers) has been unchanged for the past eight to nine months. Similarly, the margin to swap for fixed rate bonds has been updated very infrequently. This suggests that there is no liquidity in these securities, and we consider it is extremely unlikely that the true credit margin for these bonds would not have changed in this period. It is extremely unlikely that the quoted yields are reflective of the actual yields on these bonds.

In our view, it is not reasonable to conclude that the observed annualised Australian corporate bond yield can be estimated solely by reference to the sample of bonds proposed by the AER. Further, removal of the Coca-Cola Amatil and SP AusNet would reduce the sample size to only seven bonds, which is inadequate given the wide range of yield estimates (ie, for three of the bonds, the average range exceeds 10 per cent of the proposed debt risk premium), limited number of data providers and lack of liquidity implied by the infrequent changes in the margin to swap. There are other bonds which are not used in the AER's sample that could be included to increase the sample size (refer section 3.5.4). However, in light of the data quality

issues, it would not be reasonable to attempt to estimate the observed annualised Australian corporate bond yield solely by using their yield data.

In contrast to the AER's sample, the quality of data for individual securities in the Bloomberg BBB rated Fair Value Curve appears to be much higher, although the quality of data is lower for some of the longer dated securities. In our view, the higher quality of data for the Bloomberg BBB rated Fair Value Curve, and the superior curve calculation methodology, indicates that this should be used as the primary means to estimate the debt risk premium. The extent of the weighting that should be applied to the AER's sample (or the broader sample discussed in section 3.5.4) should be based on the quality of available data for the bonds in the sample at the time of the averaging period. The quality of data during the AER's indicative averaging period was very low, and accordingly a low weighting would have been appropriate to estimate the debt risk premium during that period.

3.7 EXCLUSION OF BLOOMBERG FAIR VALUE CURVES

The AER notes that the decision to discontinue the use of Bloomberg Fair Value Curves reflects:[56]

> *'the increased volume of observed market data currently available, and ongoing market evidence and commentary that suggest the Bloomberg BBB rated FVC does not reflect prevailing Australian bond market conditions'*

The evidence provided in the AER's Draft determination does not support this view. The previous section has shown that, while the amount of data for longer term to maturity bonds has increased, it is still inadequate to form a reliable estimate using a sample of securities clustered around the ten year mark. In contrast, the data quality of the Bloomberg Fair Value Curve is much better, with input from a range of pricing sources. These issues were not considered by the AER. This section discusses the AER's reasons for deciding not to accept Powerlink's proposal to use the Bloomberg BBB rated Fair Value Curve.

3.7.1 Departure from previous decisions

Although the AER has expressed its dissatisfaction with Bloomberg's fair value curves, and has reduced its reliance on its outputs, this represents the first decision (draft or final) for electricity transmission or distribution where fair value curves have been excluded entirely.

In the final decision for the Victorian distributors in October 2010, the AER concluded that:[57]

> *'In regards to the DRP, the AER has considered the DNSPs arguments and agrees with the weight of evidence that suggests Bloomberg's fair value estimates are still reflective of BBB bond yields with a maturity of less than seven years.'*

[56] AER Draft determination, page 223
[57] AER, *Victorian Distribution Determinations – Final Decision*, October 2010, page XXXIX

At the time of this decision, the longest term to maturity bond in the Bloomberg BBB rated Fair Value Curve was 4.9 years, while it is now 6.6 years (the Sydney Airport 2018 bond).

The AER does not identify the specific evidence in support of Bloomberg's fair value estimates, however there have been a large number of consultant's reports and AER decisions which have considered the Bloomberg method and outputs in some detail. We note that a number of reports have been critical of Bloomberg's approach, in the context of preferring CBASpectrum data for the calculation of the debt risk premium for a particular decision.

The AER also noted in the final decision for the Victorian distributors that:[58]

> *'The AER considers that in the current circumstances Bloomberg's fair value curve estimates are a reasonable source of information that can be used to inform the setting of the DRP. The AER further notes that Bloomberg is a market respected data service and it has relied on the fair value curves published by Bloomberg in the past.'*

In the context of these statements, the draft determination for Powerlink represents a significant change from prior regulatory practice. For the reasons set out below, we consider that the AER has not established reasonable grounds to exclude the use of Bloomberg BBB rated Fair Value Curve. Further, noting the improvements in the composition and recent performance of the 7 year index (and the data quality issues of the AER's sample) we consider that the grounds for using the Bloomberg BBB rated Fair Value Curve as the sole basis for estimating the debt risk premium have strengthened since the Victorian decision and since Powerlink's original regulatory submission.

3.7.2 Letter from Bloomberg LP

On 28 October 2011, Bloomberg LP provided a letter to the AER responding to three queries regarding the divergence between Bloomberg's BBB Fair Value Curves and the iTraxx index.

The AER has selected a number of quotes from the letter in support of its view that the Bloomberg Fair Value Curve is not suitable for the present purposes. However, when read in full, the Bloomberg letter is simply an honest assessment of the challenges of constructing a Fair Value Curve in the context of a thinly traded market and limited sample of bonds. Bloomberg's acknowledgement of these challenges in its letter is in marked contrast to the AER's references throughout the draft determination that its sample reflects 'observed market data', particularly in light of the data quality issues afflicting its sample, discussed in section 3.6.6 above. Moreover, having regard to the recent Caltex issue, it appears that predictive ability of the Bloomberg BBB rated Fair Value Curve has performed very well (see section 3.7.5)

Bloomberg's letter states that:[59]

[58] AER, *Victorian Distribution Determinations – Final Decision*, page 509

> *'BFV curves are created daily based off bonds that fulfill [sic] the criteria of a curve, i.e. rating, currency, market, as well as other criteria such as being susceptible to OAS (Option Adjusted Spread) analysis. If a bond meets these requirements and has a BGN price the bond will be included in the curve. This means that not all BBB-/BBB/BBB+ domestic AUD bonds are considered in what is already a limited universe of issues. Bloomberg currently considers nine securities in its BFVC 356, the Australian BBB curve.*
> …
> *Our methodology fits the curve, together with its accompanying constant maturity points, to minimize the average option adjusted spread… This methodology does not guarantee that any given issue will lie on the Fair Value Curve, just that the average OAS difference will be minimized.'*

The letter acknowledges that Bloomberg does not consider floating rate notes and acknowledges that this 'might lead to perceptions that FVC values are not representative' particularly given the limited range of bonds available from which the Fair Value Curve can be calculated. However, as noted previously, the four floating rate notes used by the AER have particularly poor data quality, and even if Bloomberg changed its position it is very unlikely that these would be included.

Bloomberg's letter states that nine securities are considered in its Australian BBB curve. However, at the date of this report, this had been expanded to 14 securities. Bloomberg does not list the date on which securities were added to or removed from this curve. The APA Group bond used in the AER's sample was added to the Bloomberg Fair Value Curve, and was in the sample during our initial analysis in early December 2011. However it has subsequently been removed, which we expect is due to a lack of ongoing reliable pricing data.

In addition, the average maturity profile of the Bloomberg BBB Fair Value Curve has lengthened significantly since previous regulatory decisions (refer section 3.7.6)

3.7.3 Analyst reports

The AER cites in support of its view three market analyst reports discussing the funding outlook for three listed groups, accounting for 15 gas and electricity networks.[60] These reports note that spreads for BBB rated APA Group are approximately 240 basis points, 150 basis points for A- rated Spark Infrastructure Group, and 300 basis points for BBB- rated DUET Group. However, we do not consider that these reports are indicative of the debt risk premium because:

- The APA Group report relates to bank debt, which is typically for a 2 to 5 year term, and which it would be expected is priced below ten year corporate debt.[61]
- It is common practice to refer to spreads over swap, rather than the margin over government bonds. QTC has reviewed the three reports and there is nothing in the context in which the statements are made which suggests the reports are referring to spreads over government debt, rather than the usual spread to swap.

[59] Bloomberg LP, *Bloomberg's Fair Market Curves,* letter to the AER dated 28 October 2011, pages 1 and 2

[60] AER Draft determination, Table 5.5

[61] In recent months, some highly rated corporates have been able to issue debt at lower margins than bonds issued by banks, however we do not expect this would apply to APA, which is rated 'BBB'.

The AER should confirm with the authors of these reports whether the spread referred to is a spread to swap or to a spread to Commonwealth bonds.

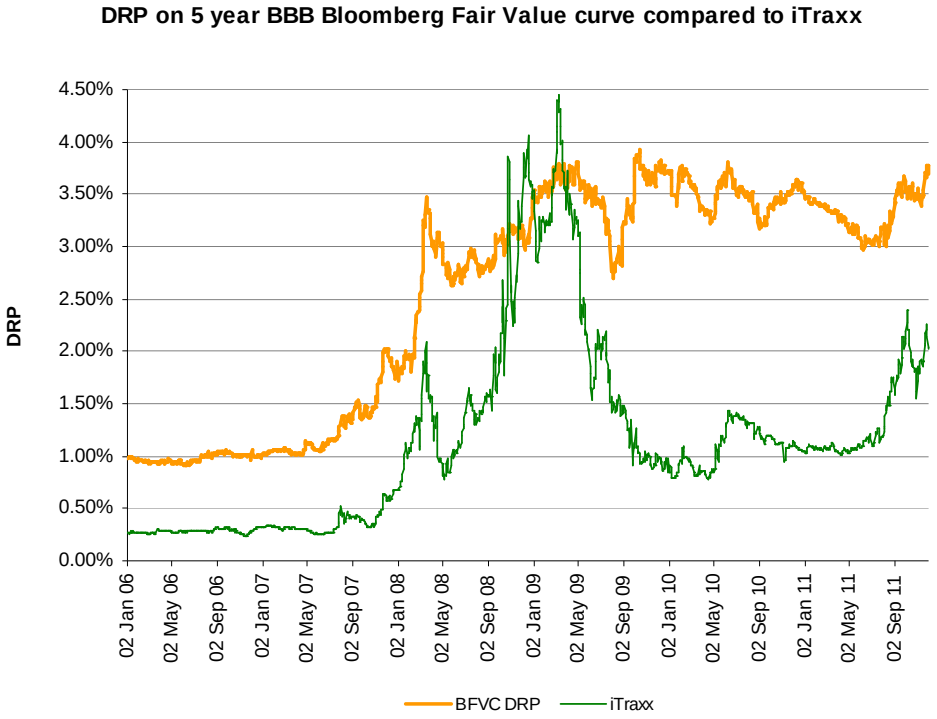
3.7.4 Divergence with iTraxx

The AER also cites the divergence between the Bloomberg 5 year BBB rated Fair Value Curve and the 5 year iTraxx credit default swap index as an indication that the former is no longer indicative of corporate credit margins.

The AER has provided a visual analysis of the relationship between the debt risk premium derived from the 5 year BBB Bloomberg Fair Value Curve (BFVC) and the iTraxx credit default swap index. The iTraxx is based on a portfolio of 25 single name credit default swaps (CDS) and can be viewed as the cost of insuring against default risk on a portfolio of investment grade borrowers.

The AER claim that the debt risk premium for a standard fixed rate bond 'exclusively reflects the risk that the investor will not be paid out in full for its investment'. As the iTraxx is a measure of perceived default risk, the AER concludes that the debt risk premium on the BFVC should broadly move in line with the iTraxx. The AER's chart is reproduced below:

CHART 15: BLOOMBERG BBB RATED FAIR VALUE CURVE AND ITRAXX



The chart displays a significant divergence between the debt risk premium from the Bloomberg Fair Value Curve and the iTraxx. In particular:

- Between December 2007 and April 2009 the iTraxx index rose significantly compared to the debt risk premium.

- Post April 2009 the debt risk premium remained elevated despite the sharp fall in the iTraxx index.

These divergences are viewed by the AER as evidence that the Bloomberg Fair Value Curve does not reflect prevailing market conditions and is likely to overstate the benchmark debt risk premium.

Relationship between debt risk premiums and the iTraxx index

The AER has not considered whether the divergence is unique to the debt risk premium calculated using the Bloomberg Fair Value Curve.

To address this issue we calculated the average debt risk premium on a portfolio of fixed rate bonds on a daily basis between January 2006 and November 2011. This approach is similar to the sampling approach used by the AER. If the AER's claims are correct, the average debt risk premium on the bond portfolio should broadly move in line with the iTraxx index.

Due to data constraints and the length of the analysis period, it was necessary to change the mix of bonds in the portfolio over time[62]. New bonds have been included from the date when yield data was available from UBS or Bloomberg. The portfolio debt risk premium is based on a simple average of the individual bond debt risk premiums. The shaded areas Table 18 indicate the bonds that were included in the portfolio at different points in time:

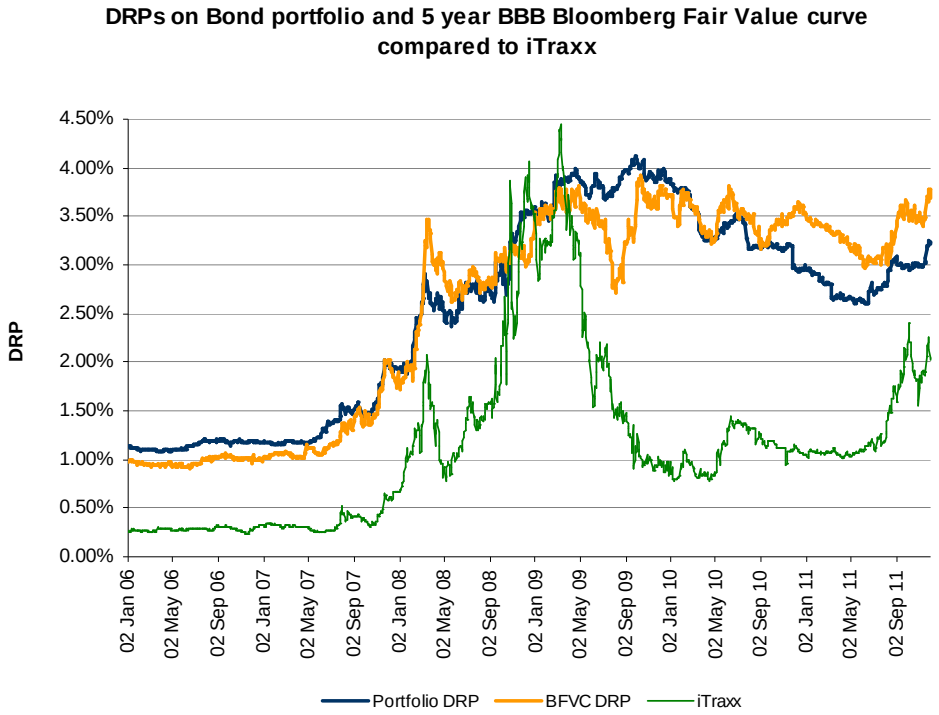
TABLE 18: COMPOSITION OF BOND PORTFOLIO

		Snowy	*Santos*	***APA***	*Mirvac*	***Stockland***	***BAC***	*SAC*	*Caltex*
Start	*End*	*25 Feb 13*	*23 Sep 15*	***22 Jul 20***	*16 Sep 16*	***25 Nov 20***	***09 Jul 19***	*06 Jul 18*	*23 Nov 18*
02 Jan 06	21 Jul 10								
22 Jul 10	23 Sep 10								
24 Sep 10	24 Nov 10								
25 Nov 10	01 Apr 11								
04 Apr 11	24 May 11								
25 May 11	18 Nov 11								
21 Nov 11	30 Nov 11								

The debt risk premiums on the bond portfolio and the 5 year BBB rated Bloomberg Fair Value Curve are displayed in Chart 16, along with the iTraxx index:

[62] We have not undertaken a detailed analysis of the data quality of the bonds included in this sample because the data is simply being used to illustrate the behaviour of the debt risk premium over time in broad terms, rather than a precise estimate of the debt risk premium.

CHART 16: COMPARISON TO BOND PORTFOLIO YIELDS



We can conclude that the debt risk premium on the bond portfolio *does not* broadly move in line with the iTraxx index. However, there is a strong positive relationship between the debt risk premiums from the Bloomberg Fair Value Curve and the bond portfolio. This suggests that the divergence observed by the AER is common to debt risk premium calculated using historical bond yields and the Bloomberg Fair Value curve.

Differences between the portfolio and Bloomberg debt risk premiums at various points are to be expected due to the different bonds and calculation methodologies that have been used. It should be noted that both debt risk premiums have the same long-term average value of 255 basis points. Since the end of 2008 the average portfolio and Bloomberg Fair Value Curve debt risk premiums were 355 basis points and 344 basis points respectively. As recently as August 2011 the debt risk premiums were the same.

Explanations for the divergence with the iTraxx index

In our view there are a number of explanations for the divergence that are more plausible than the conclusions drawn by the AER. In particular:

- We understand that during the Global Financial Crisis (GFC), portfolio managers viewed the CDS market as a more cost-effective way of reducing credit exposure compared to trying to sell corporate bonds. Hedging pressure in the CDS market explains the rapid rise in the iTraxx index between December 2007 and April 2009, and the equally sharp fall thereafter. It also explains why the initial rise in the iTraxx index was not matched by a similar increase in debt risk premiums on corporate bonds.

- Part of the yield margin between corporate and risk-free interest rates reflects compensation for the lower liquidity associated with corporate bonds. The high debt risk premiums relative to the iTraxx index since April 2009 most likely reflect a higher liquidity premium required by investors for holding corporate bonds since the peak of the GFC.

In addition to explaining the divergence with the iTraxx, the above points are consistent with the observed positive relationship between the debt risk premiums from the Bloomberg Fair Value Curve and the bond portfolio.

The data presented in this section does not support the AER's conclusion that the divergence between the iTraxx index and the Bloomberg Fair Value Curve reflects a problem with the latter. The debt risk premium reflects compensation for risks other than default risk (such as liquidity), and this is common to debt risk premiums estimated using historical bond yields and the Bloomberg Fair Value Curves.

3.7.5 Caltex 7 year bond issue

On 18 November 2011, Caltex (rated BBB+ by Standard and Poor's) announced a 7 year $150 million bond maturing on 23 November 2018, with a fixed semi-annual coupon of 7.25 per cent. Bloomberg indicates that the issue price was 99.959. On an annualised basis, the issue yield on the Caltex bond is around 7.38 per cent.

At around the same time, the Bloomberg BBB rated 7 year Fair Value Curve was yielding 7.22 per cent or 7.35 per cent on an annualised basis. This suggests that in this instance the Bloomberg BBB rated Fair Value Curve has performed well as an indicator of the fair price of the Caltex bond. Indeed, given that Caltex is rated BBB+ and its issue was priced at a yield above the Bloomberg Fair Value Curve, using this observation only the Bloomberg Fair Value Curve has underestimated the cost of issuing corporate debt.

While acknowledging that this is a single issue, the Caltex data directly contradicts the AER's claim that '*the Bloomberg 7 year BBB rated FVC… does not currently reflect the available market evidence for long dated bonds*'.[63]

3.7.6 Recent changes to the BBB rated Fair Value Curve

Since Bloomberg's letter to the AER on 28 October 2011, the number of securities used in the Bloomberg BBB rated Fair Value Curve has increased from nine to thirteen at the time of our analysis in section 3.6.5 and has subsequently increased to fourteen.

Bloomberg does not keep records of the historical composition of its fair value curuves. However, the increase in the term to maturity of bonds in the BBB rated Fair Value Curve is illustrated by comparing the current curve to October 2010:

[63] Powerlink draft determination, page 218

TABLE 19: COMPOSITION OF THE BLOOMBERG BBB RATED FAIR VALUE CURVE (6 DECEMBER 2011)

October 2010		6 December 2011	
Issuer	*Term to maturity (in years)*	*Issuer*	*Term to maturity (in years)*
CWNAU	0.52	WESAU	0.63
TCLAU	0.88	HOLNVX	0.67
ORGAU	0.94	CHINLP	0.94
TAHAU	0.96	TCLAU	2.29
HOLNVX	1.78	WESAU	2.76
CHINLP	2.06	MGRAU	3.27
GPTAU	2.82	MAPAU	3.58
TCLAU	3.41	GAIF	4.45
WESAU	3.88	MGRAU	4.78
MAPAU	4.61	WESAU	4.91
DUEAU	4.93	DXSAU	5.37
		MAPAU	6.58
		AAPAU	8.63
Average	2.44		3.76

Note: the sample of bonds in the Bloomberg BBB rated Fair Value Curve has since changed.

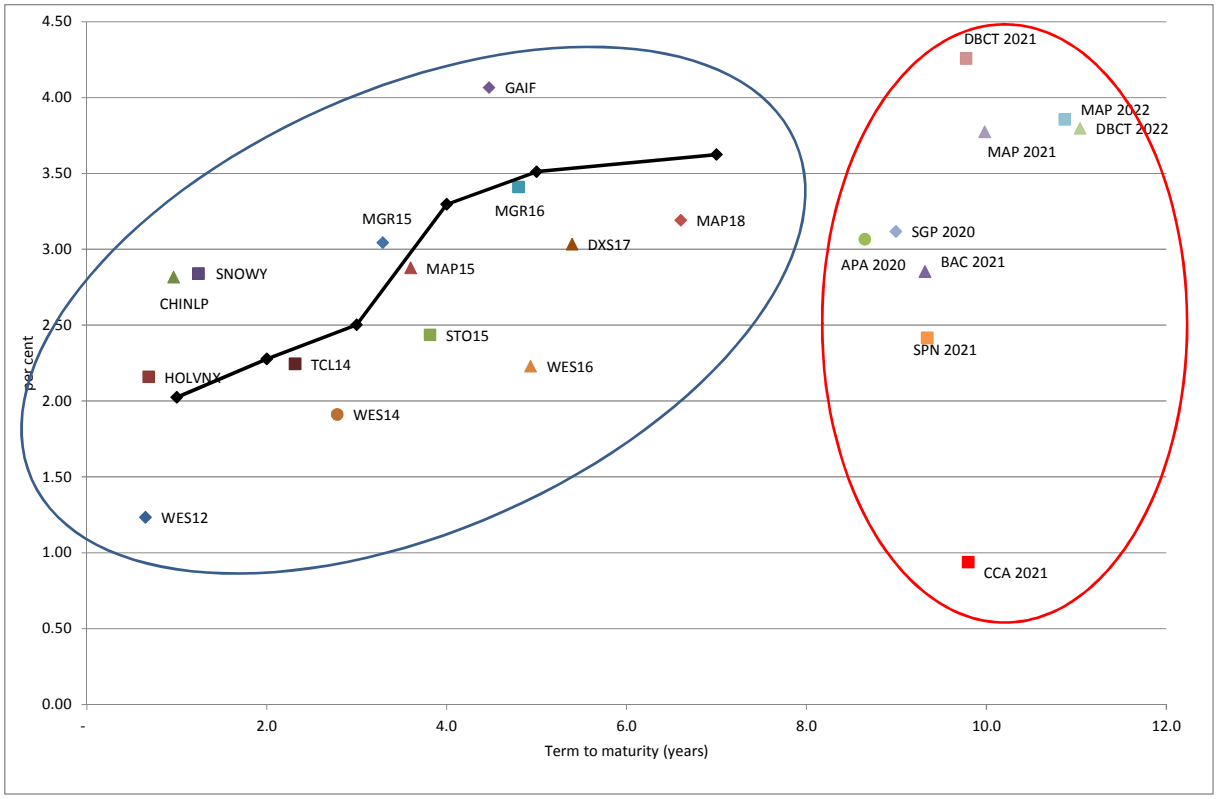
Compared to October 2010, there are now three bonds with terms of greater than five years, and the overall average term to maturity has increased to 3.76 years. The AER was satisfied in the Victorian final decision in October 2010 that the Bloomberg Fair Value Curve was reliable up to a term of seven years, even though it did not include any bonds with more than five years term to maturity. Based on the increasing number of longer term to maturity bonds in the sample, in our view the reliability of the Bloomberg Fair Value Curve at the seven year term has increased significantly, notwithstanding the recent removal of the APA Group bond.

3.7.7 Comparison of yields

The AER has included a chart showing the Bloomberg BBB rated Fair Value Curve compared to the yield data on its sample of bonds, from which it is inferred that the Fair Value Curve provides an excessive debt risk premium. In our view, the manner in which the chart is presented is misleading, in that it implies that the Bloomberg BBB rated Fair Value Curve is at odds with observed market data, when the analysis below suggests that the issue lies with the quality of data for the AER sample.
We have updated the AER's chart for data over the 40 day trading period to 9 December 2011, and included the securities in the Bloomberg sample[64]. In Chart 17 the Bloomberg BBB rated Fair Value Curve and its constituent bonds are circled in blue, while the AER sample of securities are circled in red:

[64] Only Bloomberg data has been used for the Bloomberg BBB rated Fair Value Curve securities to illustrate the fit between the curve and its constituent bonds, while for the AER sample both UBS and Bloomberg data has been used consistent with Table 9.

CHART 17: DEBT RISK PREMIUMS OF BLOOMBERG AND AER BOND SAMPLES



When the Bloomberg BBB rated Fair Value Curve is plotted together with the sample of bonds from which it is derived, in our view it appears to be a reasonable fit, with observations falling either side of the curve and a limited number of large outliers. One exception appears to be the Wesfarmers 2012, 2014 and 2016 bonds, which the market has apparently priced at a much tighter spread than the A- Standard & Poor's credit rating implies (these bonds are included in the BBB sample as their composite credit rating is BBB+).

When the AER sample is viewed in light of the Bloomberg bonds, the results appear quite anomalous. The Coca-Cola Amatil bond is clearly an outlier. The SPI Electricity & Gas 2021 bond is apparently priced at least 50 basis points lower than the bonds with maturities of four to seven years (with the exception of the Wesfarmers 2016 bond, as noted above), and appear to have a lower debt risk premium than China Light and Power and Snowy Hydro bonds maturing in around one year. The APA Group, Brisbane Airport and Stockland Trust bonds are apparently priced at the same debt risk premium as bonds with maturities of three to seven years. The reason for this may be that the margin to swap for APA Group and Brisbane Airport securities have not been updated in some time (see Chart 11). The yields on the floating rate notes appear to be in line with an extrapolation of the Bloomberg BBB rated Fair Value Curve, although as noted previously these margins have not been updated in at least eight months, therefore the similarity may be a coincidence.

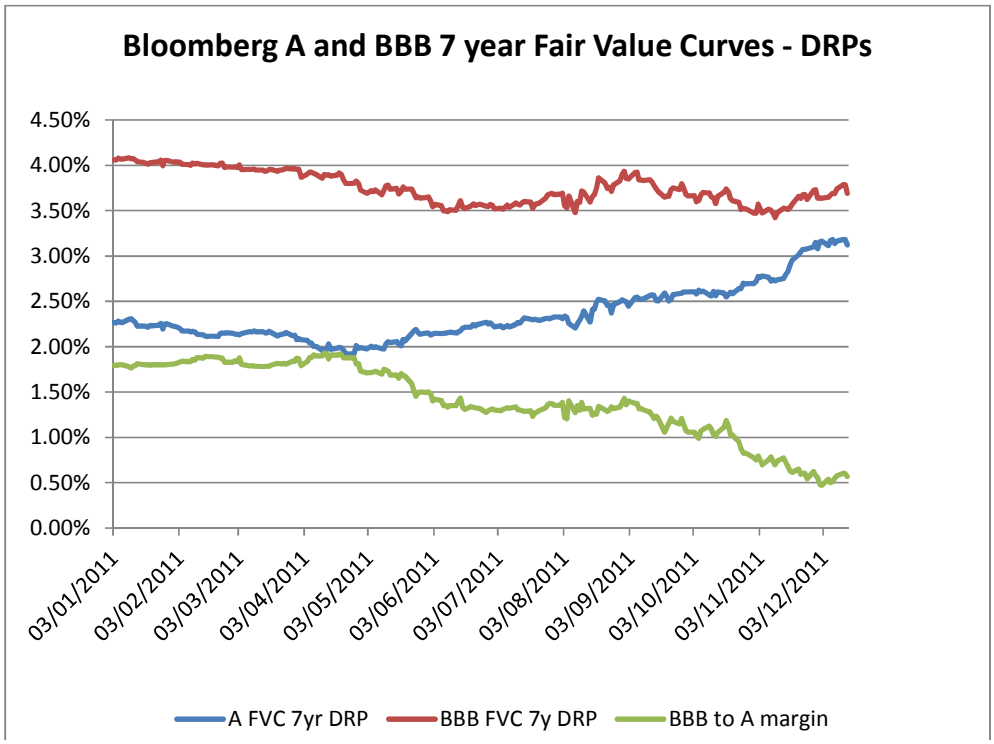
Having regard to the discussion in this report regarding the higher quality of the Bloomberg sample, it is clear that the apparent inconsistency in yields between the

two samples is because the yields on the AER's sample of bonds are understated, rather than the converse conclusion which the AER has attempted to prove.

Comparison with the Bloomberg A rated Fair Value Curve

Chart 18 shows the debt risk premiums for the Bloomberg BBB rated 7 year Fair Value Curve and Bloomberg A rated 7 year Fair Value Curve during 2011. The chart shows that the A rated 7 year Fair Value Curve has risen significantly this year, while the BBB rated 7 year Fair Value Curve has fallen slightly. As a result, the spread between these curves has narrowed considerably, to around 50 to 60 points, with most of the narrowing occurring since September 2011.

CHART 18: BLOOMBERG A AND BBB 7 YEAR DEBT RISK PREMIUMS



In the Australian corporate bond market the number of bonds and liquidity in those bonds increases with higher credit ratings, and as such the quality and reliability of fair value curve estimates should increase for higher rated bonds. The Bloomberg A rated Fair Value Curve includes (at the time of writing) 32 bonds, with two bonds of more than five years remaining term to maturity.[65]

The spread between the A rated and BBB rated Bloomberg Fair Value Curves in the first five months of 2011 appears to be quite high, and this may have been a contributing factor to the AER's conclusion that the Bloomberg BBB rated Fair Value Curve did not reflect market conditions[66]. In our view, the reliability of the Bloomberg BBB rated Fair Value Curve has improved in the recent months, and as shown in Chart 20 the results for the five year estimate are directly in line with the CNF survey data obtained by QTC (refer to section 4.3).

[65] These are the Telstra July 2020 bond SPI Electricity & Gas April 2021 bond, shown in Chart 2.
[66] AER Draft decision, pages 218 to 219

3.7.8 Findings on the use of Bloomberg

Our findings in relation to the AER's decision to exclude the use of Bloomberg BBB rated Fair Value Curve are as follows:

- Having reviewed the Bloomberg letter, we are of the view that its contents do not indicate that the Fair Value Curves are unsuited for the purpose of estimating the debt risk premium. The concessions in Bloomberg's letter regarding the quality of underlying data and the impact on the reliability of its estimates should be considered in light of the serious data quality issues affecting the bonds in the AER's sample. It is inappropriate for the AER to highlight Bloomberg's acknowledgement of the challenges of constructing a fair value curve in a thinly traded market, without recognising the limitations of its own approach, and making a fair assessment between the two.[67]
- While recognising that the AER is not bound to follow the previous approach of using fair value curves (either as a sole basis for estimation, or in combination with other sources), in light of its previous statements in support of Bloomberg's fair value curves, it has not provided sufficient justification to exclude the Bloomberg BBB rated Fair Value Curve. The AER has not adequately identified the deficiencies in the Bloomberg data which have arisen since the Victorian decision, when the use of the Bloomberg BBB rated Fair Value Curve was supported by a 'weight of evidence' in its favour.
- The AER's use of the divergence between the iTraxx index and the Bloomberg BBB rated Fair Value Curve as a basis for excluding the latter is unreasonable. The iTraxx index tracks the cost of insuring against counterparty default, which is only one of the elements which influences bond prices. Liquidity (or lack thereof) is a significant factor in corporate bond pricing, and there is ample evidence showing that this has had a significant impact on yields since 2008. A comparison of the Bloomberg BBB rated Fair Value Curve with a sample of representative bonds indicates that (unlike CDS spreads) debt risk premiums did not contract significantly following the global financial crisis.
- Contrary to the AER's conclusion from the Bloomberg letter that the Bloomberg BBB rated Fair Value Curve is not a good predictor of pricing, the recent Caltex issue provides support for the Bloomberg estimate. The yield on the BBB rated 7 year Caltex security was within 3 basis points of the Bloomberg BBB rated 7 year Fair Value Curve at the time of issue.
- The number of bonds included in the Bloomberg BBB rated Fair Value Curve has increased (even since the Bloomberg letter of 28 October 2011). Notably, the Bloomberg sample now includes bonds with longer terms to maturity, including at one point the APA Group bond which was used by the AER as a significant data source for the debt risk premiums in the recent Victorian distribution and gas access arrangement decisions. The AER was satisfied with the reasonableness of the Bloomberg BBB rated 7 year Fair Value Curve estimate in the Victorian decision, notwithstanding that the sample did not include any bonds with more than five years remaining term to maturity. The sample currently includes two bonds with more than five years term to maturity. It is our view that these recent

[67] The decision by Bloomberg to cease publication of its 8 and 10 year fair value curves, and the cessation of CBASpectrum data, does not appear to have alerted the AER to the data quality issues which must be considered in any attempt to estimate a long-term benchmark corporate bond yield.

changes should improve the Bloomberg BBB rated Fair Value Curve estimate at the 7 year term to maturity.

- A comparison of the yields on more liquid bonds in the Bloomberg sample suggests that the yields on the bonds in the AER's sample are lower than their true price (or, conversely, that the AER's sample is not reflective of the benchmark BBB+ rated Australian corporate bond).

In light of the data quality issues affecting most bonds in the AER sample, our specific concerns around the Coca-Cola Amatil and SPI Electricity & Gas bonds and the lack of any reasonable grounds to exclude the Bloomberg BBB rated Fair Value Curve, it is reasonable for this curve to be used as the primary basis for calculating the debt risk premium. In this regard, we also note:

- Bloomberg is a trusted provider of financial information which has considerable experience in constructing Fair Value Curves across a broad range of markets and types of securities.
- Bloomberg is independent to the regulatory process, and therefore its decisions in relation to the construction of its curve are not taken with any particular regulatory outcome in mind.
- Bloomberg's approach to calculating the BBB rated Fair Value Curve is likely to have been informed by an extensive period of testing and statistical analysis on this curve and others.
- The choice of securities by Bloomberg represents an explicit decision to use high quality pricing data to construct its curves, rather than create curves (such as an eight or ten year BBB curve) which are in its view based on inadequate quality data.
- The Bloomberg sample also has the benefit of being constructed as a curve across various maturity points, which is capable of being statistically tested against individual bond data, while the AER result is calculated as a simple average.

The use of the AER sample or a broader sample of bonds (as discussed in section 3.5.4) as a second method for estimating the debt risk premium could be considered, provided that the weighting given to the bond sample approach was reflective of its relative data quality and the other factors listed above which favour the use of Bloomberg as the primary method. Having regard to the poor data quality for the AER sample of bonds during the indicative averaging period, unless there was a significant improvement during the actual averaging period, we recommend that a low weighting should be given to the sample approach.

4 POWERLINK'S PROPOSED APPROACH

4.1 OVERVIEW OF POWERLINK'S PROPOSED APPROACH

Powerlink has calculated its proposed debt risk premium using the average of two Fair Value Curves calculated by Bloomberg, namely the BBB rated 7 year Fair Value Curve extrapolated to a term to maturity of ten years, and the BBB rated 5 year Fair Value Curve extrapolated to a term to maturity of ten years. The Bloomberg AAA rated Fair Value Curve was the last curve for which a ten year estimate was produced, and is therefore the most recent Bloomberg Fair Value Curve estimate for the increase in the debt risk premium for bonds with ten years term to maturity. As such, Powerlink has proposed that the last recorded spread between the AAA rated 5 and 10 year Fair Value Curves (72 basis points, or 14.4 basis points per annum) should be used to extrapolate the BBB rated 5 year Fair Value Curve. Similarly, it is proposed the last recorded spread between the AAA-rated 7 and 10 year Fair Value Curves (44 basis points, or 14.7 basis points per annum) should be used to extrapolate the BBB rated 7 year Fair Value Curve.

Powerlink calculated a debt risk premium of 434 basis points, based on an indicative averaging period of 40 business days from 7 February 2011 to 1 April 2011.

In this report, we refer to the increase in the debt risk premium as the term to maturity increases as the 'DRP term premium'.

4.2 OVERALL COMMENTS ON POWERLINK'S ORIGINAL REGULATORY SUBMISSION

We support the use of Bloomberg BBB rated Fair Value Curve as the basis for estimating the debt risk premium for the following reasons:

- Sole reliance on the AER's proposed sample approach does not provide a reliable estimate of the benchmark Australian corporate bond yield because the underlying data quality is poor
- The Bloomberg BBB rated Fair Value Curve continues to reflect the cost of debt for BBB rated issuers, based on survey data collected by QTC and the recent Caltex bond issue
- The AER's reasons to exclude the Bloomberg BBB rated Fair Value Curve, including inconsistency with broker reports and the iTraxx index, do not stand up to scrutiny, and
- There are various methods to extrapolate the Bloomberg BBB rated Fair Value Curve which are capable of providing a reasonable estimate of the benchmark ten year BBB+ rated Australian corporate bond.

4.3 COMPARISON WITH SURVEY DATA

QTC performs a quarterly survey of financial market participants as part of the administration of the CNF, to determine indicative credit margins on corporate borrowings with various tenors and credit ratings. Between three and six survey

participants are asked to provide indicative margins to the swap curve based on the following criteria:

- A minimum total annual borrowing program of A$1 billion
- Credit ratings ranging from AAA to BBB-
- Tenors ranging from 3 months to 10 years
- Exclude any margins for facility, underwriting or Commonwealth guarantees

QTC converts the swap margins to debt risk premiums by adding the appropriate margin between the swap and Commonwealth government yield curves.

In this regard, we note the comment of the Australian Competition Tribunal in *ActewAGL*, where the Tribunal noted:

> *'There are various ways to estimate the debt risk premium. Estimates based on historical averages are one of the most common proxies for the debt risk premium. Surveying market participants is another method and has the advantage of better reflecting prevailing market conditions.'*

We have used this survey data to test a number of elements of Powerlink's proposal to calculate the debt risk premium:

- The reliability of the Bloomberg BBB rated Fair Value Curve, tested at the five year point
- The average DRP term premium over time
- The 10 year debt risk premium implied by applying a DRP term premium to the Bloomberg BBB rated Fair Value Curve

The use of survey data provides a reasonableness check for the Bloomberg BBB rated Fair Value Curve, which the AER identified as being a deficiency in Powerlink's original submission.[68] The survey data confirms that the current results produced by the Bloomberg BBB rated Fair Value Curve are reasonable, although during the Global Financial Crisis the curve probably understated the debt risk premium, which has been recognised in previous reports.

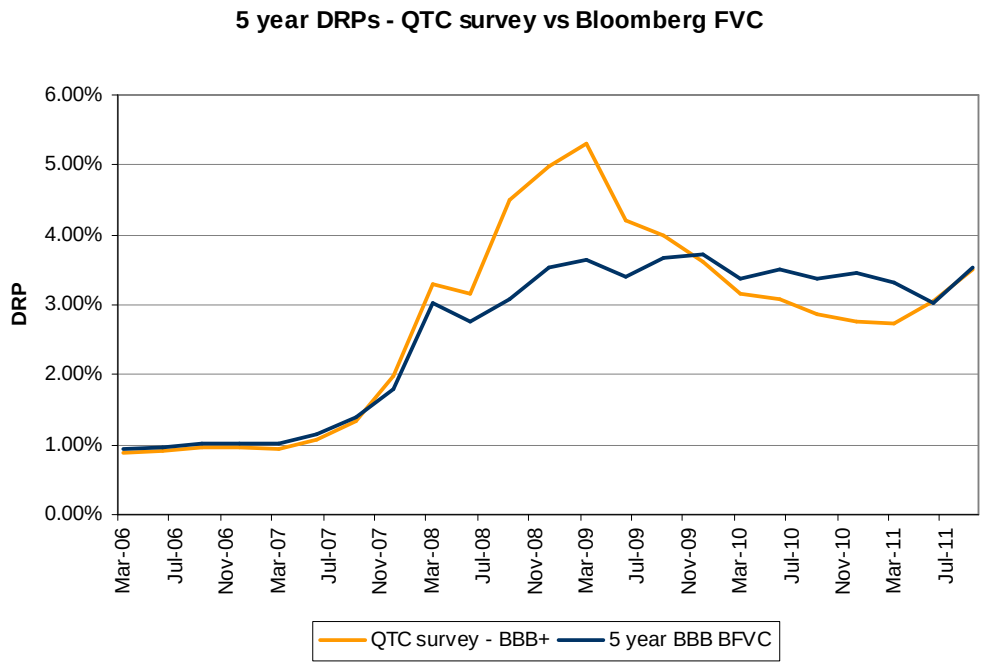
- We have shown the Bloomberg BBB rated Fair Value Curve against the BBB+ rated survey data, as this tends to show a closer fit than the BBB rated survey data. This is probably because the bonds in the Bloomberg BBB rated Fair Value Curve are typically at the higher end of that rating band, because in the Australian corporate bond market only higher quality issuers are capable of issuing longer term debt.

Analysis of the Bloomberg 5 year BBB rated Fair Value Curve

The following charts compare the average debt risk premium from the QTC survey with the debt risk premium on the Bloomberg Fair Value Curve. Both debt risk premium relate to a borrowing with a 5 year term to maturity:

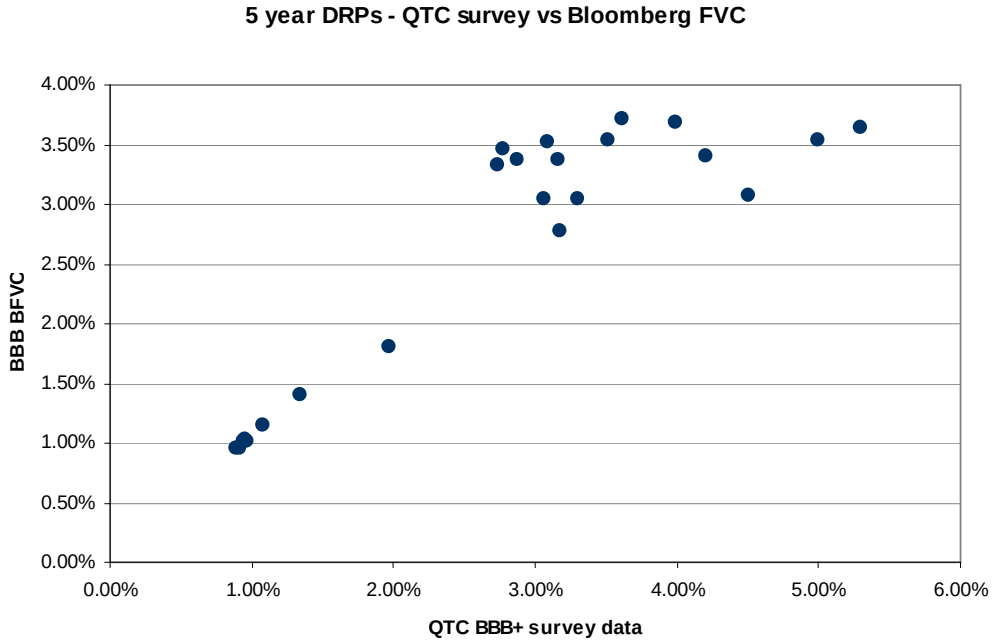
[68] AER Draft Decision, page 234

CHART 19: 5 YEAR DEBT RISK PREMIUMS SINCE 2006



The average 5 year BBB debt risk premium on the Bloomberg Fair Value Curve during the 40 day averaging period was 350 basis points. This estimate is in line with the most recent data from the QTC survey for 5 year BBB+ debt. Both estimates are higher than the AER's estimate of a ten year BBB+ debt risk premium.

CHART 20: CORRELATION OF FAIR VALUE CURVE AND SURVEY DATA



The average debt risk premium from the 5 year BBB rated Bloomberg Fair Value Curve during the 40 day averaging period was 347 basis points. This is very close to

the 351 basis point margin from 30 September 2011 QTC credit survey. Both debt risk premiums are higher than the AER's *10 year* BBB+ estimate of 319 basis points.

Over time, there is a strong positive relationship between the debt risk premiums, which suggests that the Bloomberg Fair Value Curve is producing reasonable estimates. The higher debt risk premiums from the credit survey during between 2008 and 2009 most likely reflects the heightened uncertainty around the pricing of credit at this time. To some extent, the Bloomberg Fair Value Curve debt risk premiums can be viewed as conservative as they tend to plateau around 350 basis points even when the survey data is indicating significantly higher debt risk premiums for 5 year debt.

4.4 EXTRAPOLATION METHODOLOGIES

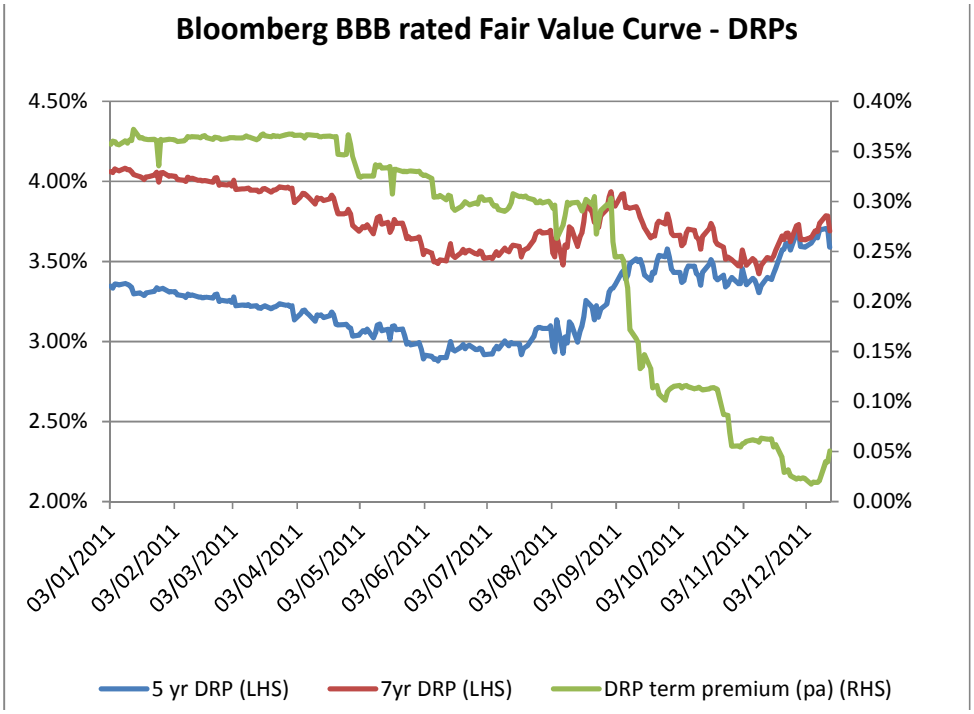
Using the Bloomberg BBB rated Fair Value Curve requires that a methodology is developed to estimate the DRP term premium which should be added to estimate a ten year result.

Powerlink's original submission considered a range of extrapolation techniques before settling on the use of the last available DRP term premium from the Bloomberg AAA rated Fair Value Curve. In its draft determination, the AER rejected the use of the Bloomberg AAA rated Fair Value Curve as an extrapolation technique because the last available data is from June 2010, and Powerlink had not provided support for the continued reliability of that data. The AER also noted that the spread between the 7 and 10 year Bloomberg AAA rated Fair Value Curve had been quite volatile over time, and more recently the spreads between points on the AAA and BBB rated Fair Value Curves have been quite volatile[69].

The chart below shows the debt risk premiums implied in the Bloobmerg BBB rated 5 and 7 year Fair Value Curve points over the past twelve months, and the DRP term premium. The DRP term premium has been quite volatile and has declined from around 35 basis points per annum to a low of 5 basis points per annum.

[69] AER draft determination, page 231 (Figure 5.3)

CHART 21: DEBT RISK PREMIUMS FOR BLOOMBERG BBB FVC



We note that Powerlink's consultant, PwC, did not select the straight line extrapolation of the 5 to 7 year Bloomberg Fair Value Curve to estimate the 10 year Australian benchmark corporate bond yield, and in light of the volatility shown in the chart above this is a sensible decision.

Estimation of the ten year debt risk premium also requires a choice of which points on the Bloomberg BBB rated Fair Value Curve should be used as the starting point for extrapolation. In the original proposal, PwC extrapolated from both the five and seven year points using the relevant increase in the Bloomberg AAA rated Fair Value Curve (ie, five to ten and seven to ten years respectively), taking an average of the two results. We recommend that the extrapolation techniques considered below are applied starting from the five year point on the Bloomberg BBB rated Fair Value Curve, because:

- this corresponds more closely with the terms to maturity of the paired bonds discussed below
- the CNF data is shown for five and ten years term to maturity, and
- the five year point on the Bloomberg BBB rated Fair Value curve may be a more reliable estimate given there are more bonds with around five years remaining term to maturity in the Bloomberg sample.

4.4.1 Extrapolation using paired bonds

An alternative methodology for estimating a 10 year debt risk premium from the Bloomberg BBB rated Fair Value Curve involves using the implied DRP term premium from a paired bond analysis.

This type of methodology was considered by PwC in section 3.3.4 of their report, which calculated an average DRP term premium of 16 basis points per annum. The

AER used the same sample of bonds to directly derive a calculation of the debt risk premium in table 5.8 of the draft determination. We do not agree with the AER's use of the paired bond data in this manner (ie, as a direct means of estimating a ten year debt risk premium), or with its conclusions that 'credit ratings are an imprecise indicator of DRPs' because of the range of estimates produced[70]. Of the 9 bond pairs in the sample in table 5.8, five involve bonds which have less than half a year to maturity, and we do not consider that reasonable information on longer term credit margins can be derived by comparing debt risk premiums for two very short-term bonds because this assumes that the debt risk premium is linear across all maturities. Further, the longer dated bonds in the pairs for CFS Property Trust (3.7 years), Transurban Finance (2.9 years) and Volkswagen (2.9 years) are much too short to be used to estimate a ten year debt risk premium, as the AER has done. It follows that the AER's conclusions following table 5.8 in its report (pages 236 and 237) are of limited usefulness.

In our view, the use of bond pairs to estimate the DRP term premium beyond the 5 year term to maturity is most likely to be effective if both bonds in the pair are medium to longer term maturities. The results provided from the Telstra, Australia Pacific Airport and Mirvac bond pairs are likely to be more reliable, and among these the Telstra bond pair is likely to provide the best indicator, given it involves 4 and 9 year bonds and Telstra debt securities are typically more liquid.

The use of pair bonds provides a reasonable approach to estimating the likely DRP term premium, provided:

- The underlying data for both bonds is of reasonable quality
- The shorter dated bond has at least four to five year term to maturity (ie, excluding very short dated securities)
- The longer dated bond has a maturity which approaches ten years, and
- There is a reasonable gap between the remaining term to maturity of two bonds (this is likely to follow from the above criteria).

Based on these considerations, we have estimated the DRP term premium using the following paired bonds:

TABLE 20: PAIRED BONDS

Issuer	*Maturity date*	*Credit rating*	*Term to maturity (years)*
Telstra	2 Aug 2016	A	5.0
Telstra	15 Jul 2020	A	8.9
Stockland Trust	18 Feb 2015	A-	3.5
Stockland Trust	25 Nov 2020	A-	9.3

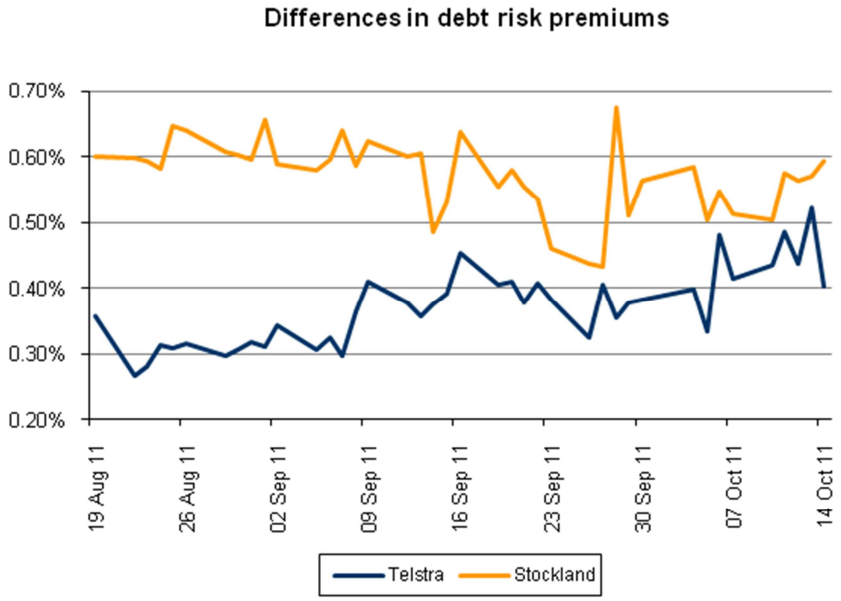
The difference between the terms to maturity for the Telstra and Stockland Trust pairs was 4.0 years and 5.8 years respectively at the start of the 40 day averaging period. We believe these bond pairs should be favoured over those used by the AER

[70] AER draft determination, page 236. The AER's conclusion is also in appropriate because it does not recognise that the -0.24 result for the Commonwealth Property Trust bonds is clearly an outlier, and otherwise the range is much narrow (2.31 per cent to 3.66 per cent).

where the maturity gap is much smaller and the term to maturity of the shorter bond is significantly less than 5 years.

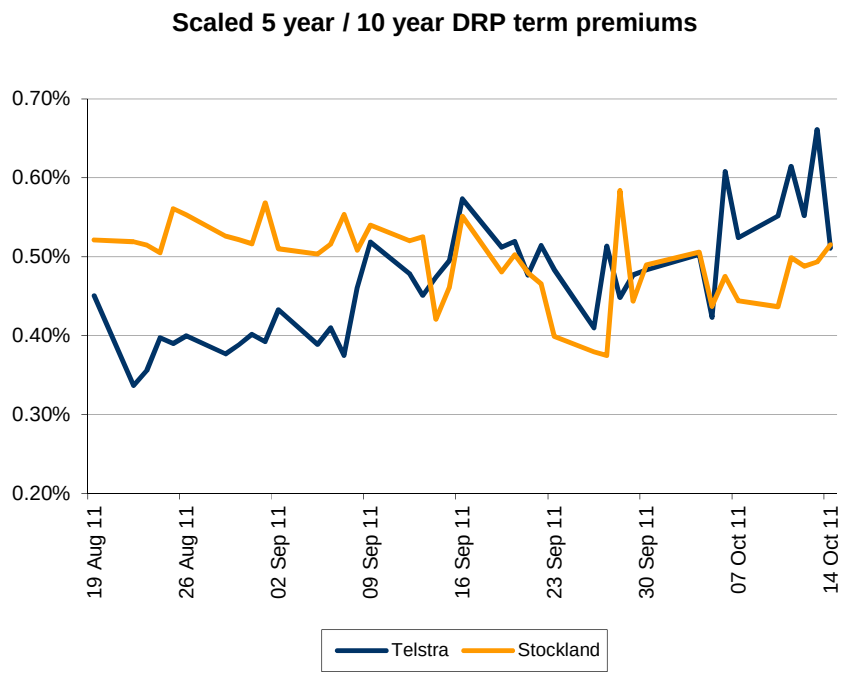
Over the 40 day averaging period the difference between the debt risk premiums on these two bond pairs was as follows:

CHART 22: UNADJUSTED DRP TERM PREMIUM



In order to estimate the DRP term premium between, five and ten years for example, it is necessary to scale the results to a standard five years. This is shown in the chart below:

CHART 23: IMPLIED 5 YEAR DRP TERM PREMIUMS



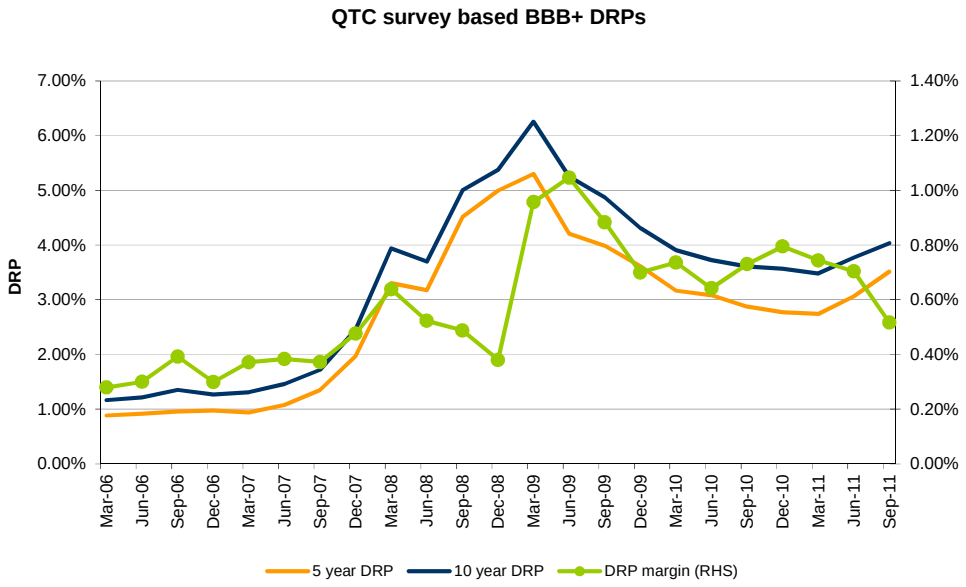
The chart shows that average DRP term premium was about 10 basis points per annum, which produces a DRP term premium of 50 basis points between the 5 and 10 year tenors.

Adding the term premium increase to the debt risk premium to the 5 year Bloomberg BBB rated Fair Value Curve debt risk premium produces a 10 year debt risk premium of approximately 400 basis points. We believe this estimate is conservative as the Telstra and Stockland bonds are rated A, and may have a lower DRP term premium compared to a BBB+ rated issuer. By way of comparison, the average margin in QTC's survey data between 5 and 10 year BBB+ debt risk premium since December 2009 (refer below) has been 70 basis points.

4.4.2 Analysis of the 5 to 10 year survey DRP term premium

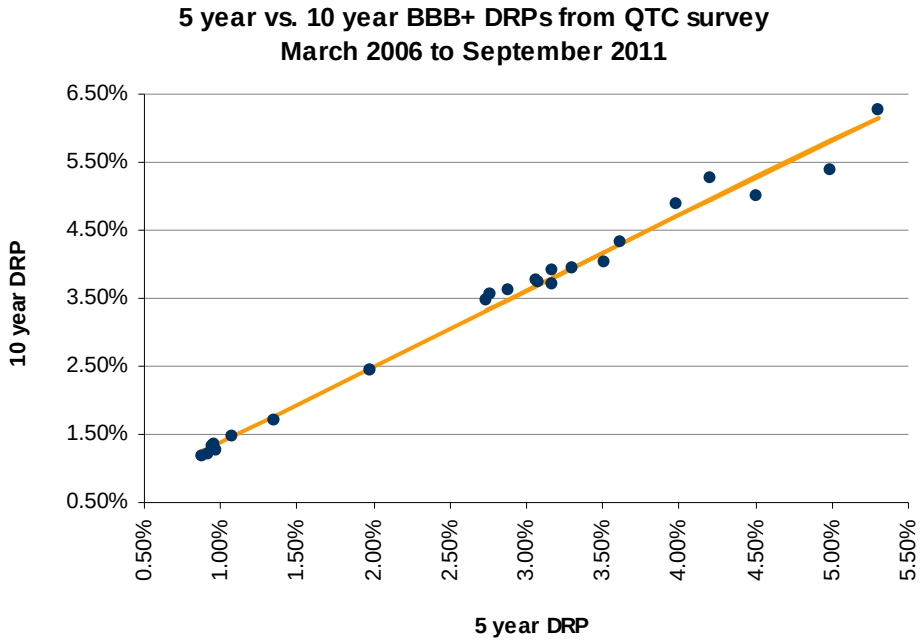
Chart 24 shows the 5 and 10 year BBB+ debt risk premiums from QTC's survey since 2006. The survey peaked during the Global Financial Crisis at over 6.00 per cent for 10 year debt, however it has since declined to around 3.50 per cent as markets improved during 2010 and the first half of 2011. With the recent deterioration in market conditions, the 10 year debt risk premium has increased to around 4.00 per cent, however the 5 year debt risk premium has increased more rapidly, which has narrowed the DRP term premium to around 50 basis points at 30 September 2011.

CHART 24: 5 AND 10 YEAR BBB+ DEBT RISK PREMIUMS



The average DRP term premium since March 2006 is 58 basis points. Since the end of 2008 the average DRP term premium is 77 basis points. Although the debt risk premiums have varied considerably over time, there is a strong linear relationship between the size of the debt risk premiums and the DRP term premiums at a given point in time:

CHART 25: 5 AND 10 YEAR SURVEY DEBT RISK PREMIUMS



The strength of this relationship makes the survey data useful for testing the extrapolation methodologies that can be used to estimate a 10 year debt risk premium from shorter-term data.

Prior to the latest survey, the DRP term premium had been around 60 to 80 basis points since December 2009, or around 12 to 16 basis points per annum. This is broadly consistent with the DRP term premium estimated in the paired bond analysis in the AER's table 5.8, and slightly higher than our analysis of Telstra and Stockland paired bonds, although this difference may be due to the higher rating of those bonds.

Extrapolation using QTC credit survey data

The strong linear relationship between the 5 and 10 year debt risk premiums from the credit survey can be used to check the reasonableness of the DRP term premium calculated using paired bonds.

We have used the quarterly survey data between March 2006 and September 2011 to estimate the following regression equation[71]:

$$10\ year\ DRP = 28 + 1.1087 \times 5\ year\ DRP$$

The average debt risk premium from the 5 year BBB rated Bloomberg Fair Value Curve during the AER's 40 day averaging period ended 14 October 2011 was 347 basis points. Using this figure in the above regression equation produces a 10 year debt risk premium of **413 basis points**, which implies a DRP term premium of 66 basis points, or 13 basis points per annum.

[71] The adjusted r-squared for the regression is 0.9884 and the t-statistics for the constant and slope coefficients are 3.8 and 43.3 respectively. The standard error of the regression is 17 basis points.

The DRP term premium from the most recent credit survey was slightly lower than the regression estimate at 52 basis points, or 10 basis points per annum. Adding this margin to the 5 year debt risk premium from the Bloomberg Fair Value Curve produces a 10 year debt risk premium of **399 basis points.**

Finally, the 10 year BBB+ debt risk premium from the 30 September 2011 QTC credit survey was **403 basis points**.

4.5 FINDINGS ON THE EXTRAPOLATED BLOOMBERG FAIR VALUE CURVE

Our findings in relation to the use of the extrapolated Bloomberg BBB rated Fair Value Curve are as follows:

- The analysis in the preceding section and the comparison with QTC's survey data indicates that the Bloomberg BBB rated Fair Value Curve is currently producing reliable estimates of the debt risk premium. This is confirmed by the recent data from QTC's CNF survey, which provides a close match for the Bloomberg BBB rated Fair Value Curve.
- There are a number of ways in which the DRP term premium can be estimated, and we recommend that a number of approaches are considered to overcome the volatility in individual estimates. We have estimated the DRP term premium using paired bonds and CNF survey data, which have produced similar estimates.
- The paired bond analysis and review of survey data which we have undertaken suggests that a DRP term premium in the order of 10 to 15 basis points per annum would be reasonable. A conservative estimate of 10 basis points per annum should be applied.
- Based on the average debt risk premium implied by the Bloomberg BBB rated 5 year Fair Value Curve over the 40 trading days ended 9 December 2011 of 353 basis points, and a DRP term premium of 10 basis points per annum, this approach produces a debt risk premium of 403 basis points.
- Given the higher quality of data underlying the Bloomberg BBB rated Fair Value Curve sample, the other factors listed in section 3.7.8 which support the use of the Bloomberg curve, and the closeness of this estimate to the CNF survey data, the results of this approach should be given a higher weighting in estimating the debt risk premium.

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