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Dr Duc Vo
Senior Analyst
Economic Regulation Authority
6th Floor
197 St. George's Terrace
Perth WA 6000

Dear Dr Vo

Response to Discussion Paper: Measuring the Debt Risk Premium: A Bond-Yield Approach

Goldfields Gas Transmission Pty Ltd ("GGT") welcomes the opportunity to comment on the Economic Regulation Authority's discussion paper *Measuring the Debt Risk Premium: A Bond-Yield Approach*. GGT owns and operates the Goldfields Gas Pipeline ("GGP"), which is regulated by the Authority.

In summary response to the discussion paper, GGT submits that:

- a change in approach to estimating the debt risk premium is not required;
- a change to the approach to estimating the debt risk premium is not appropriate; and
- were a change required and appropriate, the Authority's proposed approach is unlikely to better reflect the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair yield curves.

Is a change of approach required?

GGT acknowledges that there have been two changes in the data available to the regulator to perform its function of estimating the debt risk premium: CBA Spectrum ceasing to publish its data, and Bloomberg restricting the length of the BBB corporate fair value yields that it publishes.

It is clear that some minor adjustment to the approach is required, but it is not obvious that a wholesale change of approach is required. As discussed below and more fully in the attachment to this submission, the core independent data remains robust and available.

The supporting documents to the attachment incorporated on CDRom from the Australian Competition & Consumer Commission, Australian Energy Regulator and Australian Competition Tribunal are in the public domain. Other supporting documents on the CDRom may be subject to copyright and should not be considered to be in the public domain.

Bloomberg is a respected provider of this information to the financial marketplace. While we do not have visibility of the detailed proprietary process used by Bloomberg to prepare its fair value yields, we can rely on the fact that Bloomberg is a trusted provider of this information to participants in the world's most efficient market.

Bloomberg is independent – GGT considers that a benchmark developed by an independent provider, where one is available, will avoid concerns of perceived bias in developing the benchmark or related portfolio.

Importantly, Bloomberg is indifferent – it does not prepare its fair value yields for the purpose of regulatory rate setting and therefore has no vested interest in the outcome.

GGT submits that a change of approach is not required at this time. As discussed more fully in the attachment to this submission, continued reliance on the Bloomberg fair value yields, combined with extrapolation of the yield term from 7 to 10 years based on the difference between the 5 and 7 year BBB yields, remains the best option at this time.

In the longer term, it may be appropriate to investigate a change in approach to estimating the debt risk premium. While GGT recognises the urgency facing the Authority in finalising the access arrangements for the Western Australia Gas Networks and the Dampier to Bunbury Gas Pipeline, GGT submits that a wholesale change of approach is not required at this time.

GGT submits that a fundamental change to the assessment of a core parameter, part way through an investigation process, introduces a degree of regulatory uncertainty and risk that would require further compensation through the regulatory framework.

Is a change of approach appropriate?

As discussed above, Bloomberg is a recognised authority in this area. The Authority's proposed approach is not likely to better reflect the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair value yields. This indicates that the Authority is undertaking some considerable effort and expense, and significantly increasing the regulatory risk attributable to its regulated businesses, with no discernable benefit.

For the regulator to venture into an area outside of its core area of expertise to develop its own portfolio of bonds to create a benchmark is a change of approach that introduces a significant degree of regulatory uncertainty and risk that is not required under the circumstances.

Is the Authority's recommended change appropriate?

Developing a portfolio of bonds and estimating a yield curve from this data is not within the regulator's core area of expertise; it is a specialist task that requires specialist skills and expertise. Just as a regulator relies on external engineering advice in assessing technical engineering matters, it would be reasonable to expect the Authority to consult specialist expertise in analysing and developing a benchmark debt portfolio. GGT considers that Bloomberg is better placed to undertake this analysis due to its in-depth practical understanding of financial markets, both open trading and over the counter, and day to day exposure to these markets.

The need for this specialist expertise is evidenced by the Authority's proposed use of a simple average of bonds with a range of maturities to estimate the debt risk premium, in contrast to using the data to fit a yield curve to adequately reflect the term structure of interest rates. The regulator should not purport to undertake the construction and analysis of a benchmark debt portfolio when it has access to the services of a respected, independent, and indifferent service provider for whom this is a core part of its expertise.

The Authority's discussion paper establishes the hurdle to be used for assessment of its proposed approach:

Is the Authority's proposed approach of estimating the debt risk premium likely to *better reflect* the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair yield curves? [emphasis added]

This is a high hurdle indeed, given Bloomberg's respect in financial markets.

As developed more fully in the attachment to this submission, we have asked two key questions in the assessment of the Authority's approach:

- o Does the Authority's approach do anything that should not be done in preparing a benchmark cost of debt for assessing the debt risk premium?

Yes. As discussed in the attachment to this submission, the Authority's approach:

- o simply takes an average of the yields of bonds of different maturities, rather than constructing a yield curve to properly reflect the term structure of interest rates;
 - o includes bonds without adequate regard to their liquidity; and
 - o includes bonds without adequate regard to whether the bonds in the sample might be considered as outliers.
- o Does the Authority's approach fail to do anything that should be done in preparing a benchmark cost of debt for assessing the debt risk premium?

Yes. As developed more fully in the attached submission, while the full details of the approach that is currently used by Bloomberg to estimate its fair value curves is not known, we know that it uses sophisticated analysis and techniques. For example, as at 2007, we know that Bloomberg's development of its fair value yields included the following activities:

- o constructing a zero coupon yield curve (which reflects the fact that bonds will tend to have different coupon rates), using a piecewise linear function;
- o valuing any bonds with embedded interest rate options (such as callable or puttable bonds) using a lognormal interest rate model, which is also used for the yield curve model;
- o relying on an international team of experts to support the yield curve analysis; and
- o continuing to review the application of alternative models that could overcome the problems associated with using a piecewise linear function, such as a forward rate model.

Given Bloomberg's position in the marketplace, it is reasonable to presume that these sophisticated analysis techniques are reasonably necessary to be undertaken in order to develop a robust estimate of bond yields. None of this analysis is apparent in the Authority's approach.

This is not to say that an alternative or new approach could not be better than that adopted by Bloomberg, either now or in the future. GGT has reviewed the Authority's proposed approach to identify any benefits or advantages associated with the approach which would suggest that it is superior to Bloomberg and should be adopted. As noted above, GGT considers the Authority's approach to be overly simplistic and does not consider that it offers any advantage over the established Bloomberg estimates to suggest that it would better reflect the prevailing conditions in the market.

Having established that the Authority's proposed approach includes analysis activities which should not be undertaken in developing a benchmark debt risk premium, fails to undertake analysis activities which should be undertaken, and does not represent a superior, alternative approach to the task, GGT submits that the Authority's approach is *highly unlikely to better reflect* the prevailing conditions in the market for funds than the use of Bloomberg's current estimates of fair value yield curves.

Summary

GGT accepts that it would be preferable to have access to multiple data sources to support the analysis of such the debt risk premium, noting there is currently limited information available in the market on which to base estimates of this parameter. Until a new approach can be developed through a more fulsome analysis and consultation process, the Authority should retain the approach that delivers the least regulatory shock and uncertainty.

In the near term, GGT considers that the approach which delivers the most robust estimates with the least uncertainty and regulatory risk is to continue to use the Bloomberg fair value yields, extrapolating the 7 year yield to 10 years by adding the difference between the 5 and 7 year BBB yields.

In summary response to the Authority's specific questions:

Authority question	Summary response
1. Is the Authority's proposed approach of estimating the debt risk premium likely to better reflect the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair yield curves?	Bloomberg is a recognised authority in this area. Considering the identified deficiencies in the Authority's approach relative to Bloomberg's, the Authority's proposed approach is highly unlikely to better reflect the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair value yields.
2. Is the use of a benchmark sample of Australian corporate bonds with a term shorter than 10 years likely to better reflect the prevailing conditions in the market for funds than the use of Bloomberg's estimates of fair yield curves to derive a 10-year term?	Bloomberg is a recognised authority in this area. The Authority's proposed approach is not likely to better reflect the prevailing conditions in the market for funds than the use of Bloomberg's estimates of fair value yields to derive a 10-year term.
3. Is the Authority's proposed approach to the selection of Australian corporate bonds appropriate?	The Authority's approach, particularly the use of the APT bond, does not adequately reflect the need for liquidity in the market for the relevant bonds to appropriately estimate yields.
4. Which method for calculating the weighted average of observed yields from the sample should be used?	Observed yields of varying terms should not be averaged – rather, the data should be used to plot a yield curve to reflect the term structure of interest rates.
5. Are there any relevant sources of information that the Authority has not considered in this discussion paper with regard to estimating the debt risk premium?	For the purpose of the exercise consistent with the recommendations of this submission, the Authority has not omitted any relevant data sources.

In conclusion, we reiterate our key point that until such time as a superior approach to this issue emerges, it is inappropriate to adopt a hastily conceived change of approach to estimating the debt risk premium commensurate with prevailing conditions in the market for funds.

We would be pleased to discuss this matter further. Please feel free to contact Scott Young, Regulatory Manager on (02) 9275 0031 or scott.young@apa.com.au.

Yours faithfully



Steve Lewis
General Manager

Attachment: Synergies, *Response to the Authority's Discussion Paper - Measuring the Debt Risk Premium: A Bond-Yield Approach* with supporting document incorporated in the enclosed CDROM.



Response to the Authority's Discussion Paper

Measuring the Debt Risk Premium: A Bond-Yield Approach

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Synergies Economic Consulting Pty Ltd
www.synergies.com.au

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Introduction

Liquidity problems in the Australian corporate bond market have showed no clear signs of improvement following the commencement of the global financial crisis. This has presented particular challenges in a regulatory context, which requires the estimation of the expected cost of debt for a ten year maturity (and most commonly based on a BBB/BBB+ credit rating). In the case of businesses regulated under the National Gas Rules, for example, that cost of debt must:¹

...be commensurate with prevailing conditions in the market for funds and the risks involved in providing reference services.

The Economic Regulation Authority (the Authority) has released a discussion paper entitled "Measuring the Debt Risk Premium: A Bond Yield Approach" (the Discussion Paper). The purpose of this submission is to respond to the questions posed by the Discussion Paper, which are:

1. Is the Authority's proposed approach of estimating the debt risk premium likely to better reflect the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair yield curves?
2. Is the use of benchmark sample of Australian corporate bonds with a term shorter than ten years likely to better reflect the prevailing conditions in the market for funds than the use of Bloomberg's estimates of fair value yield curves to derive a ten year term?
3. Is the Authority's approach to the selection of Australian corporate bonds appropriate?
4. Which method of calculating the weighted average of observed yields from the sample should be used?
5. Are there any relevant sources of information that the Authority has not considered in this discussion paper with regard to estimating the debt risk premium?

Responses to these questions are provided below.

¹ Rule 87.

Question 1

Is the Authority's proposed approach of estimating the debt risk premium likely to better reflect the prevailing conditions in the market for funds than the use of current Bloomberg's estimates of fair yield curves?

The Authority is proposing to depart from referencing Bloomberg's fair value curves to estimate the debt risk premium. Instead, it is proposing to construct its own sample of bonds of varying terms to maturity and estimate the debt risk premium based on the yields on the bonds in this sample.

The key problem underpinning this review is the lack of market data available to estimate the debt risk premium – this generally applies for BBB rated debt (whether rated BBB-, BBB or BBB+) but is exacerbated the longer the term to maturity.

We do not agree that the Authority's proposed solution to the problem will better reflect the prevailing conditions in the market for funds compared to continued reliance on Bloomberg's fair value yields. In providing our reasons for this we will address:

- Bloomberg's selection process for its fair value sample;
- the importance of liquidity to price discovery;
- the need to exclude outliers;
- the extent to which placing any material weight on the bond issued by the Australian Pipeline Trust (APT) in determining a cost of debt for Goldfields Gas Transmission is inconsistent with the application of a benchmark approach.

Bloomberg's selection process for its fair value sample

In supporting its proposed departure from Bloomberg's fair value curves the Authority observes the difference between the Bloomberg seven year BBB fair value yield and the observed yields for individual BBB and BBB+ corporate bonds (Figure 2 in the Discussion Paper). However, it does not consider the liquidity (or any other) characteristics of these bonds. One of the bonds in the Authority's sample, being APT's ten year issue, has also been referenced by the Australian Energy Regulator (AER). In its most recent decision² the AER determined that it would base the debt

² Australian Energy Regulator (2010). Final Decision: Victorian Electricity Distribution Network Service Providers, Distribution Determination 2011-2015, October.

margin on the yield on this bond (25% weight) and its estimate of the Bloomberg ten year fair value yield (75% weight).

The detailed methodology that Bloomberg currently applies to construct its fair value curves from the limited market data is not known. However, we do know something about how it selects the bonds to include in its sample.

Bloomberg generates Australian Bloomberg Fair Value (BFV) curves for both sovereign and some credit rated sectors of differing maturities. The BFV curves are used to generate Bloomberg Fair Values for bonds in the different sectors. For example, Bloomberg currently derives a BFV seven year BBB curve and this can be used to estimate BFV prices for BBB rated bonds of similar maturity. Similarly the BFV seven year BBB curve indicates the current cost of debt for BBB rated firms seeking funds from the debt market. The sample includes all BBB rated bonds (that is, it includes our assumed notional credit rating of BBB+).

Only selective bonds are included in the estimation of the BFV curve to ensure that the curve is reliable. For the bond to be included in the estimation, the bond must be 'well priced'³. To be well-priced, the bond must be liquid to ensure that the price is reliable.

Prices generally can be either indicative, executable or traded prices⁴:

- Indicative prices comprise approximately 90% of all of the bond prices that are available on the Bloomberg bond database. Indicative prices are provided by bond market participants called market makers. Market makers have no obligation to execute trades at indicative prices so it is therefore not unusual to see indicative prices being very different from actual market/traded prices.
- Executable prices are available only for bonds traded on some electronic trading systems. Most bonds are traded over-the-counter (OTC) and in this market counterparties deal directly with each other as opposed to via an exchange in the exchange traded market. As a result of this there is a lack of quality executable prices being reported.
- Traded prices are which trades have been executed and will not include OTC trades.

In the estimation of the BFV curve, Bloomberg collects various prices, including indicative prices and executable prices for bonds that have a good liquidity. Bloomberg

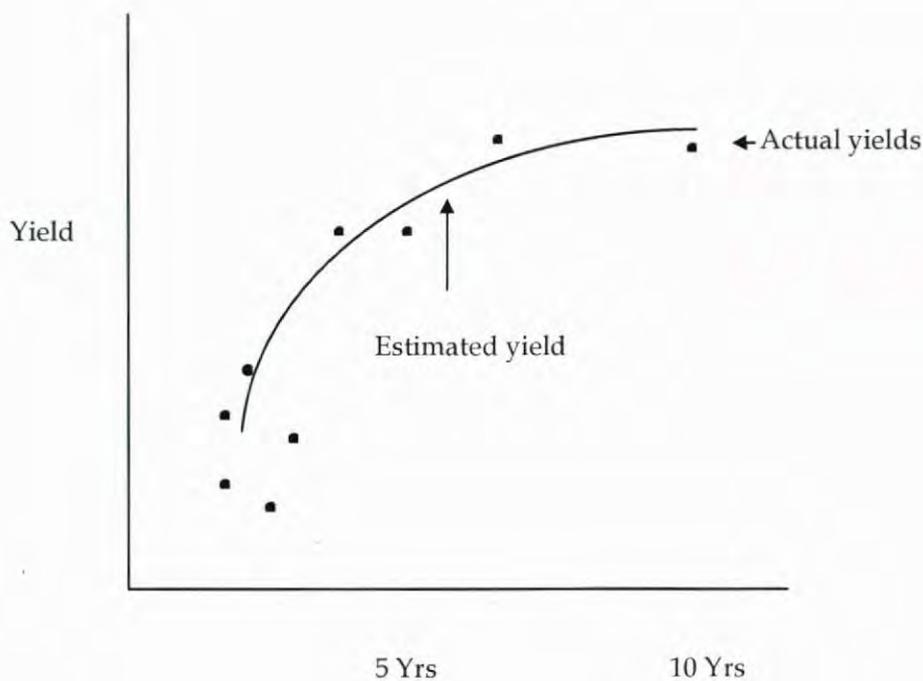
³ Lee, M. (2007). Fixed Income Specialist, Bloomberg LP, 'Bloomberg Fair Value Market Curves' International Bond Market Conference 2007, Taipei.

⁴ Lee, M. (2007).

excludes those bonds that are considered to be outliers, that is, have prices that are significantly higher or lower than comparable bonds.

To estimate the representative yield Bloomberg relies on actual reliable observations for a given rating and for a given time to maturity. As depicted in Figure 1, Bloomberg then fits a line to the data points to estimate the yield curve. In doing so, Bloomberg's estimation technique minimises the sum of squared deviations between actual observations and estimates of fair yields.⁵

Figure 1 Estimating yields



The Authority wants to construct a “broader sample of bonds with varying terms for deriving the debt risk premium.”⁶ It also states that “any measure that relies on a small sample of data points will be less reliable than one based on a larger sample.”⁷ We

⁵ NERA (2005). Critique of Available Estimates of the Credit Spread on Corporate Bonds: A Report for the Energy Networks Association, May.

⁶ Economic Regulation Authority (2010). Discussion Paper: Measuring the Debt Risk Premium: A Bond Yield Approach, 1 December, p.7.

⁷ Economic Regulation Authority (2010). p.9.

agree that a larger sample is preferable to a smaller sample, provided the data we are including in that sample is relevant and reliable. If the data is not relevant and/or there are questions regarding its reliability, we do not consider that it is valid to say that the smaller sample "will be less reliable". There is no reason why Bloomberg would not similarly seek to maximise the number of bonds it includes in its sample, provided that data was seen to be reliable.

The importance of liquidity to price discovery

Price discovery is one of the most important functions of any exchange (or organised marketplace, such as the bond market). The most reliable prices in any market are derived from those which emerge when the greatest concentration of trading takes place. There is a direct and strong relationship between number of trades and reliable prices. Importantly if there is little concentration of trading, as in a thin market, prices are not reliable as they do not accurately reflect supply and demand at the time. Even though prices are transparent and are known instantaneously, there is little confidence that the resultant price is one that would be negotiated in an open and unrestricted market between knowledgeable, willing and informed buyers and sellers acting at arm's length.

A necessary prerequisite for an efficient price discovery process is a market which is an efficient mechanism in pricing transactions. The ideal is a market in which prices provide accurate signals for resource allocation, that is, a market in which firms make production and investment decisions and investors choose among the securities that represent ownership of the firms' activities under the assumption that prices at any time "fully reflect" all available information. A market in which prices "fully reflect" all available information is called an "efficient market".⁸

An efficient market adjusts extremely quickly to new information so that that information is impounded into price virtually instantaneously in an unbiased manner. The rationale behind market efficiency is the existence of traders in the market who could profit from any slow market adjustment. If the market took a considerable time to adjust to a piece of information, then an opportunity would exist to buy or sell before the market adjustment was completed. If traders decided to take advantage of those opportunities, then their efforts to buy or sell would force prices up or down immediately. This would remove the slow market adjustment. The adjustment would occur as soon as the analysts perceived it to be slow. Thus, market efficiency is a result of competition among buyers and sellers.

⁸ See Fama, E. (1970). 'Efficient Capital Markets'. *Journal of Finance*. 25, pp. 383-417.

If there were few buyers and sellers operating in the market then the market would not be efficient. The resultant price would not reflect all available information.⁹ It would not be a price that would be negotiated in an open and unrestricted market between knowledgeable, willing and informed buyers and sellers acting at arm's length.

In summary, an efficient price discovery process is required so that prices are reliable and they do accurately reflect supply and demand at the time. Conditions at a point in time are reflected in price. In an efficient market, prices would reflect a change in market conditions. This is not the case in an inefficient market. In an inefficient market, prices do not reflect available information or current conditions. The inefficient prices cannot be validly analysed to examine factors affecting either supply or demand.

Price discovery involves the process of buyers and sellers arriving at a transaction price for a given quality and quantity of a product at a given time and place. It involves several interrelated concepts, among them:

- market structure (number of participants in the market, size of the market, location of the market, and the competitiveness of buyers and sellers in the market);
- market behaviour (buyer procurement and pricing methods);
- market information and price reporting (amount, timeliness, and reliability of information); and
- markets for risk management instruments and alternatives.

The variation in reported prices (week-to-week or daily), both above and below the market price level results from many factors directly affecting price discovery. A major contributing factor is the frequency of trading in the market. In a situation where there is only a small amount of trading as in the case of a thin market¹⁰, 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. The transacted price would not be the same as one that would be negotiated in an open and unrestricted market between a knowledgeable and willing but not anxious buyer and a knowledgeable and willing but not anxious seller acting at arm's length.

⁹ In the sharemarket the price would be said to be over or under valuing the company.

¹⁰ The market for the supply of gas from Santos Limited to Xstrata Queensland Limited would be considered to be a thin market.

There is a plethora of empirical evidence investigating and reporting the effects of thin trading in markets.¹¹ 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.¹² 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.

A study by Biais et al looks at indicative prices posted at the pre-opening session on the Paris Bourse.¹³ It shows that prices posted during the first part of that period are pure noise. As the market opening time gets closer (that is, as we get closer to the time actual trades can be executed), "the evidence is consistent with an increase in the information content and informational efficiency of the indicative prices."¹⁴

The consequence of this is that an analysis of observed prices to determine a material change in price could result a correct conclusion only by chance. Prices in thin markets are distorted and do not reflect all information pertaining to price.

Illiquid bonds therefore cannot be validly used as an indicator of the DRP for a ten year BBB yield. In order to provide relevant and current information regarding lenders' expectations of future returns (in this case, the expected cost of debt), there needs to be sufficient turnover. If there is a lack of turnover the information that is reflected in the latest observed yield is likely to be stale and not reflective of current market conditions.

Exclusion of outliers: the APT bond

In theory, and prior to any analysis, an instrument such as the APT ten year bond appears a highly desirable bond to include in the sample because it is the only ten year

¹¹ See Banz, R. (1981). 'The Relationship between Return and Market Value of Common Stock', *Journal of Financial Economics*, 19, pp. 41-44; Beedles, W., Dodd, P. and Officer, R. (1988). 'Regularities in Australian Share Returns', *Australian Journal of Management*, pp. 1-29; Reinganum, M. (1981a). 'Misspecification of Capital Asset Pricing: Empirical Anomalies Based on Earnings' Yields and Market Values', *Journal of Financial Economics*, 9, pp. 19-46.

¹² Barclay, M., Litzenberger, R. and Warner, J., (1990). 'Private Information, Trading Volume and Stock return Variances'. *Review of Financial Studies*, 3, 233-253.

¹³ Biais, B., Hillion, P. and Spatt, C., (1999). 'Price Discovery and Learning During the Preopening Period in the Paris Bourse'. *Journal of Political Economy*, 107, pp.1218-1248.

¹⁴ Biais, B., Hillion, P. and Spatt, C., (1999). p.1245.

BBB bond currently on issue. As noted above, the AER, for example, recently proposed to place a 25% weight on the yield on this bond and a 75% weight on Bloomberg's fair value yield.

As at the 31st of December 2010, Bloomberg did not use the APT bond in its estimation of the yield curve. The most likely reason for this is that the price of the APT bond is an indicative price and due to the lack of liquidity in the bond, the price is not considered to be a reliable price.

The APT bond was issued in Australia to thirteen institutional investors on 15th July 2010. The APA Group has advised that this debt has been purchased and held by these investors as part of a long-term 'buy and hold' strategy, presumably as the characteristics of the business meet their specific needs. To the extent that any trades have occurred, they would be on an over-the-counter basis. APA has informed Synergies that to its knowledge, there has been no subsequent trading in the bond.

The APT bond has not traded, nor is the quoted price an executable price. The price quoted by Bloomberg is an indicative price. As outlined above, market makers who provide these prices are not bound by them and it is not uncommon to see significant differences between indicative prices and traded (or market) prices. If markets are illiquid as is the case with the APT bond, it is not logical to expect that the indicative price is a reasonable approximation of a market price.

The APT bond issue is potentially unique. KangaNews recently awarded the issue the Australian Domestic Corporate Market Deal of the Year.¹⁵ The methodology that is used to determine the awards is cited as follows:¹⁶

Issuers, investors and intermediaries are invited to vote for the best houses, deals and intermediaries in the year, on a confidential basis. In 2010 over 100 market participants submitted their votes for the winners of the KangaNews awards. Because of the widescale input from genuine market participants, KangaNews is confident that its annual awards are the best and fairest recognition of excellence that exists in the Australasian debt markets.

It was also recently awarded Finance Asia's Best Local Bond Deal.¹⁷

This suggests that the deal was considered to be particularly innovative and unique (and the APA Group has advised that this is considered to be the case). In our opinion,

¹⁵ <http://www.kanganews.com/index.php/component/content/article/1555>, accessed 15 December 2010.

¹⁶ <http://www.kanganews.com/index.php/component/content/article/1555>, accessed 15 December 2010.

¹⁷ http://www.financeasia.com/News/241763_achievement-awards-2010---australia-and-nz-day-1.aspx?refresh=on, accessed 20 December 2010.

it could also mean that this deal could not be easily replicated by other Australian corporates (including the 'efficient benchmark firm') and indeed, even the APA Group, at least in the short to medium-term.

The other reason it could be difficult to replicate is the size and scope of the APA Group's balance sheet. The APA Group is funding an asset base of some \$5 billion in total. This is likely to well exceed the size of the 'efficient benchmark firm'.

The APT bond is therefore likely to be an outlier. Not relying on outliers to establish benchmark WACC parameters has also been addressed in relation to other parameters, such as the establishment of the benchmark notional credit rating. For example, in its 2004 decision in relation to the East Australian Pipeline Limited (EAPL), the Australian Competition Tribunal ruled that the Australian Competition and Consumer Commission should have excluded AGL's A credit rating when seeking to establish the notional credit rating for EAPL (the other three pipelines in the sample were rated BBB);¹⁸

If attention is directed to the chosen class, the only rational conclusion is that AGL was an 'outrider' out of line with the other members of the class and should properly be ignored. That conclusion is reinforced by the material which shows AGL to be of such a size and its business of such a nature as to be a poor proxy for a pipeline operator.

In conclusion, it is important to consider the extent to which any of the bonds that are to be included in a sample could be considered to be an outlier. The APT bond is an example of what may well be such an outlier, at least at the current time.

Benchmark versus actual cost of debt

GGT is in a relatively unique situation in that should the Authority choose to put any material weight on the APT bond when estimating the cost of debt to apply to the GGP, it is referencing the cost of debt of its majority owner, the APA Group. It is therefore referencing its actual cost of debt. The majority of Australian regulators, including the Authority, estimate the cost of debt based on the cost that would be incurred by the 'efficient benchmark' service provider. Reference is not made to the regulated firm's actual cost of funds.

The National Gas Rules specify that in setting the return on capital it will be assumed that the service provider "meets benchmark levels of efficiency" and "uses a financing

¹⁸ Australian Competition Tribunal (2004). Application by East Australian Pipeline Limited [2004] ACompT 8, para.66.

structure that meets benchmark standards".¹⁹ The National Electricity Rules prescribe that the cost of debt must be that of the "efficient benchmark" service provider.²⁰

In its 2008 Issues Paper released at the commencement of the development of its WACC Statements, the AER noted that:²¹

It is common regulatory practice for regulators to use a benchmark approach rather than business specific approach in estimating the WACC parameters, as this:

- is consistent with the general approach of incentive regulation (a view adopted by other regulators and generally accepted by the businesses)
- means that customers are less likely to bear the cost associated with inefficient decisions (e.g. financing structures), and
- improves the comparability of regulatory decisions.

It reiterated that position in the final decision regarding its WACC statements:²²

The regulatory regime should continue to provide symmetrical outcomes with respect to the benchmark cost of debt, with interest rate risk fairly compensated for via the equity beta. This approach is consistent with most aspects of an incentive-based regulatory regime, whereby the methodology for determining the cost of debt is a benchmark assumption against which incentives are created for a regulated business.

The key rationale provided by the AER is that the benchmark approach is consistent with the principles of incentive regulation. If the regulator references the firm's actual cost of debt, it could reward inefficient financing practices. Similarly, if a firm has put in place a particularly effective financing structure, basing the estimate on that cost of debt removes any benefit that would otherwise accrue to the firm. This in turn provides it with no incentive to implement more efficient strategies to reduce its cost of debt below the benchmark.

¹⁹ Rule 87.

²⁰ Rule 6.5.3(1).

²¹ Australian Energy Regulator (2008). Issues Paper. Review of the Weighted Average Cost of Capital (WACC) Parameters for Electricity Transmission and Distribution, August, p.14.

²² Australian Energy Regulator (2009). Electricity Transmission and Distribution Network Service Providers, Statement of the Revised WACC Parameters (Transmission), Statement of Regulatory Intent on the Revised WACC Parameters (Distribution), p.20.

If the Authority chose to place any material weight on the yield on the APA Group's own bond issue, it is removing any benefit that should accrue to the firm from pursuing more efficient financing arrangements. This in turn significantly dilutes any incentive for the business to implement more efficient strategies to achieve a lower cost of funds than the benchmark, which is one of the main principles underpinning incentive regulation. The AER has stated that the application of a benchmark approach is "consistent with the general approach of incentive regulation"²³.

Further, as outlined above, to the extent that this deal was seen as particularly innovative and unique, and difficult to replicate (not only because of the APA Group's size), it is not considered appropriate to use this to set the benchmark cost of funds. This will not provide any regulated business with an incentive to reduce its cost of funds below the benchmark if the benchmark itself is not practically achievable. That is, the deal appears to be more of an outlier than a benchmark. As outlined above, Bloomberg may also view the bond to be an outlier given it hasn't included it in the sample used to construct its fair value curve.

Why reliance should continue to be placed on Bloomberg's fair value curve

While the precise method Bloomberg currently uses to construct its fair value curves is not known (although we do know something about the methods it has used, as will be discussed further below), it is not appropriate to assume that its fair value estimates are somehow biased or erroneous, particularly if this is being based on comparisons against yields on bonds that are illiquid.

Bloomberg is a respected global data service that has specialist skills and expertise in capital markets. It also has access to sophisticated tools and resources that it would use in analysing market data and trends. The market for the provision of these types of services is estimated to be worth \$16 billion of which Bloomberg's share is approximately one third, with an estimated revenue of \$6.6 billion.²⁴

²³ Australian Energy Regulator (2008). p.14.

²⁴ Clifford, S. & Creswell, J. (2009). "At Bloomberg, Modest Strategy to Rule the World", New York Times, 14 November, <http://www.nytimes.com/2009/11/15/business/media/15bloom.html>, accessed 20 December 2010.

Box 1 Bloomberg's business

Bloomberg's core business is leasing terminals to 287,500 subscribers worldwide. Each terminal user has access to over 30,146 functions covering an enormous amount of both real time and historic data that is unparalleled in scope and depth. For example with regard to fixed income markets, the Bloomberg service has been providing for 29 years a coverage of central banks and agencies, credit analysis, mortgages, syndicated loans, credit default swaps and financial futures and related derivatives.

The terminal provides access to:

- 4.6 million fixed income securities including sovereign, corporate, and emerging market debt;
- 4,100 yield curves; and
- data on approximately 37,000 syndicated and institutional loans.

Data source: Clifford & J. Creswell (2009). "At Bloomberg, Modest Strategy to Rule the World", *New York Times*, 14 November, <http://www.nytimes.com/2009/11/15/business/media/15bloom.html>, accessed 20 December 2010.

Bloomberg is considered to be a leader in financial information across industries, and across the world. Importantly, the data is independent and Bloomberg has no specific agenda in constructing its fair value curves other than to interpret the current market data.

Bloomberg's purpose in constructing its fair value curves is to provide market participants with information regarding prevailing capital market prices. Its business depends on having a strong reputation for providing high quality information and related services to its clients. In order to deliver value-add to its customers, Bloomberg's data services synthesise all of the available information that individual market participants do not have the time and resources to access, process and interpret.

We are not of the view that there is any risk of bias in the methodology it uses, noting that the information is not specifically provided for regulatory purposes. On the other hand, attempting to develop an alternative methodology with a specific regulatory purpose in mind could introduce a risk of bias, albeit inadvertently.

In reviewing such methodologies in a regulatory context, stakeholders will often favour the approach that they consider best achieves their objectives at the time (be that a low or a high debt margin). This in turn could be misguided because the methodology that is seen to produce a high debt margin in one market environment could actually produce a low debt margin at another point in time. (The changing relativities observed between CBA Spectrum and Bloomberg estimates following the commencement of the global financial crisis illustrates this, with CBA Spectrum initially producing significantly higher estimates and then prior to cessation of its publication, was producing lower estimates than Bloomberg.)

Discarding Bloomberg's fair value yield curve in favour of constructing a broader sample of BBB bonds, particularly if no regard is given to the liquidity of those instruments or potential outliers, is not considered an appropriate way of estimating

the debt margin using limited market data. Indeed, we consider that given the significance of these issues and the potential complexities underpinning them, particularly following the commencement of the global financial crisis, 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.

Question 2

Is the use of benchmark sample of Australian corporate bonds with a term shorter than ten years likely to better reflect the prevailing conditions in the market for funds than the use of Bloomberg's estimates of fair value yield curves to derive a ten year term?

The wording of this question suggests that there may be some misunderstanding on the part of the Authority as to Bloomberg's methodology, as Bloomberg already references a sample comprising Australian corporate bonds of varying terms to maturity in constructing its fair value yield curves.

However, the Authority has also stated that it intends to depart from estimating a benchmark cost of debt for a ten year term to maturity. Instead, it proposes to estimate an 'average' cost of debt for an unspecified maturity (with that maturity depending on the maturities of the bonds in the sample at the time and the averaging method applied).

To the extent that this is the point of the Authority's question, we do not agree that it is appropriate to depart from the estimation of a ten year cost of debt. There are two issues we will address here. The first is the need to extrapolate Bloomberg's seven year fair value yield to derive a ten year estimate. The second is how this can currently be done, given some of the yields formerly referenced in regulatory determinations are no longer published by Bloomberg²⁵.

The need to extrapolate to a ten year term

Based on section 6.1 of the Discussion Paper, it is evident that one of the main reasons that the Authority considers that a ten year term to maturity is used to estimate the debt margin is for consistency with the other WACC parameters (in this section it considers the trade off between maintaining consistency with the other WACC parameters and maintaining 'market relevance'). While consistency with the other WACC parameters is a relevant and important consideration, the main reason that a ten year term to maturity is assumed is because investors are assessing their rate of return expectations based on a long-term, forward looking horizon. For an infrastructure owner delivering services from assets with long economic lives, it will seek to secure funding for as long as possible (recognising the difficulties in doing this at the current time).

²⁵ Most recently, this has been the cessation of publication of the seven and ten year AAA corporate fair value yields.

The most common yield curve shape observed in practice is upward sloping. This is because lenders typically require a higher yield to commit funds the longer the term to maturity because of the perceived increase in risk. For example, as at 30 November 2010 the 20 day average of the Bloomberg five year BBB yield was 8.56% while the seven year rate was 9.4%. The shorter term rate was 84 basis points below the longer term rate. While ten year fair value yields are not currently published by Bloomberg, based on the five and seven year yields there is no basis to assume that that yield curve would be flat beyond seven years.

As will be outlined below, a fundamentally important difference between the Authority's proposed approach and the way Bloomberg derives its fair value estimates is that Bloomberg is not using an averaging approach (or some other method) to come up with some 'aggregate' measure of the yield. Instead, it is using the data to construct a yield curve (that is, yields for varying terms to maturity, currently being to a maximum of seven years). This is quite a different approach to simply averaging the yields on instruments with different terms to maturity.

Recommended extrapolation method

Bloomberg ceased publishing ten year BBB yields in October 2007. Most recently, an approach that has been applied to estimate a ten year BBB yield has been to extrapolate seven year BBB yields by adding the margin between the seven and ten year AAA bond yields. This approach implies that the term structure from seven to ten years for BBB rated bonds is the same as for AAA rated bonds. This solution was only a short-term one as AAA rated corporate bonds ceased to exist when the Commonwealth government withdrew its temporary guarantee of bank debt.

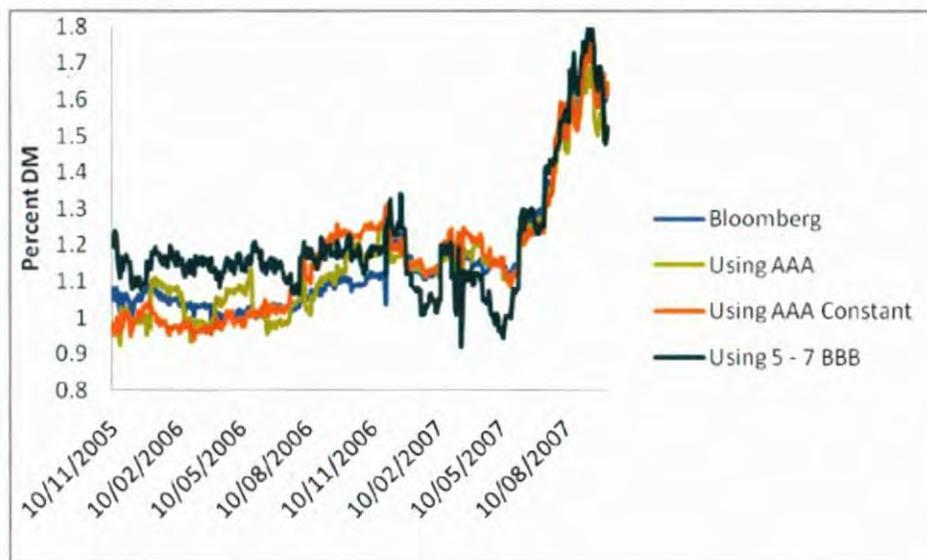
An alternative approach that uses timely information is to estimate a Bloomberg ten year BBB yield using the term structure for the five to seven year period for the same yield curve. This assumes that the slope of the yield curve from five to seven years is the same as for seven years to ten years.

Figure 2 illustrates the Bloomberg ten year BBB yield for the period November 2005 to October 2007, which is a two year continuous reporting period and contains the latest estimates of a ten year BBB yield provided by Bloomberg. Three other yields are also displayed being:

- using AAA – a ten year BBB yield estimated using the seven year BBB yield and adding the seven to ten year (corporate) AAA term structure;

- using a constant AAA slope - a ten year BBB yield estimated using the seven year AAA yield and adding the seven to ten year AAA term structure for the start of the period; and
- using five to seven year BBB - a ten year BBB yield estimated using the seven year BBB yield and extrapolating this using the five to seven year BBB term structure.

Figure 2 Debt Margins 2005 - 2007



Data source: Bloomberg

This illustrates that the three estimation methods are all approximations of the ten year BBB yield when it was estimated and reported by Bloomberg.

In the past, the approach that has been favoured by the AER in determining whether it will reference estimates produced by Bloomberg, CBA Spectrum or a combination of both, has been to examine the average squared difference between the estimate and the quoted ten year BBB yield²⁶. Using this approach, the following table ranks the results from applying the above three methods over the first three months and last three months of the period 2005 to 2007. Over the first three months, the best²⁷ estimate of the ten year BBB yield is the seven to ten year AAA yield. Over the last three months, the method that best estimates the ten year BBB yield is the extrapolation of the five to seven year BBB yield. It is obvious that the rankings change over time and they change for a variety of reasons.

²⁶ An approach similar to that used by the AER to determine preferred data providers

²⁷ The best estimate is using the AER criteria of minimising the sum of the squares.

Question 3

Is the Authority's approach to the selection of Australian corporate bonds appropriate?

As outlined above, we do not agree with the Authority's proposal to construct its own sample of corporate bonds. However, we will still make brief comment on the criteria it proposes to use to select those bonds.

The criteria it has proposed are:

1. have the same Standard and Poor's credit rating as the regulated businesses (BBB/BBB+)
2. be in the same industry (the regulated utility sector)
3. have a maturity of two years or longer to ensure that there are sufficient bonds in the sample for the analysis.

We agree that the first criterion is important.

We note that the Authority has proposed to not rely on the second criterion. We agree that this criterion is unnecessarily limiting and we question whether there will ever be sufficient depth and liquidity in the BBB corporate bond market to limit the sample to the regulated utility sector.

The third criterion is problematic as two years is materially shorter than the benchmark term to maturity, which is ten years. We agree that exclusion of these bonds would limit the sample size, at least at the current time. As noted above, Bloomberg also references bonds with maturities that are materially shorter than the benchmark of ten years. However, we consider that the most appropriate approach to deal with this is Bloomberg's approach, which is to fit a yield curve to the data points (rather than using some form of averaging across the yields on bonds of different maturities). This is discussed further in response to question 4.

We also note the Authority's proposal to broaden the types of instruments referred to in the sample, that is, including floating rate bonds and bullet, callable and puttable bonds. While we agree that increasing the sample size is desirable from a statistical perspective, particular caution needs to be exercised in including instruments whose prices will be materially influenced by specific characteristics of those instruments (that are not characteristics of 'conventional' fixed rate debt). In particular, we do not endorse the inclusion of bullet, callable and puttable bonds as these features will

significantly influence the yield on these bonds relative to bonds that do not have these features, unless an appropriate adjustment is made to isolate and understand the impact of these specific characteristics on the bond yield.

If the Authority chooses to implement this preferred method, we consider that one additional and important criterion should be included, which is some form of liquidity test (the importance of liquidity was addressed in detail above). Ideally, any bonds included in the sample should have traded at or around the averaging period, noting that the fact that Bloomberg reports a yield does not necessarily mean that the bond has traded (as outlined above, up to 90% of these prices can be indicative, including prices of bonds in its fair value sample).

Question 4

Which method of calculating the weighted average of observed yields from the sample should be used?

As outlined above, Bloomberg derives its fair value yield curves by fitting a curve to the various data points, being yields on bonds of differing terms to maturity. This is quite a different process to calculating some form of average of these data points.

Once the yield curve is constructed, it can be used to observe the estimated fair value yield on a BBB bond for any maturity up to (currently) seven years. In contrast, the Authority's approach results in a single estimated yield for BBB bonds across the entire maturity spectrum, with that yield reflecting an 'average' term to maturity depending on the maturities of the bonds in the sample at the time and the averaging method applied.

The term structure of interest rates

The task faced by the Authority is to estimate the current ten year yield on a BBB bond using yields on other BBB bonds of varying maturities. Fundamental to this analysis is understanding the relationship between yield and term to maturity. This is referred to as the term structure of interest rates. A yield curve plots the yields on bonds with the same credit quality but different term to maturity:²⁸

By incorporating the expectations of diverse participants in the marketplace, the shape of the yield curve succinctly captures and summarises the cost of credit for loans of various maturities.

Yield curves are constructed using some form of mathematical approach, such as exponential spline fitting²⁹ or linear programming. Noting that different techniques may be applied, constructing a yield curve based on the term structure of interest rates is the standard approach used in financial markets.

We do not know the precise method that Bloomberg applies to construct its yield curves. However, based on a conference paper delivered in 2007, we know that at least at that time, it had regard to the following:³⁰

²⁸ Sundaresan, S. (2002). *Fixed Income Markets and Their Derivatives*, 2nd edition, South-Western, p.202.

²⁹ For example, refer: Vasicek, O. & Fong, H. (1982). *Term Structure Modeling Using Exponential Splines*. *The Journal of Finance*, Vol.XXXVII No.2, May.

³⁰ Lee, M. (2007).

- it modelled a zero coupon curve, which removes the effect of the coupon (as the price of a bond will be influenced by its coupon rate);
- the interest rate model used in the yield curve modelling is a lognormal model³¹. It also uses this lognormal model to value embedded options such as callable and puttable features;
- it has used a piecewise linear model³² to construct its zero curves, and this method was selected due to its computational efficiency;
- one of the problems identified with this method was the possibility of generating an 'unstrippable' zero curve and negative implied forward rates. When Bloomberg encounters this problem its "team of curve experts in Princeton" performs a manual override;
- one possible solution to these identified problems is to use a forward rate model. The primary drawback of this model historically has been its computational efficiency. However, this was seen to be becoming a more viable option as computation speeds and power increase.

We do not know if Bloomberg still uses this approach or has since revised its approach, noting that the global financial crisis has emerged since this paper was delivered in 2007.

Implications

We do not intend to explore the pros and cons of alternative yield curve construction methodologies here. The key point that emerges from the preceding section is that in our opinion, the Authority's proposed approach of averaging the yields on bonds with different maturities oversimplifies the task.

We consider that in order to meaningfully interpret the yields on BBB bonds with different maturities, the approach of constructing a yield curve - or fitting a line to the data points - is the most appropriate method to apply (refer Figure 1). Yield curve construction requires the application of an appropriate mathematical approach. It can be computationally demanding and hence requires access to appropriate resources and skills.

³¹ Used to model a distribution of random variables where the logarithm of the variables is normally distributed.

³² A piecewise linear curve breaks the curve into a separate set of slopes, based on a set of 'breakpoints' that are defined where the slope of the curve changes.

The yields on bonds of different maturities (including shorter maturities) are used to inform the position and slope of the yield curve. This is quite a different approach to 'combining' the yields on all of these instruments into a single aggregate yield measure. This is not considered a valid approach for this purpose, regardless of the method used to average the yields.

We do not know the precise method that Bloomberg currently uses to construct its yield curves. However, we recognise that it is a robust and independent data provider with specialist skills and resources in financial markets. We therefore consider it highly unlikely that the method that it uses to construct its curves is not a legitimate or reasonable approach.

More importantly, we are not of the opinion that the Authority's method would be a better approach. Other data sources or methodologies may be developed in the future which do provide a better alternative. However, we are of the opinion that the Authority's method as proposed in the Discussion Paper is not that alternative.

Question 5

Are there any relevant sources of information that the Authority has not considered in this discussion paper with regard to estimating the debt risk premium?

As outlined above, while there would be considerable benefits in widening the sample this can only be done by referring to instruments that provide information that is relevant to our purpose. For example, we do not agree that it is valid to include bonds with specific characteristics that could materially influence their yield relative to 'conventional' fixed rate bonds, in particular, bullet, callable and puttable bonds, unless an appropriate adjustment is made to isolate and understand the impact of these specific characteristics on the bond yield (as noted above, Bloomberg uses its lognormal interest rate model to value the embedded options in callable and puttable bonds).

We also agree with the Authority that data from other jurisdictions should not be used. For example, referencing the US market could be seen as one such possibility as it is a liquid and deep market. In reality, it is also a market that some Australian corporates will turn to in the absence of sufficiently liquidity here. However, not all firms will have the ability to access this market. It would also necessitate the conversion of the US yields to an Australian dollar cost of funds (via swap transactions), which is not necessarily easy to replicate.

More importantly, yields in the US will not necessarily be reflective of Australian market conditions (regardless of who is issuing the bonds in the US). For example, we have examined ten year BBB debt margins for:

- Bloomberg ten year BBB bonds (when they were reported);
- Bloomberg seven year BBB yields extrapolated to ten years (the Bloomberg seven year extrapolated margin); and
- US BBB ten year bonds.

The period of the analysis is from the July of 2004 until September 2009³³.

³³ In July 2004 Bloomberg was reporting ten year BBB yields. By September 2009, Bloomberg had ceased reporting ten year BBB yields for two years.

Figure 3 10 year BBB Margins: US and Australia



Data source: Bloomberg and Synergies analysis

It can be seen that prior to September 2007, when Bloomberg still reported ten year BBB yields in Australia, the US and Australian margins were similar. Using the AER's approach of calculating the average squared difference between margins and the reported yield, the 'best' estimate of the ten year BBB margin can be determined. The 'best' approach is the one with the average least squared difference. These differences are summarised in Table 2 and it can be seen that the Bloomberg seven year extrapolated margin has the least difference.

Table 2 Average Squared Differences

Approach	Difference
US Bonds	0.0278
Bloomberg seven year extrapolated	0.0171

Source: Bloomberg and Synergies

Over this time period the better predictor of the ten year margin was the Bloomberg seven year extrapolated margin. The margin calculated using US bonds is inferior.

Since the sub-prime crisis emerged in 2007, Australian and US margins have diverged. It appears that since then, the factors that are driving prices and margins in the US are different to those that affect Australian businesses raising funds in Australia. It is therefore not appropriate to reference this market to estimate an indicative cost of debt

for a firm raising funds in the domestic market. It could also be difficult for stakeholders to replicate the equivalent Australian dollar cost of funds.

The other consequence of referencing data from other jurisdictions is that this is more compatible with an International Capital Asset Pricing Model (ICAPM). The model applied by the Authority and other Australian regulators is a domestic CAPM. To the extent that other jurisdictions are recognised, it is only to the extent that foreign investors influence prices in the Australian domestic market.

If an ICAPM is to be applied, all of the parameters would need to be respecified on this basis. This is extremely difficult to do in practice (which is one of the reasons why it is not commonly applied, at least at the current time). If the Authority is to review the application of this approach, it would need to be done as part of a wider review of the WACC methodology and the estimation of each parameter. It may also necessitate examination of other markets.

Conclusion

Estimating a 'benchmark' ten year BBB debt margin is clearly a complex and difficult task, especially given the limitations in the available data. In our opinion, reliance on data published by an independent and reputable data provider with expertise in financial markets remains the best solution. It is also well positioned to deal with the problems posed by the market data.

We know that Bloomberg has regard to liquidity when determining whether to include a bond in its sample and it excludes what might be considered to be outliers. While increasing the size of the sample is desirable in theory, it will be of no benefit if the data cannot be used to reliably inform the estimation of an expected cost of debt that reflects prevailing market conditions. While we do not know the specific method that it currently uses, we consider that Bloomberg's approach of fitting a curve to the data points is superior to some form of averaging.