Use of the APT bond yield in establishing the NER cost of debt

A report for Victorian Distribution Businesses

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1. Introduction and summary

1.1. Introduction

1. My name is Tom Hird. I have a Ph.D. in economics, 19 years experience working as a professional economist and am an Honorary Fellow of the Faculty of Economics at Monash University. I am a founding Director of CEG's Australian operations and am named by Global Competition Review in its list of top individual competition economists. My curriculum vitae is attached to this report.

2. The Victorian electricity distribution businesses (Victorian DBs) have asked me to review the document "AER draft approach for measuring the debt risk premium for the Victorian Electricity Distribution Determinations" dated 27 September 2010 (the consultation paper).

3. The remainder of this report is set out as follows:

   - Section 2 describes the consultation paper's proposed methodology for estimating the NER cost of debt and provides a conceptual and empirical critique of the methodology and logic set out in the consultation paper;
   - Sections 3 to 5 provide a more detailed empirical analysis and description of the relevant data in each of the three separate averaging periods for the Victorian distribution businesses;
   - Section 6 examines the issue of how best to extrapolate a fair value yield from 7 to 10 years;
   - Section 7 concludes; and
   - Appendix A provides examines sensitivity of my conclusions to the assumption and data employed by me.

1.2. Key conclusions

4. The consultation paper proposes that under the National Electricity Rules, the BBB+ debt risk premium (DRP) at 10 years be estimated as a simple average of the Bloomberg BBB fair value estimate at 10 years (extrapolated from 7 to 10 years assuming no increase in the DRP) and the DRP associated with yield estimates for a recently issued BBB rated APT bond which had a maturity of 10 years at issue.

5. Corporate bonds exhibit a great variety of yields even for the same or similar credit rating and maturity (as can be seen in the figure below). The Bloomberg fair value estimates are published by Bloomberg as its estimate of the benchmark BBB cost of debt based on analysis of the yields on these manifold BBB and other rated bonds. Given this construction of the curve, *a priori* logic suggests that the Bloomberg fair value estimates are an appropriate candidate for an estimate of the benchmark BBB+ yield required under the NER. Naturally, it is appropriate to test this *a priori* view against the available data.

6. The APT bond is a single observation for a BBB bond and accounts for only around 1% of all Australian bonds with a credit rating of BBB to A- (ie, those credit ratings either side of and including BBB+). The APT bond has a maturity of around 10 years and is one of the few relevant bonds that does – but is not the only such bond. In my view, *a priori* logic would suggest that it is unlikely that the APT bond will be a good proxy for the NER cost of debt. It is possible that it could be a good proxy but, *a priori*, it would be unlikely (colloquially, it would be a 'fluke'). Naturally, it is appropriate to test this *a priori* view against the available data.

7. It follows that the consultation paper's proposal to give both the Bloomberg fair value estimate and the APT bond estimate equal weight is inappropriate in an *a priori* sense. That is, without any further investigation of the relevant bond market data it is unlikely to result in a reasonable estimate (although it may do so purely by chance).

8. The consultation paper does perform some empirical analysis of the reasonableness of its conclusion. It examines bonds with a maturity of greater than 7 years and, in so doing, arrives at a small sample of bonds. Based on this sample the consultation paper concludes:

> *While the AER has endeavoured to take in a wide variety of yield information on long dated bonds, this has still only produced a relatively small sample for comparison in this case."* (Page 6); and
>
> *"Given the relative placement of the two BBB bonds and Bloomberg fair values amongst bonds of other ratings in this comparison, it is difficult to make definitive conclusions about the appropriateness of either the APT bond or Bloomberg's estimates in setting the benchmark corporate bond rate."* (Page 7)
>
> *"In the context of this uncertainty, the AER considers it reasonable to average the yields implied by Bloomberg and from the APT bond when setting the DRP. In this situation, the AER considers that combining the yields from both data sources is more likely to produce an outcome that is consistent with the revenue and pricing principle in sections 7A(2) and (3) of the NEL than is simply taking yield data from either source."* (Page 7)

9. I characterise this logic as:

   - starting with an *a priori* assumption that both the Bloomberg estimate and the APT bond are equally good proxies for the NER benchmark;
   - testing whether this *a priori* assumption can be invalidated by a sample of bonds with greater than 7 years maturity;
   - concluding, based on that sample, that invalidation is not possible and that therefore both information sources should be given equal weight with the Bloomberg fair value estimate.

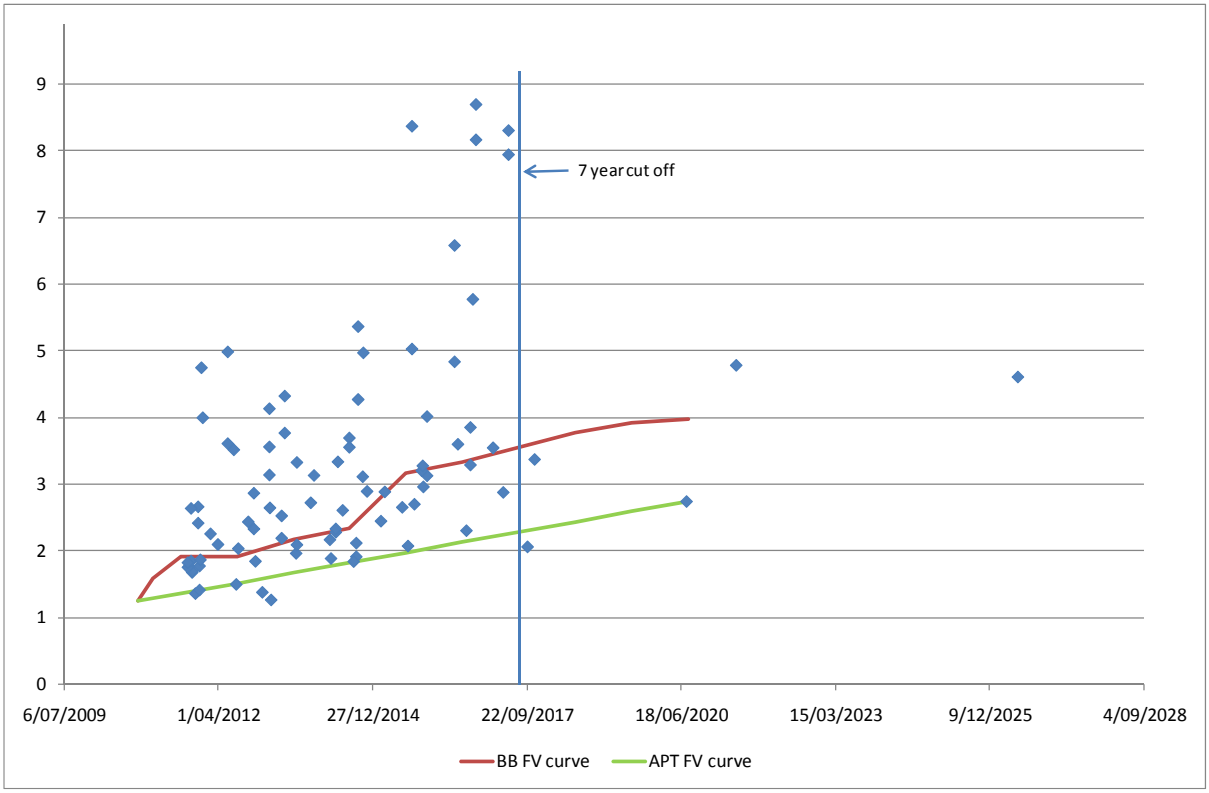
10. For the reasons described above I disagree with the first step in this logical chain. I therefore do not believe that the second step is valid. In statistical terms, the consultation paper starts with the wrong null hypothesis. The consultation paper asks "can my sample prove the APT bond is not representative" instead of the correct question which is "can my sample prove that the APT bond is representative". I consider that the answer to the correct question would have been "no".

11. Finally, it is my view that if the sample was not artificially constrained to exclude all bonds with maturities of less than 7 years on 1 August 2010 then it would have been possible to conclude definitively that the APT bond was not representative of its credit rating.

12. The figure below shows all of the bond yield data available for bonds rated between BBB- and A – with each bond a dot in the scatter graph. The period used is the Powercor/CitiPower/United Energy averaging period (2 to 27 August 2010). The beginning of this period corresponds with the beginning of the AER period used in deriving its sample (1 August to 21 September 2010). As can be seen, the cut off of seven years results in the great majority of the available data being excluded.[1]

[1] It is also the case that had the earlier Jemena Electricity Networks averaging period been used then many of the bonds immediately to the right of the vertical '7 Year' line would have been included in the sample.

Figure 1: BBB- to A rated bonds yields



Source: Bloomberg UBS and CBASpectrum, yields are averages of all available yield estimates for each bond. Powercor averaging period data used.

13. Also superimposed on this chart is the Bloomberg DRP fair value curve and a straight line that connects the bottom of the Bloomberg curve and the APT DRP estimate. I describe the latter as the "APT fair value curve".[2] It is striking that the APT fair value curve passes below the vast majority of the observations for DRP associated with all BBB to A- rated bonds – this is true at both short and long maturities.

14. I consider that this comparison is conservative in that it assumes the APT fair value curve has a materially flatter shape than the Bloomberg fair value curve. Had the implied APT fair value curve had the same shape as the Bloomberg fair value curve it would pass below all but one of the observations in the above figure. In my opinion, there is no reasonable shape to the APT fair value curve that would allow it both pass through the APT observation and fit the rest of the relevant bond market data.

15. On the basis of this and other analysis in the body of this report I do not believe that it is reasonable to maintain the position that the APT bond yield is an equally good estimate of the 10 year BBB+ benchmark rate as that derived from the Bloomberg BBB

[2] In order to use the great majority of bond yields that are not 10 year maturity to infer something about the reasonableness of the AER's choice of the 10 year APT bond it is necessary to infer something about the implied fair value curve that cuts through the AER's proxy for a 10 year fair value (the APT DRP).

curve. It therefore, in my opinion, it is unreasonable to adopt a methodology that gives the same weight to the APT bond yield as to the Bloomberg fair value estimate.

16. I also examine methods for extrapolation of the Bloomberg fair value yield curve from 7 to 10 years. In my view, the consultation paper's proposal to extrapolate the Bloomberg fair value yield curve from 7 to 10 years using the Commonwealth Government Securities (CGS) yield curve is unreasonable. This is equivalent to assuming that the DRP at 10 years is the same as the DRP at 7 years. This is because the DRP is simply the BBB yield less the CGS yield. Thus, the increase in the BBB yield is set equal to the increase in the CGS yield then the DRP does not change. In my view, extrapolating using the Bloomberg AAA curve, consistent with the approach in the AER Draft Decision, is appropriate in the Jemena Electricity Networks averaging period when contemporaneous estimates are available. However, Bloomberg subsequently ceased publication of its AAA curve to 10 years. For the later averaging periods I consider that adopting the increase in DRP associated with the last available Bloomberg AAA curve is superior to assuming a zero increase in DRP.

17. On this basis I consider that the most appropriate methodology for setting the DRP under the NER would be to adopt the Bloomberg fair value estimate extrapolated from 7 to 10 years using the Bloomberg AAA fair value curve.

1.3. Federal Court Guidelines on Expert Witnesses

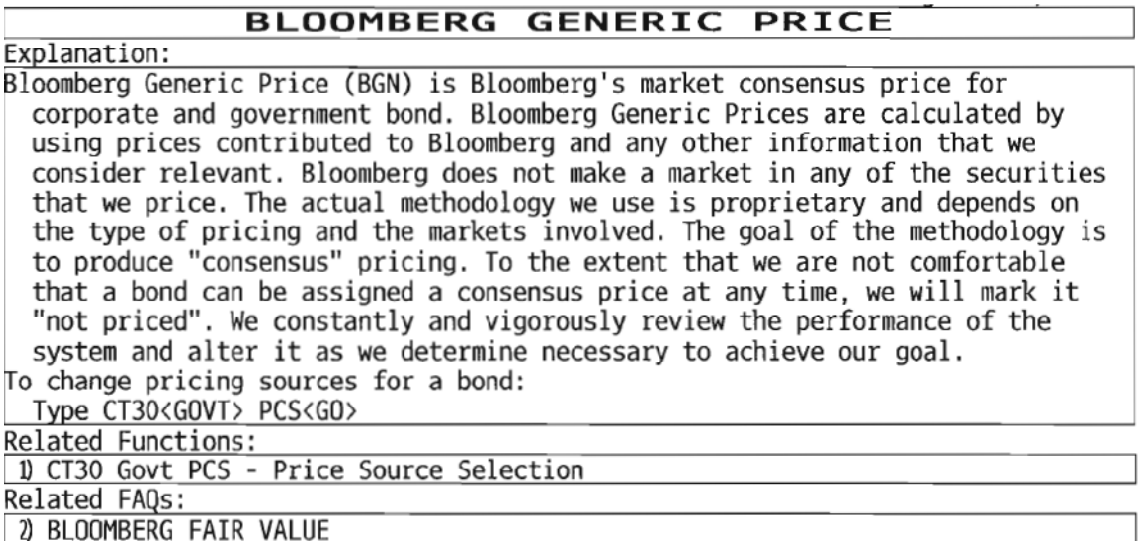
18. I have read and considered the Federal Court Guidelines on Expert Witnesses. I have made all inquiries that I believe are desirable and appropriate to answer the questions put to me. No matters of significance that I regard as relevant have to my knowledge been withheld.

Thomas Nicholas Hird

2. Conceptual critique of AER proposed methodology

19. This section provides a critique of the AER proposed methodology. All yield and spread data quoted in this report uses the market convention and is in the form provided by data providers. That is, the data has not been annualised. The data sources are Bloomberg, CBASpectrum and UBS. For Bloomberg I have used BGN yield estimates for all fixed bonds (with the exception of APT) and BCMP for trading margins on all floating rate bonds (and UBS data for swap rates).

20. In relation to APT, Bloomberg only publishes a BVAL yield for APT and I have used that (I note that this has been quite volatile with the estimated DRP ranging between 2.1% and 3.0%). Bloomberg does not quote a BGN price which I assume reflects a lack of sufficient contributor data for Bloomberg to arrive at a generic price estimate (I have been unable to locate any contributor data for the APT bond on Bloomberg and it is unclear to me on what underlying data Bloomberg arrives at its BVAL yield). See the below screenshot from Bloomberg describing the BGN price. In relation to CBASpectrum yield estimates for APT these only began being published on 1 October 2010 and I have not incorporated these into my analysis. However, they are included in the data table at appended to this report (and are higher than both Bloomberg BVAL and UBS yield estimates).



BLOOMBERG GENERIC PRICE

Explanation:

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.

To change pricing sources for a bond:
Type CT30<GOVT> PCS<GO>

Related Functions:
1) CT30 Govt PCS - Price Source Selection

Related FAQs:
2) BLOOMBERG FAIR VALUE

2.1. Legal background

21. Clause 6.5.2(e) of the NER defines the debt risk premium (DRP) as:

> *"…the premium determined for that regulatory control period by the AER 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 maturity equal to that used to derive the nominal risk free rate and a credit rating from a recognised credit rating agency."*

22. During the WACC review the AER applied a best comparator approach and adopted a credit rating of BBB+ for determining the DRP. The SORI also determined that the nominal risk free rate would be determined on a security with a 10 year maturity.

2.2. Advantage of using an independent data provider

23. The AER, and the ACCC before it, has traditionally used CBASpectrum BBB+ or Bloomberg BBB fair value curves as the proxy for the benchmark 10 year cost of debt for a BBB+ rated bond. CBASpectrum has suspended the publication of fair value curves following a recent review of performance in the wake of the global financial crisis.[3] The fact that CBASpectrum has determined that its methodology for deriving fair value curves is no longer sufficiently accurate to justify continued publication provides a priori grounds for giving the recent history of these estimates little weight. I also note that CBASpectrum fair value estimates are simply not available for the SPAusNet averaging periods.

24. However, Bloomberg is still publishing its fair value curves. In my view, there should be a rebuttable presumption for the continuation of the AER's reliance on published fair value curves based on:

    i. the relative expertise of the publishers of fair value curves;

    ii. the independence of the publishers from regulatory proceedings; and

    iii. continuity of regulatory precedent.

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

26. 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

[3] Email from A Donaldson of CBASpectrum to E McGinn of the AER dated 19 August 2010, provided by the AER to the Joint DBs on 28 September 2010. The CBASpectrum website also states; "*Commonwealth Bank of Australia is currently conducting research and development into the identification of alternative methods that can group the Australian bond market according to systematic risk profiles. Additional, novel and unique features available in the forthcoming enhanced CBASpectrum product are expected to allow users to create fair value curves and analyse data using these new profiles.*"

proceedings is a further powerful rationale giving rise to a presumption that their estimates will be adopted.[4]

27. Finally, the fact that the AER has always relied upon the independent expertise of fair value publishers also creates a strong rationale for the AER to continue to do so unless there is strong evidence against such an approach. Were a regulator to depart from regulatory practice, it would be preferable to do so:

    i. by adopting a well defined and robust new methodology (ie, not to depart from regulatory precedent in an *ad hoc* fashion); and

    ii. only after consultation that is proportionate to the materiality of the issues being considered.

28. Naturally, the presumption in favour of continuing to rely on the independent expertise of fair value publishers should be a rebuttable presumption. To the extent that it is possible to establish a more accurate alternative estimate of the benchmark cost of debt then that alternative should be adopted. The fact that CBASpectrum has decided to cease publication while developing alternative methodology provides a basis for not using recent fair value estimates from CBASpectrum from the time at which CBASpectrum determined these to be unreliable.

2.3. Impact and materiality of the AER proposed methodology

29. On the 15 July 2010 Australian Pipeline Trust issued $300m for a new 10-year bond with a credit rating of BBB. The AER's proposed approach is to take the estimated yield for this bond and average it with the estimated Bloomberg fair value yield at maturity of ten years. In order to implement this methodology for the Jemena Electricity Networks (JEN) averaging period (19 April to 31 May 2010) the AER proposes to extrapolate backwards in time the APT yield from July 2010.

30. The AER also proposes to estimate the Bloomberg BBB fair value at ten years by extrapolating from seven years using the slope of the Bloomberg CGS fair value yield curve. Since the risk free rate adopted in the NER is based on CGS yields, this proposal is equivalent to assuming that the Bloomberg fair value DRP at ten years is equal to the Bloomberg fair value DRP at seven years. That is, because the DRP is simply the BBB yield less the CGS yield. If the increase in the BBB yield is set equal to the increase in the CGS yield then the DRP does not change (ie, the AER proposes to assume that the DRP does not increase with maturity between seven and ten years). [5]

[4] To the extent that a fair value estimate was developed specifically by parties to the regulatory proceedings issues of independence would best be addressed by the adoption of a transparent model/methodology that was ideally collaboratively developed by businesses and the regulator on behalf of consumers.

[5] To the extent that the Bloomberg CGS yield curve differs from that derived by interpolation of the CGS yields from the RBA website there may be some slight upwards or downwards move in the DRP measured relative to the latter source of CGS

31. The effect of this proposed methodology is to substantially reduce the estimated DRP relative to an estimate that relied solely on the Bloomberg fair value curve. The effects are described below.

Table 1: Impact of move away from published fair value curves

Averaging period	Bloomberg extrapolated using CGS	Bloomberg extrapolated using AAA	APT bond	AER proposed cost of debt
19 Apr to 31 May 2010	3.73%	4.19%	2.39%	3.06%
2 Aug to 27 Aug 2010	3.60%	4.08% *	2.84%	3.22%
13 Sept to 8 Oct 2010	3.97%	4.43% *	2.89%	3.40%

Source: UBS, Bloomberg, CBASpectrum, CEG analysis.
** The Powercor and SPAusNet periods extrapolation uses the shape of the AAA DRP curve as last published by Bloomberg in June 2010*

32. As I describe in section 0 below, I consider that the proposal to set the Bloomberg DRP at 10 years equal to the Bloomberg DRP at 7 years is at odds with the empirical evidence. I consider that the AER's previous methodology, as set out in its Draft Decision, to use the shape of the AAA curve to infer the shape of the BBB curve is more reasonable. The 10 year DRP estimate derived using this methodology is described in the second column of figures.[6] When one compares this column with the AER proposed cost of debt one can see that the impact of the AER proposal is to lower the DRP estimate by around one percent.

2.4. Summary of AER justifications for proposal

33. In this section I attempt to summarise the chain of logic and evidence used by the AER to arrive at its decision.

i. The AER argues that the cessation of publication of fair value curves by CBASpectrum makes sole reliance on the Bloomberg fair value curve imprudent.

"In view of the CBASpectrum decision and earlier concerns, the AER considers that it would be imprudent to place sole reliance on Bloomberg estimates given they are produced from the same type of market information as CBASpectrum." (page 2)

yields. This appears to explain the slight increase in the Bloomberg DRP as portrayed in Figure 1 of the consultation paper.

6 Because the AAA curve continued to be published in the Jemena Electricity Networks averaging period the draft decision methodology can be used without any adaption. In the latter averaging periods the most recent shape of the AAA curve is used.

"…it has become necessary for the AER to examine other ways to estimate the DRP" (page 3)

ii. The AER consultation paper then immediately moves to a discussion of the APT bond as a potential proxy for the benchmark corporate bond rate. No other alternative is considered (page 3);

iii. The AER concludes that the APT bond "potentially provides a **preferred** source of yield information over the alternative derived from using Bloomberg fair value estimates" (page 3, emphasis added) and "…the APT bond yields on the APT bond are likely to provide a close match to those of the benchmark corporate bond…" for the following reasons:

   a. There has been uncertainty over the reliability of Bloomberg and CBASpectrum in the past (first dot point on page 3);

   b. Bloomberg BBB fair value is not specifically BBB+ (as required for the NER) and it needs to be extrapolated to 10 years (second dot point on page 3);

   c. Relying on the 10 year APT bond provides a transparent methodology for arriving at a 10 year benchmark rate (third dot point on page 3).

   d. The APT BBB rating is an acceptable and, even conservative, proxy for BBB+ as required by the NER (third dot point on page 3);

   e. The nature of APA Group's investments provide a close match to those of electricity network service providers (fourth dot point on page 3, see also third full paragraph on page 4).

iv. Notwithstanding these perceived benefits the consultation paper notes that because "*the APT bond is only one relevant observation this proposition must be tested against other relevant information"* (page 3). At the same time the AER notes that Bloomberg fair value estimates *"must also be subjected to appropriate scrutiny"*. The AER attempts to "test" the APT bond and Bloomberg fair value estimates against other information on pages 5 to 7.

34. I examine each of the points raised by the AER in turn.

2.5. Implications of cessation of publication by CBASpectrum

35. This section examines the AER conclusion, summarised in paragraph 33i) above, that:

"In view of the CBASpectrum decision and earlier concerns, the AER considers that it would be imprudent to place sole reliance on Bloomberg estimates given they are produced from the same type of market information as CBASpectrum." (pg 2); and

"…it has become necessary for the AER to examine other ways to estimate the DRP" (pg 3)

36. I agree that the Bloomberg fair value curves are produced from the "same type" of market information as the CBASpectrum fair value curves – being Australian bond market data. However, I do not agree that the cessation of publication by CBASpectrum provides a logical basis for concluding that the Bloomberg fair value curves are relatively less reliable. This conclusion does not logically follow on two independent grounds.

37. First, any estimate of the benchmark cost of debt must rely on Australian bond market data. The fact that the available data to do this is imperfect no more invalidates the Bloomberg fair value curves than it does any other method of estimating a benchmark return. The AER's proposed alternative method of arriving at a benchmark yield involves giving at least 50 percent weighting to the estimated yields of a single corporate bond. There is no reason to believe that this approach makes better use of the sparse Australian bond market data than Bloomberg's methodology. On the contrary, there is reason to believe that it does a worse job than the Bloomberg methodology.

38. Second, the CBASpectrum methodology for turning Australian bond market data into fair value curves was very different to the Bloomberg methodology. For example, the CBASpectrum fair value curves involved solving a series of simultaneous equations for each bond credit rating using data from all bonds of all different credit ratings and using assumed relationships between the different fair value curves. The Bloomberg methodology involves each curve being independently fitted to bond yield data for that credit rating and each curve need not have the same shape.[7] However, Bloomberg analysts must use judgement in ensuring that fair value curves are positioned so that they do not cross (ie, data from different credit ratings must inform the creation of each fair value curve). If changes in the quality of Australian bond market data led CBASpectrum to conclude that its methodology was inaccurate it does not follow that the same changes make the Bloomberg methodology inaccurate. Of course, even if Bloomberg's curves have become less accurate as a consequence of reduction in the quantity of bond trades this does not imply that it has become relatively less accurate than any other methodology (such as the AER's proposed methodology).

39. In my view the cessation of publication by CBASpectrum does not imply any reduction in the implied reliability of the Bloomberg estimates relative to alternatives. In fact, it would be possible to conclude the opposite. Specifically, Bloomberg and CBASpectrum fair value estimates disagreed – with Bloomberg having a higher fair value than CBASpectrum. The fact that CBASpectrum has decided that bond data was insufficient for it to accurately apply its methodology in the current market conditions could reasonably be taken as evidence that the higher fair value estimate is more reliable.

40. I do note that, as a matter of fact, this would tend to cause the estimated cost of debt to rise relative to sole reliance on the lower CBASpectrum estimate (the methodology

[7] See, NERA (May 2005), "Critique of available estimates of the credit spread on corporate bonds, A Report for the ENA. The report was co-authored by myself and Professor Bruce Grundy of the Melbourne Business School, and includes an appendix by Professor Kevin Davis of the University of Melbourne.

adopted by the AER in ActewAGL and in some prior regulatory decisions). It would also tend to cause the estimated cost of debt to rise relative to the average of CBASpectrum and Bloomberg – the methodology that was proposed by ActewAGL in its access arrangement proposal and that the ACT required the AER to use in the context of the ActewAGL decision.

41. For the reasons described in sections 3, 4 , and 0 below, I believe that the Bloomberg BBB fair value curve is a good fit to the available market data – such that examination of the available market data would not cause one to conclude that the Bloomberg estimates are unreliable and/or that an alternative was needed. I also conclude in those sections that the AER's methodology for relying on the APT bond results in an estimate that is not a good fit for the available market data.

2.6. The APT bond is the only alternative considered

42. This section examines the reasonableness of the consultation paper moving directly from the conclusion that an alternative to Bloomberg is required to the conclusion that the APT bond is the relevant alternative (summarised in paragraph 33.ii above).

43. Having determined, in my view unreasonably, that an alternative to Bloomberg is required, the consultation paper immediately considers the single APT bond as an alternative to Bloomberg. There is no wider consideration of alternatives from which the best alternative could be chosen.

44. The process for focussing on the APT bond appears to me to be *ad hoc*. This would not be the case if there were a basis for believing that the Bloomberg fair value is an overestimate of the benchmark rate and a lower yield estimate is required to offset any such overestimation. However, the consultation paper does not establish the reasonableness for such a view. Based on the empirical data presented in sections 3, 4 , and 0 below I do not believe that one can conclude, based on the full set of relevant Australian bond market data, that the Bloomberg fair value curve is an overestimate of benchmark BBB+ yields.

2.7. Rationale for preferring the APT bond to Bloomberg fair value

45. This section examines the reasonableness of the list of reasons for preferring the APT bond to the Bloomberg fair value curve as summarised in 33.iii above and reproduced below.

46. The AER concludes that the APT bond *"potentially provides a **preferred** source of yield information over the alternative derived from using Bloomberg fair value estimates"* (page, 3 emphasis added) and *"…the APT bond yields on the APT bond are likely to provide a close match to those of the benchmark corporate bond…"* for the following reasons:

    a. There has been uncertainty over the reliability of Bloomberg and CBASpectrum in the past (first dot point on page 3);

b. Bloomberg BBB fair value is not specifically BBB+ (as required for the NER) and it needs to be extrapolated to 10 years (second dot point on page 3);

c. Relying on the 10 year APT bond provides a transparent methodology for arriving at a 10 year benchmark rate (third dot point on page 3).

d. The APT BBB rating is an acceptable and, even conservative, proxy for BBB+ as required by the NER (third dot point on page 3);

e. The nature of APA Group's investments provide a close match to those of electricity network service providers (fourth dot point on page 3, see also third full paragraph on page 4).

47. In my view each of these reasons is highly problematic (each lettered point below address the summary of the AER's views in the similarly lettered point above):

a. I do not consider that uncertainty about the accuracy of Bloomberg and CBASpectrum provides a basis for preferring the AER's alternative – which places at least 50 percent weight on an observation for a single bond.

b. The fact that Bloomberg's BBB fair value curves are not labelled BBB+ does not provide a basis for preferring the BBB rated APT bond. Neither of these estimates are strictly BBB+ estimates (although the Bloomberg BBB curve does tend to at least generally be created based on mostly BBB+ rated bond yield while the APT bond is clearly rated only BBB).[8]

c. Having selected the APT bond as a benchmark it is correct that it is a transparent process to determine the yield on that bond.[9] However, this is a trivial component of the methodology. The substantive component is the selection of the APT bond as a benchmark. In my view, consistent with discussion in section 2.6 above, this element of the methodology is not transparent.

d. I consider that it is internally inconsistent for the consultation paper to argue that APT's BBB rating makes its use "an acceptable proxy for the BBB+ credit rating" and "a conservative estimate of the DRP" (third dot point on page 3) while the same BBB rating assigned to the Bloomberg fair value curve makes it "practical but not ideal" (second dot point on page 3).

e. It is not obvious to me that the underlying assets of a business are relevant. The risk for any bond will be a function of the riskiness of the underlying assets and activities and the level of gearing of the business. Safe assets can be turned into very risky assets with high levels of gearing and *vice versa* (indeed highly geared housing investments were at the heart of the global financial crisis). The bonds

[8] The fact that the Bloomberg fair value DRP has to be extrapolated from 7 to 10 years is a complication that does not exist with the adoption of the APT bond yield (which is very close to 10 years for the relevant averaging periods). However, the AER's solution to this complication is to assume the 10 year DRP equals the 7 year DRP (essentially not to extrapolate the DRP beyond 7 years). It is not clear that relative to this proposed approach the approach of adopting the APT bond yield is any simpler. I also note that the AER is proposing to give the APT bond a yield even several months before it was issued. The difficulties of doing this in any reasonable manner appear to be at least as great as extrapolating the Bloomberg fair value curve from 7 to 10 years.

[9] Although one must still rely on the judgement of those providing the yield estimate (eg, UBS and Bloomberg).

credit rating is used to capture the net effect of these considerations. In any event, had the AER looked at other BBB, BBB+ and A- rated bonds issued by monopoly infrastructure owners then it would have been clear that the APT bond had an unusually low DRP (see sections 3, 4 , and 0 below).

2.8. Testing of alternatives

48. As described in paragraph 33iv) the AER determined that it should test the appropriateness of both the APT bond yield and the Bloomberg fair value yield. The AER testing is carried out in pages 5 to 7 of the consultation paper. The key conclusions of this testing are:

> *"While the AER has endeavoured to take in a wide variety of yield information on long dated bonds, this has still only produced a relatively small sample for comparison in this case." (Page 6)*
>
> *"Given the relative placement of the two BBB bonds and Bloomberg fair values amongst bonds of other ratings in this comparison, it is difficult to make definitive conclusions about the appropriateness of either the APT bond or Bloomberg's estimates in setting the benchmark corporate bond rate." (Page 7)*
>
> *"In the context of this uncertainty, the AER considers it reasonable to average the yields implied by Bloomberg and from the APT bond when setting the DRP. In this situation, the AER considers that combining the yields from both data sources is more likely to produce an outcome that is consistent with the revenue and pricing principle in sections 7A(2) and (3) of the NEL than is simply taking yield data from either source." (Page 7)*

49. I characterise this logic as:

- starting with an *a priori* assumption that both the Bloomberg estimate and the APT bond are equally good proxies for the NER benchmark;
- testing whether this *a priori* assumption can be invalidated by a sample of bonds with greater than 7 years maturity;
- concluding, based on that sample, that invalidation is not possible and that therefore both information sources should be given equal weight with the Bloomberg fair value estimate.

2.8.1. A priori assumption is unreasonable

50. Corporate bonds exhibit a great variety of yields even for the same or similar credit rating and maturity (as can be seen in the figure below). The Bloomberg fair value estimates are published by Bloomberg as its estimate of the benchmark BBB cost of debt based on analysis of the yields on these manifold BBB and other rated bonds. Given this construction of the curve, *a priori* logic suggests that the Bloomberg fair value estimates are an appropriate candidate for an estimate of the benchmark BBB+

yield required under the NER. Naturally, it is appropriate to test this *a priori* view against the available data.

51. The APT bond is a single observation for a BBB bond and accounts for only around 1% of all Australian bonds with a credit rating of BBB to A- (ie, those credit ratings either side of and including BBB+). The APT bond has a maturity of around 10 years and is one of the few relevant bonds that does – but is not the only such bond. In my view, *a priori* logic would suggest that it is unlikely that the APT bond will be a good proxy for the NER cost of debt. It is possible that it could be a good proxy but, *a priori*, it would be unlikely (colloquially, it would be a 'fluke'). Naturally, it is appropriate to test this *a priori* view against the available data (ie, the *a priori* view that the bond is unlikely to be a good proxy is rebuttable by evidence).

52. For the reasons described above I disagree with the first step in the consultation paper's logical chain. I therefore do not believe that the second step is valid. In statistical terms, the consultation paper starts with the wrong null hypothesis. The consultation paper asks "can my sample prove the APT bond is not representative" instead of the correct question which is "can my sample prove that the APT bond is representative". I consider that the answer to the correct question would have been "no".[10]

2.8.2. Sample size artificially constrained

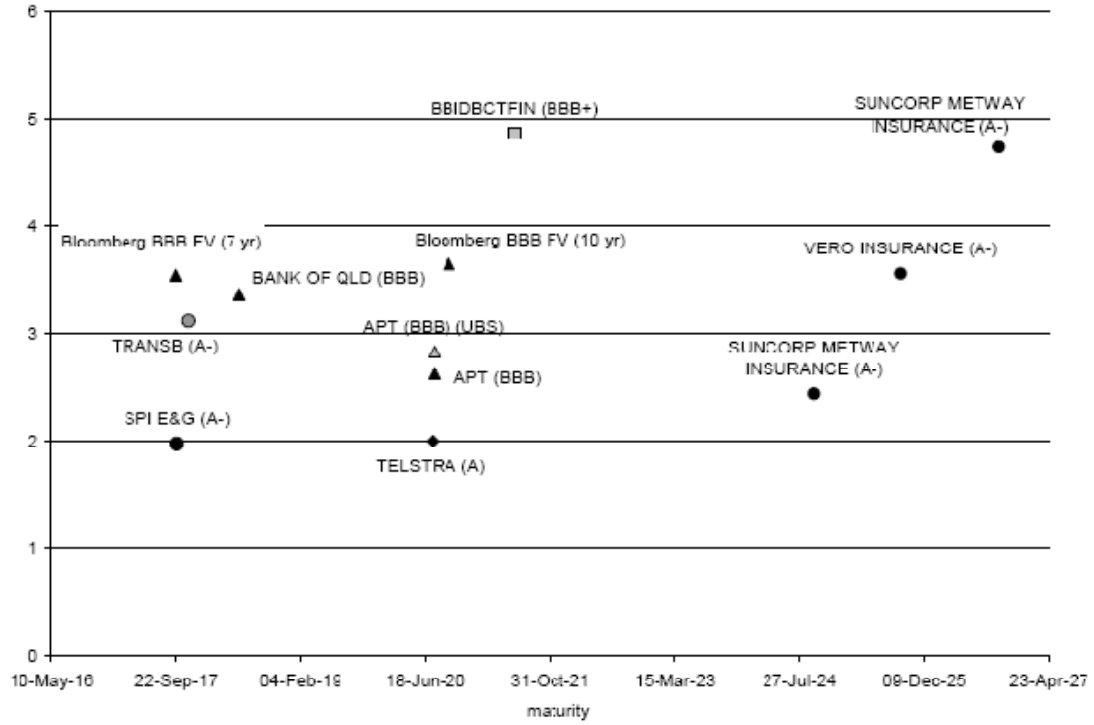
53. Finally, even the conclusion that the sample cannot invalidate the selection of the APT bond as representative is only possible based on the extremely narrow sample of bonds selected by the AER to perform this test. The AER confines its sample to bonds with maturity greater than 7 years. As a result, it only identifies one BBB+ bond (issued by DBCT). In order to broaden the sample the AER also includes BBB- to A rated bonds. This results in the inclusion of one further BBB rated bond, 5 A- rated bonds and one further A rated bond (eight bonds in total) no BBB- rated bonds are included. The average credit rating in this sample is A-. Four of these bonds are callable and are actually assigned a maturity of less than 7 years by UBS.[11]

54. Unsurprisingly this small sample with heterogeneous credit ratings has considerable dispersion as evidenced in Figure 1 from the consultation paper (reproduced below).

[10] The empirical evidence presented by the consultation paper is based on such a small sample that not only can it not establish that the APT bond is representative it cannot be used to rule out any of the bonds in the sample as unrepresentative.

[11] The four bonds are Bank of Queensland, Vero, and the two Suncorp Metway bonds. UBS assigns these bonds an earlier maturity based on the first call date for the bond. This likely reflects the fact that the coupon payments on the bond increase beyond the first call date. In my graphical analysis I use the maturity assigned by UBS which is why these bonds do not appear with a maturity of greater than 7 years in my graphs.

Figure 1: Spreads on long dated bonds



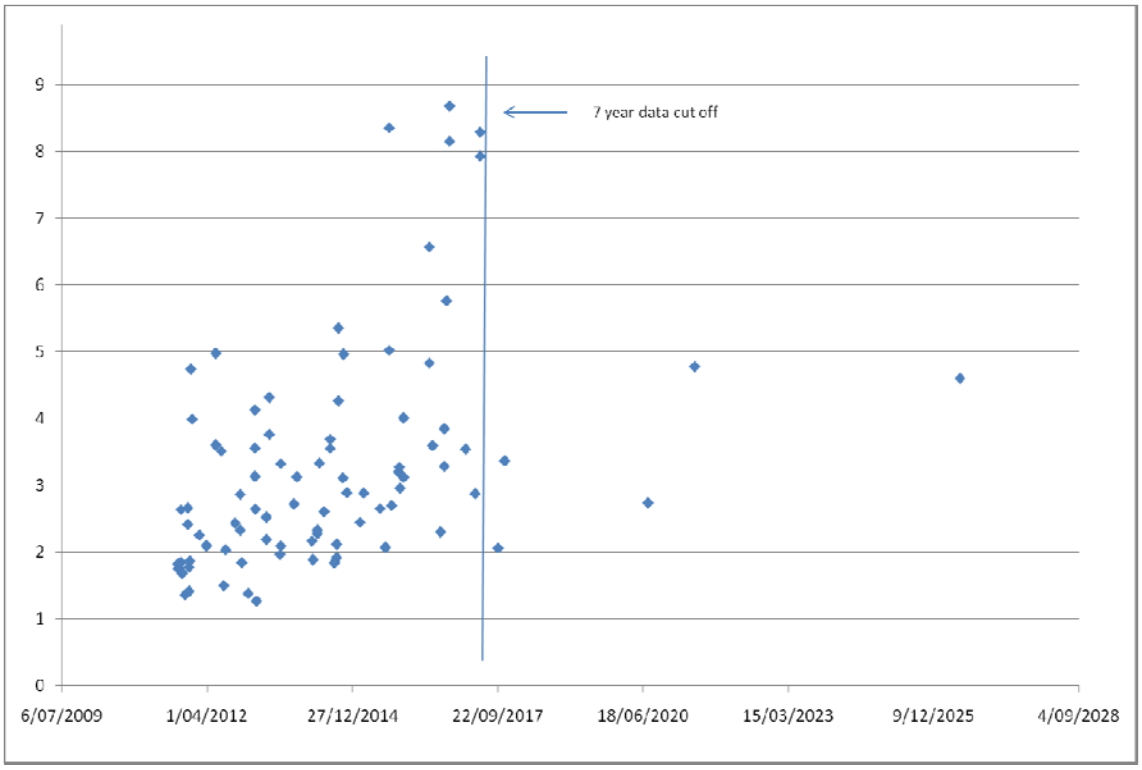
Source: AER consultation paper.

55. It is fundamentally this dispersion that provides the basis for the following conclusion in the consultation paper:

> *"Given the relative placement of the two BBB bonds and Bloomberg fair values amongst bonds of other ratings in this comparison, it is difficult to make definitive conclusions about the appropriateness of either the APT bond or Bloomberg's estimates in setting the benchmark corporate bond rate." (Page 7)*

56. However, this conclusion relies on the small sample size used. The figure below shows all of the bond yield data available for bonds rated between BBB- and A – with each bond a dot in the scatter graph. The period used is the Powercor, Citipower and United Energy averaging period (2 to 27 August 2010). The beginning of this period corresponds with the AER period used in the above graph (1 August to 21 September 2010). As can be seen, the cut off of seven years results in the great majority of the available data being excluded. (It is also the case that had the earlier JEN averaging period been used then several of the bonds immediately to the left of the vertical '7 Year' line would have been included in the sample.)

Figure 2: BBB- to A rated bonds yields



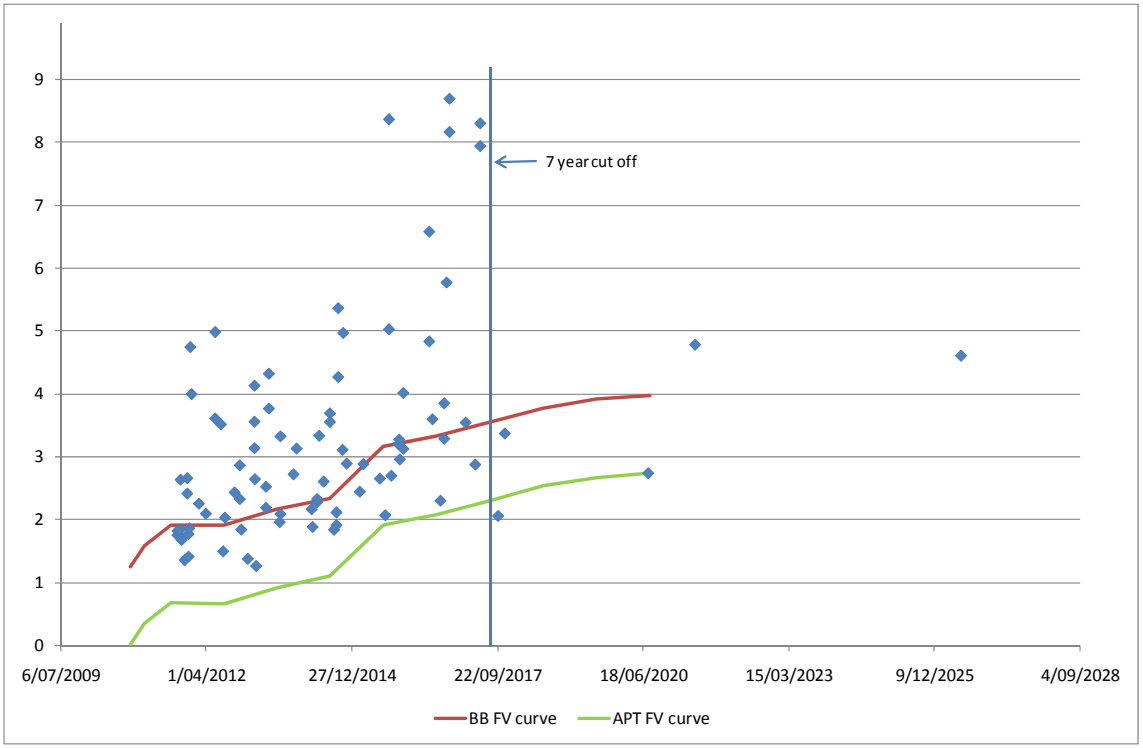
Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond.

57. Having regard to the bonds with less than seven years maturity would be highly relevant to an assessment of the Bloomberg fair value curve relative to a hypothetical fair value curve that ends at the APT bond yield. However, in my view this is best done by focussing on a sample of BBB to A- rated bonds (ie, excluding A and BBB- rated bonds as too far removed from the BBB+ rating of interest). Doing so excludes eight BBB- bonds and 34 A rated bonds. This also highlights that including BBB- and A rated bonds tends to materially increase the average credit rating in the sample, since more A rated bonds being included than BBB- rated bonds.

58. The below figure plots all remaining BBB to A- bond yields against maturity. Superimposed on this chart is the Bloomberg DRP fair value curve (extrapolated from 7 to 10 years using the most recent Bloomberg AAA FV curve between 7 and 10 years (ie, at the time publication was ceased)). Also superimposed on this chart is the same curve shifted down so that it passes through the AER's proposed APT DRP estimate – described as the "APT fair value curve".[12]

[12] In order to use the great majority of bond yields that are not 10 year maturity to infer something about the reasonableness of the AER's choice of the 10 year APT bond it is necessary to infer something about the implied fair value curve that cuts through the AER's proxy for a 10 year fair value (the APT DRP). I have used the Bloomberg fair value curve for this purpose here although I examine other alternatives below and in Appendix A. . That is, I have used the AER's selection of

Figure 3: BBB- to A rated bonds yields with fair value curves superimposed



Source: Bloomberg,UBS,CBASpectrum. Yields are averages of all available yield estimates for each bond.

59. It is striking that the APT fair value curve passes below all but one of the observations for DRP associated with all BBB to A- rated bonds. When I apply the sum of squared errors test used by the AER in the past to select a fair value curve I find the Bloomberg fair value curve is a better fit to the data than the implied APT fair value curve (and the average).

Table 2: Sum of squared errors APT FV has the same shape as Bloomberg FV

Bond categories	Bloomberg FV curve	APT FV curve	Average
BBB to A- > 1 yr maturity	11.5	16.3	13.5
BBB to A- > 4 yrs maturity	4.5	8.4	6.0
BBB to A- > 6 yrs maturity	7.0	11.7	9.0
BBB to A > 1 yr maturity	9.2	13.1	10.8
BBB to A > 4 yrs maturity	3.7	6.6	4.7
BBB to A > 6 yrs maturity	6.3	9.8	7.7

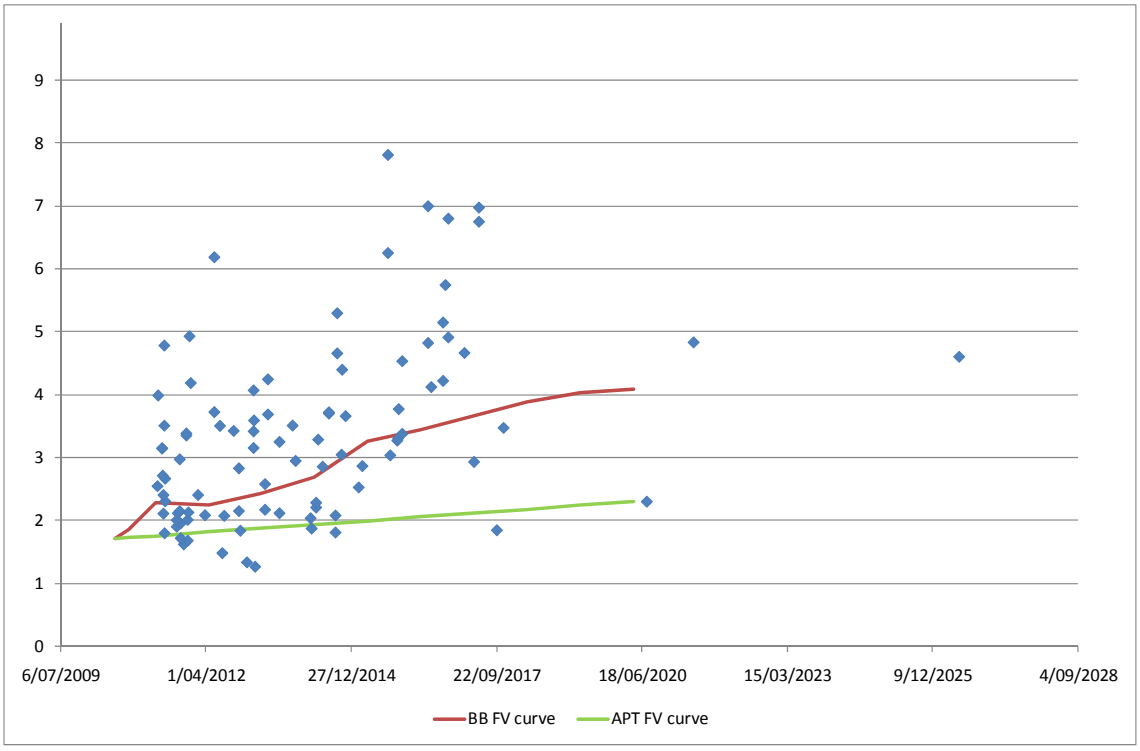
Source: Bloomberg, UBS, CBASpectrum, RBA. Figures are for Powercor averaging period.

a point on the fair value curve (the APT bond) in combination with the Bloomberg fair value curve shape to create an implied APT fair value curve.

60. This result is obvious to the naked eye with the Bloomberg fair value curve passing through the middle of the data and the implied AER curve passing below the bottom of the data. It is also the case that the sum of squared errors test selects the Bloomberg fair value curve over the average of the Bloomberg and implied APT fair value curves – even if the sample is restricted to bonds with greater than four/six years maturity and A rated bonds are included.

61. This result is not sensitive to the use of the Bloomberg fair value curve to define the shape of the fair value curve passing through the APT bond yield. Even if a straight line is used to join the bottom of the Bloomberg fair value curve (the 0.25 years Bloomberg observation at the far left of the red curve) and the APT observation then the Bloomberg fair value curve remains a materially better fit to the available data – as described in 7.Appendix A Figure 25 from that appendix demonstrates this for the JEN averaging period and is reproduced here.

Figure 25 Full sample of BBB to A- bonds – APT FV has straight line shape



Source: Bloomberg, UBS, CBASpectrum. Figures are for the Jemena averaging period.

62. In my view there is no reasonable shape to a fair value DRP curve that would both pass through the APT bond and fit the available data. Any DRP fair value curve with a positive slope (ie, where DRP increases with maturity) will fail to fit the data if it is required to pass through the APT bond yield at 10 years. The APT fair value curve depicted above is the most favourable to a finding that such a curve is reasonable because it assumes that, despite having a materially lower DRP at 10 years, it does not have a lower DRP than the Bloomberg fair value curve at low maturity. This

makes it less likely, at least at low maturities, that the APT fair value curve will underestimate the bond market data.

63. In Appendix A I examine what proportion of high DRP would have to be removed from the sample in order to make the APT fair value curve (including the straight line APT fair value curve) fit the data better than the Bloomberg curve. I conclude that over 50% of the observations in the sample would have to be removed.

64. Given this and other analysis described in sections 3, 4 , and 0 below I do not believe that it is reasonable to maintain the position that the APT bond yield is an equally good estimate of the 10 year BBB+ benchmark rate as that derived from the Bloomberg BBB curve. It therefore, in my opinion, is unreasonable to adopt a methodology that gives the same weight to the APT bond yield as to the Bloomberg fair value estimate.

2.9. Tribunal direction to have regard to long dated bonds

65. The consultation paper makes the following statement:

> *"The Tribunal's recent decision highlights the need to take account of a wider variety of information sources when scrutinising alternative methods to estimate yields on long dated benchmark corporate bonds. For these reasons the AER has compared the spreads on the APT bond, Bloomberg's seven year and extrapolated 10 year BBB fair value estimates with spreads on other long dated bonds."*

66. In this statement it appears that the AER is motivating its choice of a 7 year cut off when looking at market data by reference to the ACT decision for ActewAGL. In my view this is an error and is not consistent with the directions or intentions of the ACT. Rather, in my view this is a repeat of precisely the same error that the ACT found in the AER's ActewAGL methodology.

67. Put simply, this error involves adopting a restrictive sampling criteria and then drawing conclusions from this sample that are not justified given the size of the sample (and that could be demonstrated to be not justified with a less restrictive sample criteria). In ActewAGL the inappropriate restrictions included excluding bonds with credit ratings other than BBB+, excluding bonds that have less than three yield estimates, and excluding floating rate notes (FRNs). In the consultation paper these restrictions are lifted but a new restrictive assumption is imposed, namely, excluding bonds with less than seven years maturity.

68. In both cases the restrictions lead to very small sample sizes that are not helpful in reliably answering the questions that are relevant to the determination of a benchmark cost of debt. The consultation paper argues, based on the small sample size of bonds with maturity above 7 years, that it cannot be demonstrated that the APT bond is not a good proxy for the benchmark rate. However, the same is true in relation to the 10.8 year DBCT bond that is above the Bloomberg fair value estimate (noting that DBCT, like APT, has regulated infrastructure assets as part of its portfolio of assets). In fact

all observation in the consultation paper's Figure 1 cannot, based on the sample, be ruled out as candidates for the benchmark rate. The inability of a small sample to rule out an option does not mean that the option is the right option.

69. As I describe above, I believe that the bond information at maturities of less than seven years can be usefully introduced into a test of the APT bonds' usefulness as a proxy for the benchmark rate. In my view this data is sufficient to rule out the usefulness of the APT bond as a benchmark bond, or as a bond that is given 50 per cent weighting in the determination of the DRP.

70. I note that the ACT did state:

> *"It is difficult for the Tribunal to provide any hard and fast rule for determining whether a population is "representative". A representative population would contain many bonds after the point at which the curves diverge. It should contain bonds with a term to maturity close to 10 years. The AER should include floating rate bonds and/or bonds with observations available from one or two sources in the population unless there is good reason to exclude them. The inclusion of these bonds may raise questions which the AER will need to address in the future, such as the weighting that should be given to them."*

71. In my view the ACT has correctly stated that it is not possible to formulate a "hard and fast rule" for sample selection. While it is preferable to use long dated bonds to make inferences about the 10-year benchmark rate this does not mean that the AER should set the definition of a long dated bond at such a level (eg, seven years) that it excludes data that contain relevant information that could properly inform relevant inferences to be made about the 10-year benchmark rate.

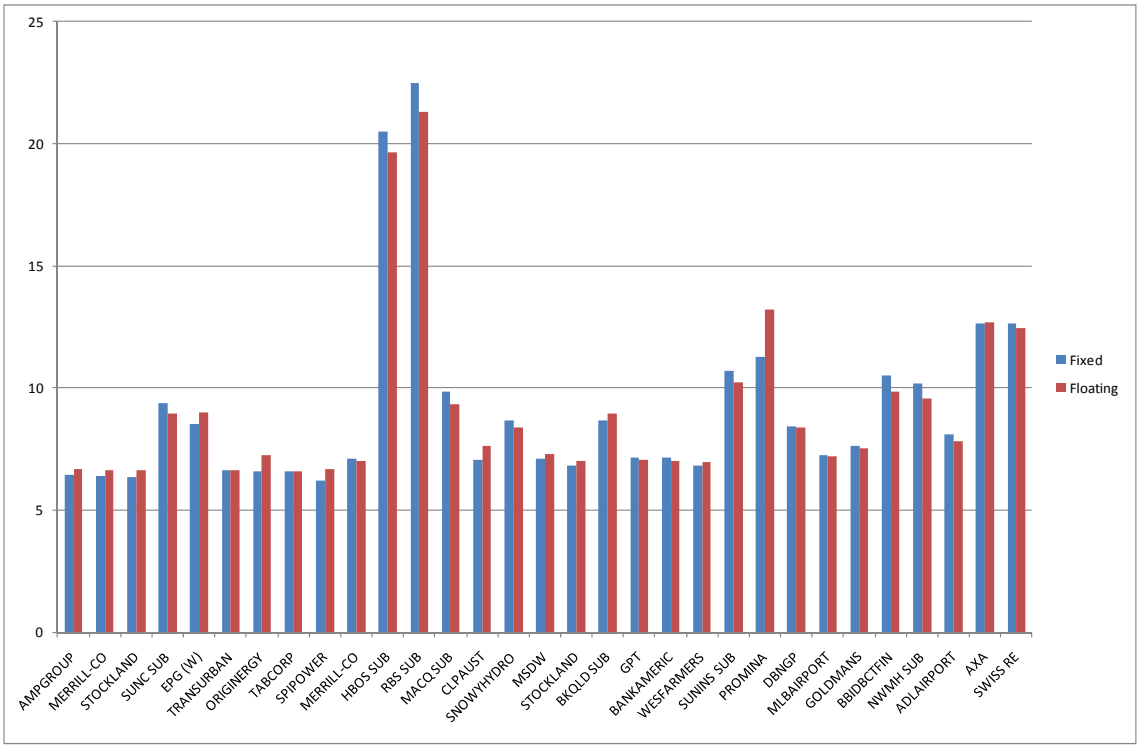
2.10. Floating rate bonds

72. Notwithstanding the ACT's direction that the AER have regard to floating rate bonds, the AER appears to be unconvinced about their use.

> *"This sample includes two floating rate bonds (BBI and Transurban) (converted to fixed rate equivalents), however the AER is still considering how much information can be reliability drawn from such bonds."*

73. It is unclear why the AER holds this position – especially as floating rate bonds are routinely issued by regulated businesses. The following figures describe the similarity of the estimated yields on floating rate bonds and fixed rate bonds from the same issuer and which share the same maturity. The figures below uses the average yields from 19 May 2010 (the beginning of the JEN averaging period) to 8 October 2010.

Figure 4: Fixed and floating BBB- to A rated bonds with same issuer and same maturity date 19/4/2010 – 8/10/2010



Source: UBS, CEG analysis

74. For some bonds the fixed yields are slightly above the floating yields and vice versa for other bonds. On average, the fixed rate bonds reported in the above figure have an estimated yield that is 1bp (0.01%) higher than for floating rate bonds.[13]

[13] There are two further FRN/fixed matching bonds – issued by Lane Cove and SNS Bank. These have yields of 30% to 40% and do have large differences in (absolute) yields. For SNS the fixed yield is 1.2% higher and for Lane Cove the fixed yield is 2.43% lower. If these two bonds are included then floating rate yields are higher than fixed rate yields by an average difference of 6 basis points.

2.11. Analysis of the DBCT (BBI) bond

75. It is relevant to note that in Figure 1 of the consultation paper there is an observation for a bond issued by Dalrymple Bay Coal Terminal (DBCT) when it was owned by BBI with a current maturity of 10.8 years. The consultation paper states:

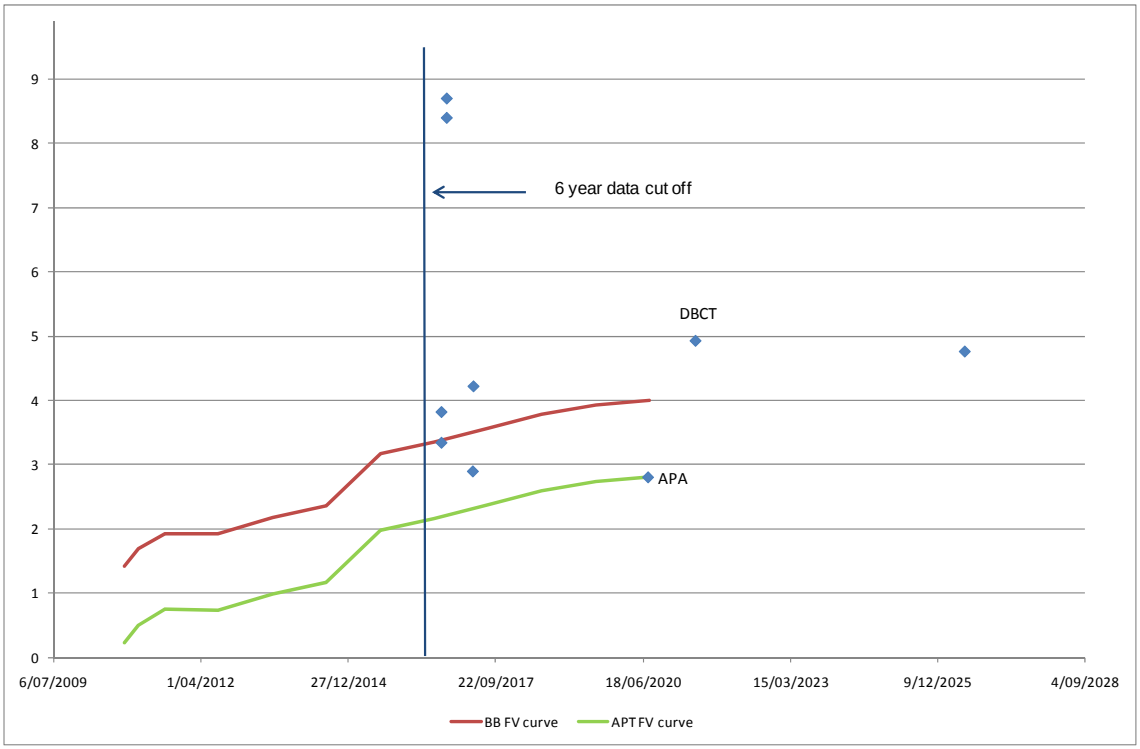
> *"The placement of the BBB+ rated BBI bond so far above the BBB rated observations is difficult to explain, however the AER has presented qualitative analysis in recent determinations regarding BBI which suggests limited weight should be placed on this bond in these types of comparisons."*

76. This statement is problematic on three separate grounds.

77. Firstly, there are only two other BBB rated bonds in the sample (Bank of Queensland and APT). While it is true that, other things equal, the higher rated BBB+ bond would be expected to have the lower yield. However, it is clear that ratings are not the only determinants of yields and there is significant heterogeneity of yields within and across credit ratings – as is evident in the AER Figure 1. The fact that the DBCT bond has a higher yield is not surprising – one of the three bonds must have the highest yield. It is, in reality, no more difficult to explain this than APT having the lowest yield. In fact, given that DBCT has the longest maturity one would expect, other things equal, it to have the highest yield and the fact that the APT bond has a lower yield than the shorter maturity and identically rated Bank of Queensland bond is, if anything, more surprising.

78. Secondly, the conclusion that the 5.0% DRP on the DBCT bond is the highest in the sample is dependent on the prior selection of a sample excluding bonds with fewer than seven years to maturity, as is clearly demonstrated at Figure 2 above. If the sample is extended to include bonds with maturity of greater than six years (instead of greater than seven years) then two BBB rated AXA bonds are introduced with materially higher DRP (average 8.5%). There is also a BBB- DBNGP bond (DRP of 4.3%), two BBB Adelaide Airport bonds (average DRP of 3.7%), and a BBB+ DBReef bond (DRP of 3.0%) introduced. Relative to this sample the DBCT bond is not unusual – especially when one takes into account that it has a four year longer maturity. These points are illustrated in Figure 5 below.

Figure 5: BBB- to BBB+ bonds with maturity greater than 6 years (Powercor, Citipower and United Energy averaging period)



Source: Bloomberg, UBS, CBASpectrum.

79. Thirdly, the 'qualitative analysis' referred to in the above statement is itself unreliable for the purpose to which the AER employs it in this statement. The AER appears to be referring to analysis presented in the ActewAGL final decision to the effect that the estimated yield on the BBI bond increased dramatically in January 2009 at around the same time that Babcock and Brown (an associated company to BBI) had its shares voluntarily suspended from trading.

> *"The AER also considers market developments in late 2008 and early 2009, which include the voluntary suspension of trading in Babcock and Brown shares and attempts to de–link Babcock and Brown and its associated companies, are likely to affect the reliability of the observed yield for the BBI bond." (Actew AGL, pg 50)*

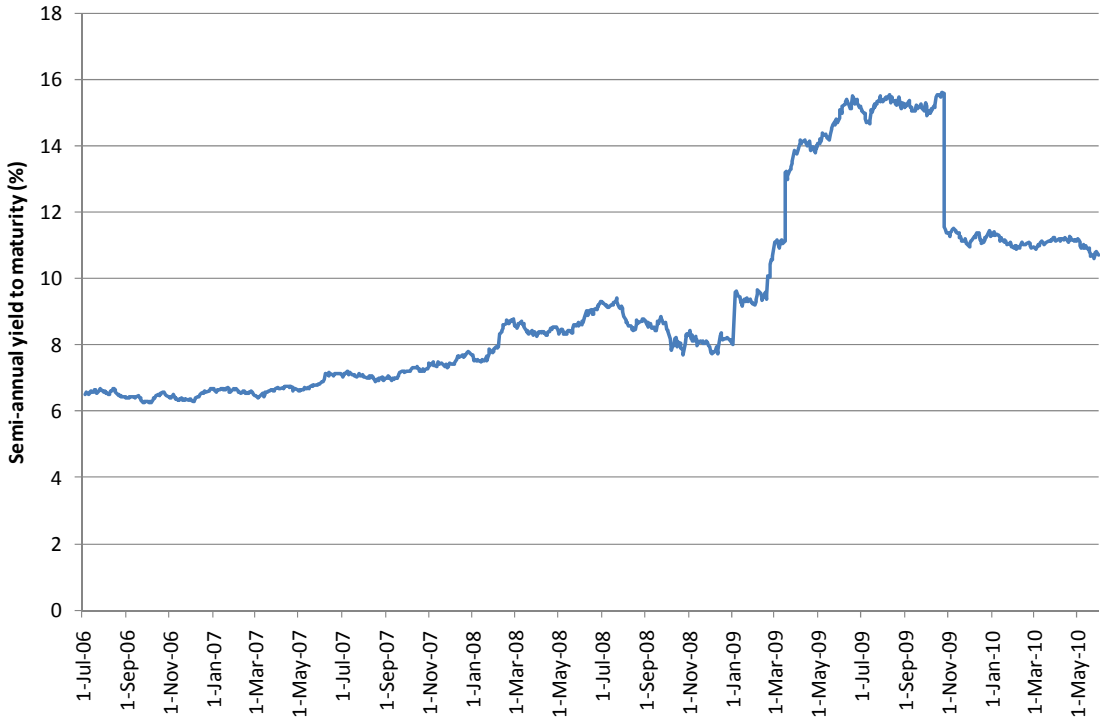
80. In my view this analysis may provide a basis for giving the DBCT bonds (issued by a Babcock and Brown related entity) less weight in early 2009. It provides no basis for drawing the same conclusion in late 2010 given that:

- credit rating agencies have not downgraded the DBCT bonds in the meantime; and
- the responsible entity for the bonds has since undergone a significant recapitalisation in late 2009; and

- estimated yields for the bonds have dropped substantially consequent to the recapitalisation.

81. Figure 6 below shows the UBS yield on DBCT yield since July 2006.

Figure 6: UBS yields on DBCT



Source: UBS

82. Inspection of Figure 6 reveals a structural break in DBCT's yields (and similarly its spreads to fair value) occurring on 27 October 2009 with a significant reduction in yields/spreads after that date. This is confirmed by an application of the Chow test comparing the three months before to the three months after. Investigation of market events around this time demonstrates that it is consistent with the 8 October 2009 announcement of a $1.8bn proposed recapitalisation[14] and with further announcements on the progress of this recapitalisation throughout October[15] and officially completed on 20 November 2009.[16] In my view, qualitative analysis based on events prior to this period is simply not relevant to assessing the reliability of DBCT bonds today.

[14] 8 October BBI Cornerstone Investor Recapitalisation http://www.asx.com.au/asxpdf/20091008/pdf/31l6zq6lq6hvr4.pdf

[15] For example, 22 October 2009, BBI Proposed Recapitalisation – Audio Broadcast. http://www.asx.com.au/asxpdf/20091022/pdf/31lhgpyrdlhpgn.pdf

[16] Completion of Recapitalisation, http://www.asx.com.au/asxpdf/20091120/pdf/31m6jn7xw6142m.pdf

83. In relation to a different, lower maturity, fixed DBCT bond the ActewAGL final decision also appears to have relied on the fact that CBASpectrum was reporting a significantly higher yield than UBS. The AER concluded:

> *"The AER considers that this provides additional evidence that even in late 2009 there is significant divergence in yields for the BBI bond, as reported by CBASpectrum and UBS, suggesting the observed yield for this bond is unreliable and cannot be included in the sample for analysis."*

84. It is correct that CBASpectrum's yield estimates did not fall following the recapitalisation described above. However, this did not just make CBASpectrum's estimates different from UBS, they were also much higher than for Bloomberg and for ABNAmro and Australian Financial Market's Association (AFMA) (which are also available on Bloomberg). Over the Powercor 20 day averaging period ending 27 August the average ABNAmro yield estimate was 9.2% and the average AFMA estimate was 9.4%. Thus, estimates from UBS, Bloomberg BGN, ABNAmro and AFMA put the DBCT yield estimate at 10.2%, 9.2%, 9.2% and 9.4% respectively. Relative to these four estimates the CBASpectrum yield estimate of 14.9% is materially higher. In fact, the CBASpectrum yield estimate would be an outlier measured using both the Chauvenet and Boxplot tests described in my previous reports.

85. This divergence is, in my view, evidence that supports a view that the CBASpectrum bond yield estimate for DBCT is unreliable rather than evidence about the unreliability of all bond yield estimates for DBCT. In any event, the longer term DBCT bonds, including the bond represented in the consultation paper's Figure 1 are not covered by CBASpectrum so the reported yields are unaffected by this.

2.11.1. The DBCT bond is an alternative benchmark to the APT bond

86. With these considerations in mind I consider that the DBCT bond in the consultation paper's Figure 1 is an equally good alternative to the Bloomberg fair value curve as a proxy for the BBB+ benchmark yield. There are four dot points on page 3 of the consultation paper that describe why the AER views the APT bond as a potentially preferable proxy for the benchmark cost of debt relative to the Bloomberg fair value curve. The first two dot points describe perceived problems with the Bloomberg estimate. The last two describe the relative advantages of the APT bond as:

- the yield calculation is transparent;
- it reflects a 10-year maturity;
- its BBB rating provides an acceptable proxy to the BBB+ benchmark;
- the APA Groups investments and markets provide a close match to those of electricity network service providers.

87. All of these perceived relative advantages apply equally to the DBCT bond (which is 10.7 years maturity at the end of the SPAusNet averaging period compared to 9.8

years for the APT bond). In addition to its BBB+ rating, the DBCT bond has the added advantage of being issued over the entirety of the three averaging periods – so there is no need to hypothecate a yield to it before it was issued as is proposed under the AER methodology. The DBCT bond is a floating rate note while the APT bond is a fixed rate bond. However, in my opinion this is not a material difference because a floating yield can easily and accurately be converted into a fixed rate yield (and *vice versa*).

88. The only material difference between the two bonds is that the DBCT bond has a yield that is above the Bloomberg fair value curve by about the same amount as the APT bond is below the Bloomberg fair value curve.

89. Without necessarily agreeing with the AER's statements as to the perceived advantages of the APT bond, given that there is at least as compelling a case for adopting the DBCT bond as the APT bond as the proxy for the benchmark BBB+ bond, then taking an average of these would be superior to adopting one and not the other. I note that the average yield gives one a value very close to the Bloomberg fair value yield – as can be seen visually in Figure 5 above.

3. Averaging period I (19/4/2010 – 31/5/2010)

90. The AER has alighted on the selection of APT as a 'conservative' proxy for a 10-year DRP. The reasons put forward for relying on the yield on the APT bond are that:

i. APT has some regulated infrastructure assets;

ii. the APT bond has a maturity of close to ten years; and

iii. with a BBB credit rating, the APT bond is rated one notch below BBB+ so its yield *"…would be expected to produce a conservative estimate of the DRP"*.

91. Without expressing a view on whether i) above is relevant (ie, whether it is appropriate to give more weight to issuers with BBB credit ratings and who have some regulated infrastructure), it is instructive to have regard to yield estimates for other firms with credit ratings of BBB and some regulated infrastructure. Table 3 below describes the yields on all bonds that have a maturity of greater than 4 years for issuers that meet these criteria.

Table 3: BBB to A- rated regulated infrastructure issuers with maturity greater than 4 years

Issuer	ISIN	Maturity (years)	Spread to CGS (%)
Adelaide Airport (BBB)	AU3FN0010500	4.2	2.9
United Energy (BBB)	AU300UELM012	4.5	3.1
Sydney Airport (BBB)	AU300SAFC025	4.6	3.7
Sydney Airport (BBB)	AU300SAFC033	5.6	3.9
Melbourne Airport (A-)	AU300APAM054	5.7	3.5
Melbourne Airport (A-)	AU300APAM047	5.7	4.6
BBI DBCT (BBB+)	AU300BBIF026	6.1	4.9
BBI DBCT (BBB+)	AU300BBIF018	6.1	7.1
Brisbane Airport (BBB)	AU300BR40051	6.2	4.2
Adelaide Airport (BBB)	AU300NTFC034	6.4	4.3
Adelaide Airport (BBB)	AU300NTFC026	6.4	5.2
SPI E & G (A-)	AU3CB0145696	7.4	1.9
BBI DBCT (BBB+)	AU300BBIF034	11.1	4.9
BBI DBCT (BBB+)	AU300BBIF042	16.1	4.7
Average of above		**6.9**	**4.2**
APT (as extrapolated backwards by the AER)	AU3CB0155133	10.3	2.4

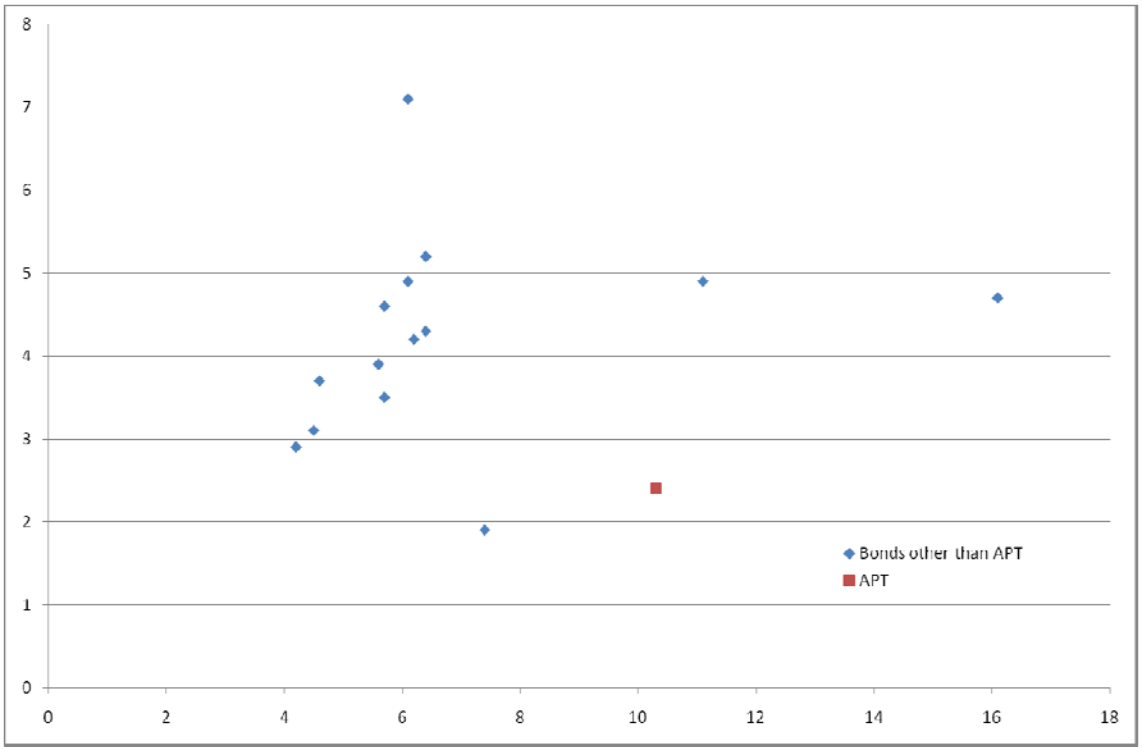
Source: UBS, Bloomberg, CBASpectrum, CEG analysis

92. The average spread to CGS for the five BBB rated owners of regulated infrastructure is notably higher than the spread for APT. This is despite the average maturity of the

14 issuers being only 6.9 years which, given an upward slope in credit spreads with maturity, one would expect their average yield to be lower than APT, other things being equal.

93. The spreads to CGS in the above table are also shown plotted against maturity. With the exception of the APT bond, there is a generally increasing DRP for these bonds with maturity. It can be seen that the APT bond has an unusually low yield in both absolute terms and for its maturity.

Figure 7: BBB to A- rated bonds issued by regulated infrastructure owners



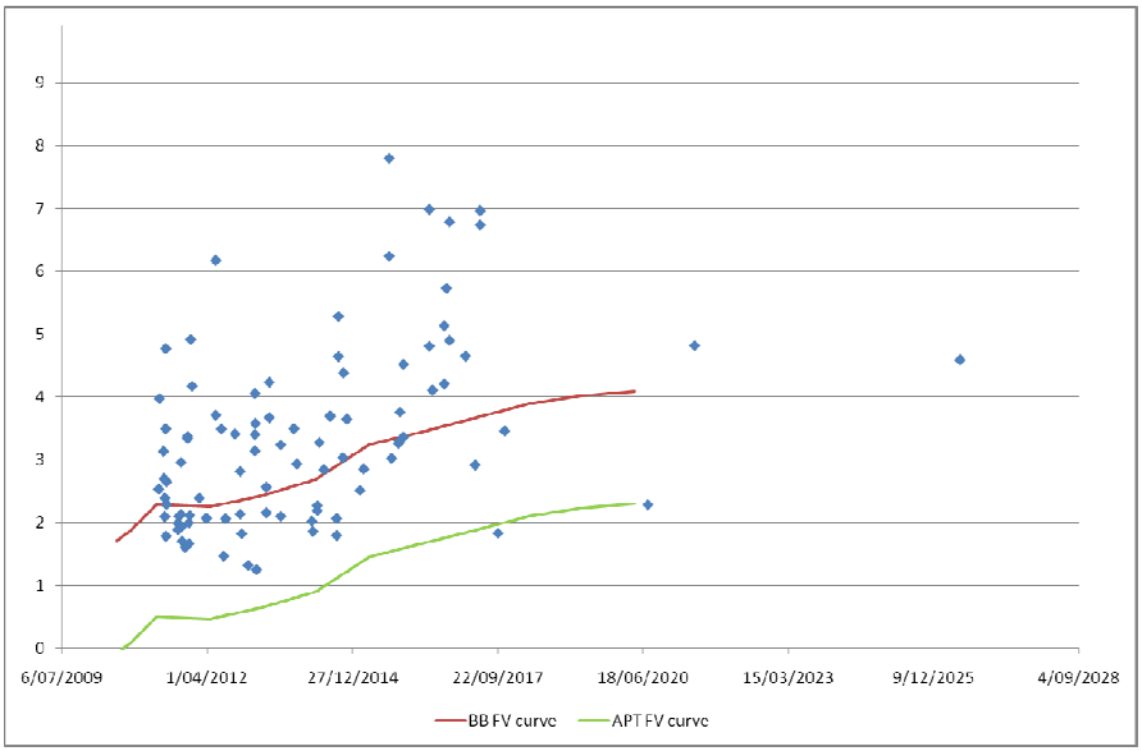
Source: UBS, Bloomberg, CBASpectrum, CEG analysis

94. If one reflects on the information contained in theTable 3 and Figure 7 above, in my opinion, one could not reach the conclusion that the spread CGS for the APT bond is a conservative estimate of the spread to CGS for a 10 year BBB+ bond. One could reasonably reach the conclusion that the spread to CGS for the APT bond is unusually low for a BBB bond.

95. This conclusion is confirmed by an analysis which takes into account all of the available information on bonds rated BBB to A-. The below figure plots all BBB to A- bond yields against maturity. Superimposed on this chart is the Bloomberg DRP fair value curve (extrapolated from 7 to 10 years using the contemporaneous Bloomberg AAA FV curve between 7 and 10 years). Also superimposed on this chart is the same

curve shifted down so that it passes through the AER's proposed APT DRP estimate – described as the "APT fair value curve".[17]

Figure 8: BBB to A- bonds yields: BB FV curve vs. AER FV curve



Source: Bloomberg UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond. Bloomberg fair value curve is extrapolated from 7 to 10 years using the contemporaneous AAA fair value curve. The APT fair value curve is equal to the Bloomberg fair value curve shifted down to pass through the APT 10 year bond.

96. It is striking that this implied APT fair value curve passes below all but one of the observations for DRP associated with all BBB to A- rated bonds (where these observations are the average DRP estimate from one or more of Bloomberg, UBS and CBASpectrum).

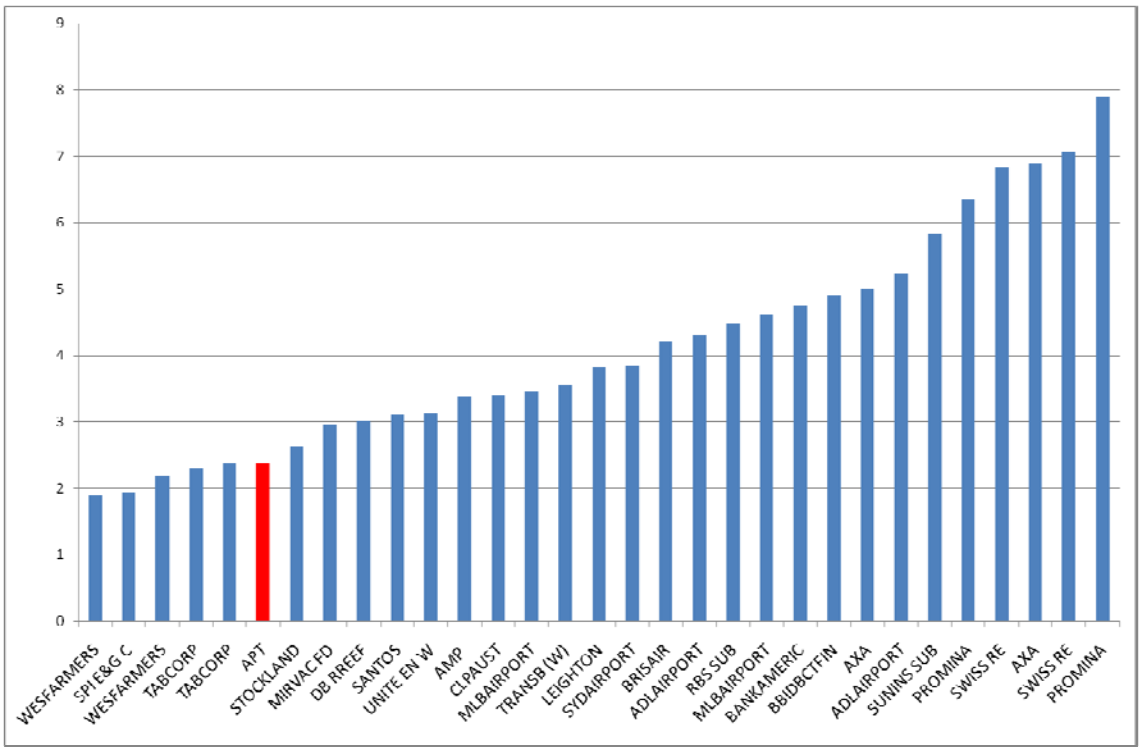
97. When I apply the sum of squared errors test used by the AER in the past to select a fair value curve I find the Bloomberg fair value curve is a better fit to the data than the implied APT fair value curve. This result is obvious to the naked eye with the Bloomberg fair value curve passing through the middle of the data and the implied

[17] While the AER does not actually propose a fair value curve the AER does propose a 10 year BBB fair value (equal to the APT yield). In order to use the great majority of bond yields that are not 10 year maturity to infer something about the reasonableness of the AER's choice of the 10 year APT bond it is necessary to infer something about the implied fair value curve that cuts through the AER's proxy for a 10 year fair value (the APT DRP). Because Bloomberg is the only publisher of a fair value curve I have used the Bloomberg fair value curve for this purpose. That is, I have used the AER's selection of a point on the fair value curve (the APT bond) in combination with the Bloomberg fair value curve shape to create an implied APT fair value curve.

AER curve passing below the bottom of the data. It is also the case that the sum of squared errors test selects the Bloomberg fair value curve over the average of the Bloomberg and implied APT fair value curves. This remains true even if A rated bonds are included in the sample.

98. Even when one ignores the fact that credit spreads should be rising with maturity the APT bond can be seen to have a very low credit spread relative to other bonds rated BBB to A- in the above scatter diagram. This is further illustrated in the below bar chart where the APT bond yield is marked in red. Despite having one of the longest maturities it has one of the lowest credit spreads in the sample (where only bonds with maturity greater than 4 years are included in the bar chart).

Figure 9: Yields on BBB to A- bonds with maturity greater than 4 years



Source: UBS, Bloomberg, CBASpectrum, CEG analysis

99. In this sample the mean (median) credit spread is 4.1% (3.8%) while the mean maturity is only 6.0 years. The median credit rating of bonds in this sample is BBB+.

100. The above figures include some issuers who have multiple bonds that meet the relevant criteria. If only one bond for every issuer, being the bond that is closest to ten years maturity, is included in the sample then the mean (median) DRP of the sample is 3.9% (3.7%). Table 4 below describes all the yields on bonds that meet these criteria and have an average maturity of more than 4 years. If more than one bond was issued on the same date the average of the two has been used. The average credit rating in this sample is BBB+.

Table 4: BBB to A- rated bonds (one per issuer) with maturity greater than 4 years

Issuer	Maturity (years)	Spread to CGS (%)
Tabcorp (BBB+)	4.0	2.3
AMP (A-)	4.1	3.4
Leighton (BBB)	4.3	3.8
Wesfarmers (BBB+)	4.4	1.9
United Energy (BBB)	4.5	3.2
RBS (BBB)	4.5	4.5
Stockland (A-)	4.8	2.6
Mirvac (BBB)	4.9	3.0
Promina (A-)	5.4	7.1
Santos (BBB+)	5.4	3.1
CLP (BBB)	5.6	3.4
Sydney Airport (BBB)	5.6	3.9
Melbourne Airport	5.7	4.1
Brisbane Airport (BBB)	6.2	4.2
Adelaide Airport (BBB)	6.4	4.8
Sunins Sub (A-)	6.5	5.8
AXA (BBB)	6.5	6.0
Bank of America (A-)	6.8	4.8
DB Rreef (BBB+)	7.0	3.0
Swiss Re (A-)	7.1	7.0
SPI E& G (A-)	7.4	1.9
Transurban (A-)	7.6	3.6
APT (BBB)	10.3	2.4
BBI DBCT (BBB+)	11.1	4.9
Average	**6.0**	**3.9**

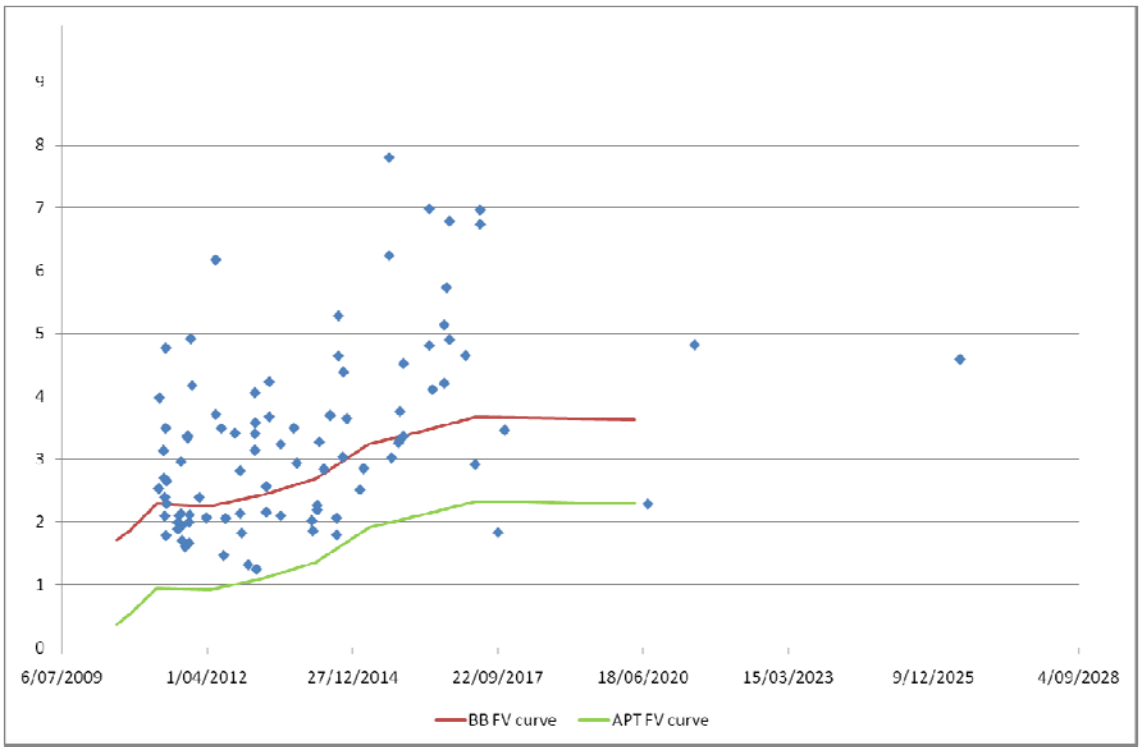
Source: UBS, Bloomberg, CBASpectrum, CEG analysis

101. The above statistics and graphical analysis demonstrate that adopting the APT DRP of 2.40% as a fair reflection of the 10-year DRP is simply not sustainable when one has regard to the full set of available information. The average DRP for BBB to A- rated bonds with more than 4 years to maturity is between 3.7% and 4.3%. The average maturity for this sample is around 6 years. A value of 2.4% for a maturity of 10 years (ie, 4 years greater than the average in the sample) is simply not consistent with the available data – unless one believes, contrary to the evidence that DRP reduces with maturity.

102. For completeness I also present a version of Figure 8 with both fair value DRP curves flat between 7 and 10 years. Even with this assumption the implied AER curve still falls below all but one observation. It also remains the case that application of the

AER's sum of squared error tests continue to select the Bloomberg fair value curve over the implied APT fair value curve and an average of the two curves.

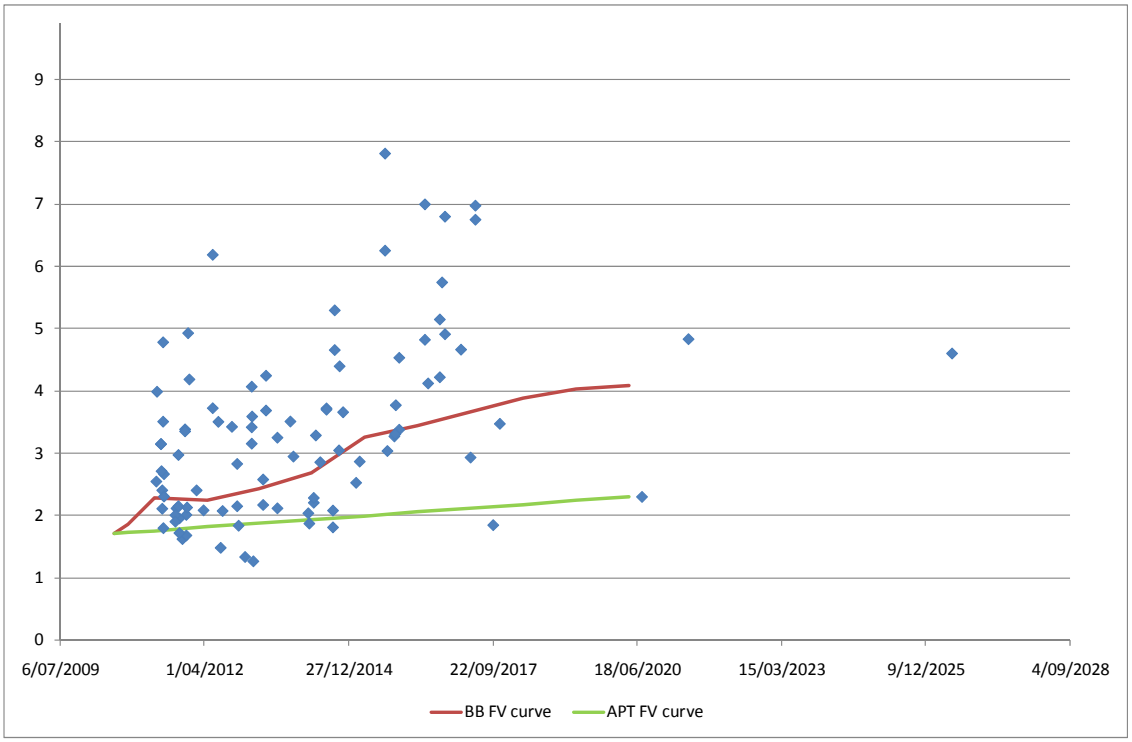
Figure 10: BBB to A- bonds yields: BB FV curve vs. APT FV curve (assuming no increase in DRP between 7 and 10 years)



Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond.

103. I also present the same figure with the APT curve a straight line between the APT estimate and the bottom of the Bloomberg fair value curve. This assumes that while the APT fair value curve is lower than the Bloomberg fair value curve at 10 years this it not true at the shortest maturity. As described previously, I consider that this is a conservative approach most favourable to the APT fair value curve best fitting the data.

Figure 11: BBB to A- bonds yields: BB FV curve vs. APT FV curve (assuming linear APT FV curve)



Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond.

104. As can be seen, it is still the case that the Bloomberg curve is obviously the best fit to the available data.

4. Averaging period II (2/8/2010 – 27/8/2010)

105. Table 5 below provides the same information as in Table 3 above but with the average yields reported for the Powercor, Citipower, United Energy averaging period (the Powercor period).

Table 5: BBB to A- rated regulated infrastructure issuers with maturity greater than 4 years

Issuer	ISIN	Maturity (years)	Spread to CGS (%)
Melbourne Airport (A-)	AU3CB0157576	4.1	2.0
United Energy (BBB)	AU300UELM012	4.2	3.2
Sydney Airport	AU300SAFC025	4.3	3.0
Sydney Airport	AU3CB0154003	4.9	2.7
SPIAA	AU3CB0156230	5.0	2.2
Sydney Airport	AU300SAFC033	5.3	3.0
Melbourne Airport	AU300APAM054	5.4	3.2
Melbourne Airport	AU300APAM047	5.4	4.1
BBI DBCT (BBB+)	AU300BBIF026	5.9	4.9
BBI DBCT (BBB+)	AU300BBIF018	5.9	6.7
Brisbane Airport (BBB)	AU300BR40051	5.9	3.7
Melbourne Airport (A-)	AU3CB0157584	6.1	2.4
Adelaide Airport	AU300NTFC034	6.1	3.3
Adelaide Airport	AU300NTFC026	6.1	3.9
SPI E & G	AU3CB0145696	7.2	2.2
BBI DBCT	AU300BBIF034	10.9	4.9
BBI DBCT	AU300BBIF042	15.9	4.7
Average of above		**6.4**	**3.8**
APT	AU3CB0155133	10.0	2.8

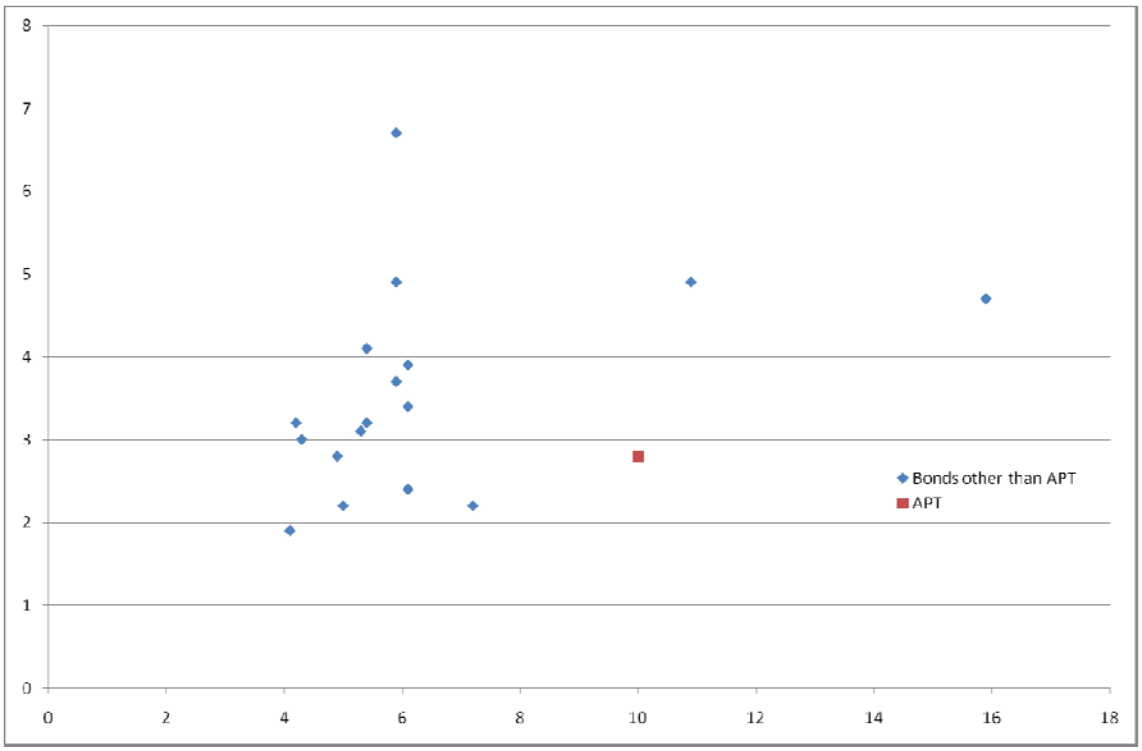
Source: UBS, Bloomberg, CBASpectrum, CEG analysis

106. The average spread to CGS for the 17 BBB to A- rated owners of regulated infrastructure remains notably higher than the spread for APT. This is despite the average maturity of the five issuers being only 6.4 years which, given an upward slope in credit spreads with maturity, one would expect their average yield to be lower other things equal.

107. If one reflects on the information contained in the above table then, in my opinion, one could not reach the conclusion that the spread CGS for the APT bond is a conservative estimate of the spread to CGS for a 10-year BBB+ bond. One could reasonably reach the conclusion that the spread to CGS for the APT bond is unusually low for BBB bond.

108. The spreads to CGS in the above table are also shown plotted against maturity. It can once more be seen that the APT bond has an unusually low DRP in both absolute terms and for its maturity.

Figure 12: BBB to A- rated bonds issued by regulated infrastructure owners

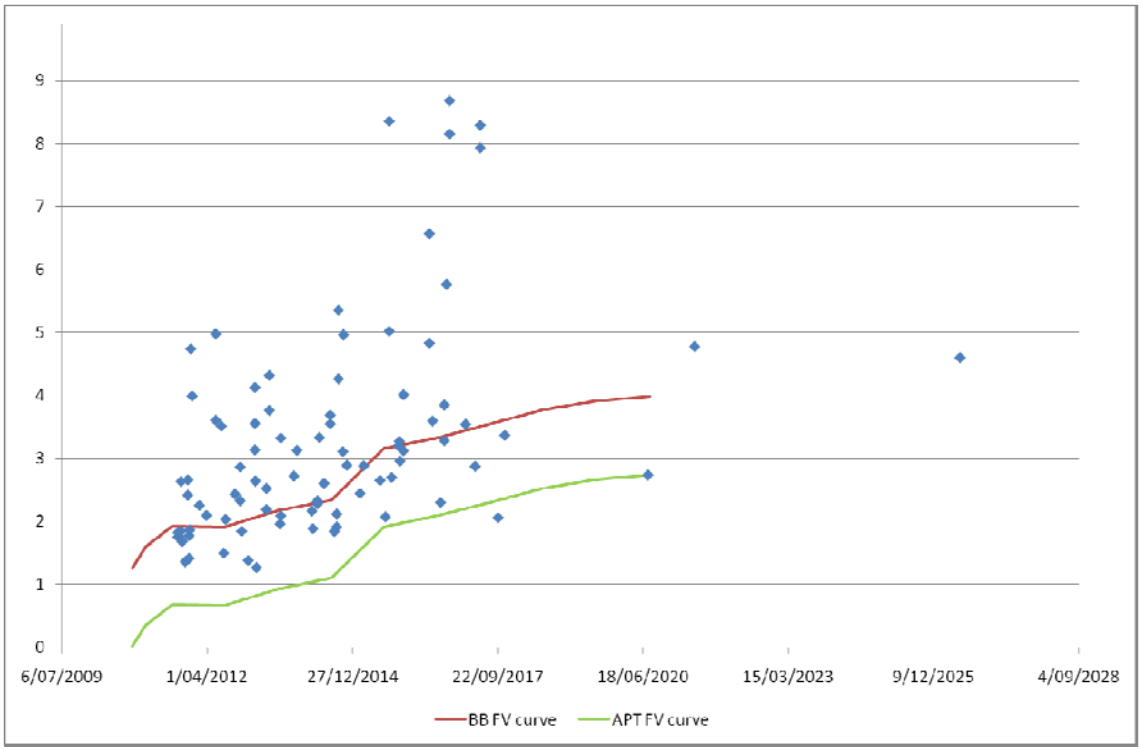


Source: Bloomberg, UBS, CBASpectrum, CEG analysis

109. If one reflects on the information contained in the above table and figure then, in my opinion, one could not reach the conclusion that the spread to CGS for the APT bond is a conservative estimate of the spread to CGS for a 10 year BBB+ bond. One could reasonably reach the conclusion that the spread to CGS for the APT bond is unusually low for BBB bond.

110. This conclusion is confirmed by an analysis which takes into account all of the available information on bonds rated BBB to A-. The below figure plots all BBB to A- bond yields against maturity. Superimposed on this chart is the Bloomberg DRP fair value curve (extrapolated from 7 to 10 years using the contemporaneous Bloomberg AAA FV curve between 7 and 10 years). Also superimposed on this chart is the same curve shifted down so that it passes through the AER's proposed APT DRP estimate – described as the "APT fair value curve".

Figure 13: BBB to A- bonds yields: BB FV curve vs. AER FV curve



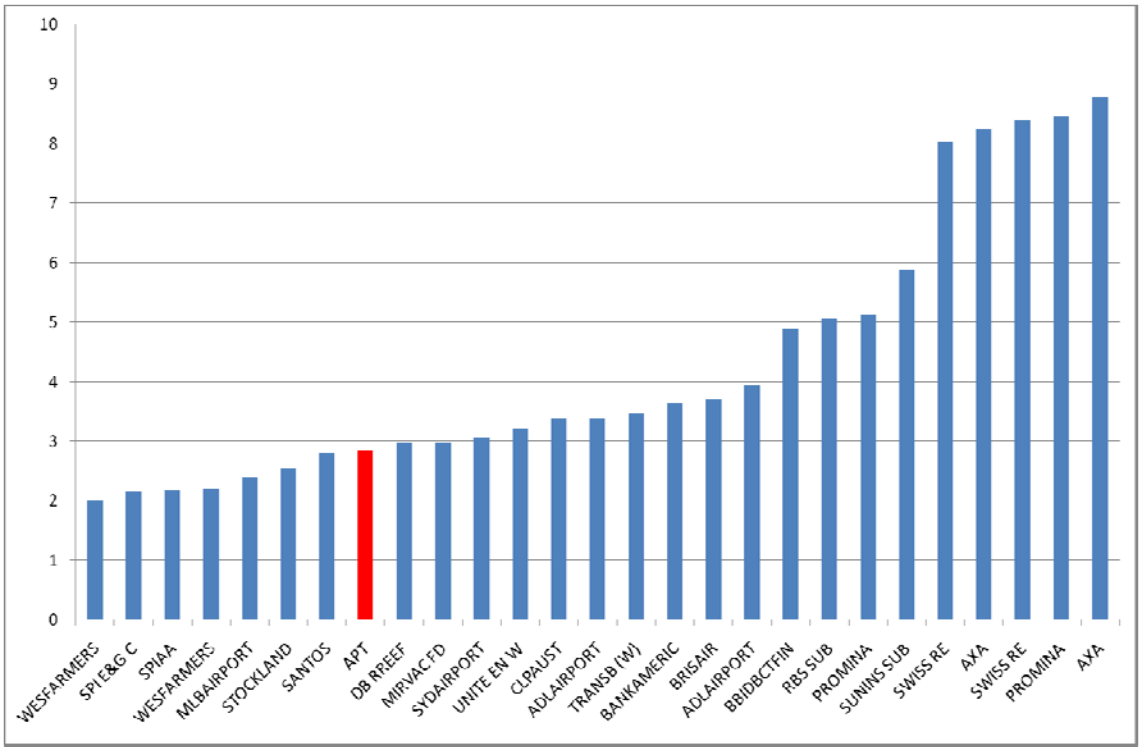
Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond. Bloomberg fair value curve is extrapolated from 7 to 10 years using the contemporaneous AAA fair value curve. The APT fair value curve is equal to the Bloomberg fair value curve shifted down to pass through the APT 10 year bond.

111. As was the case for the JEN averaging period, it is striking that this implied APT fair value curve passes below all but one of the observations for DRP associated with all BBB to A- rated bonds (where these observations are the average DRP estimate from one or more of Bloomberg, UBS and CBASpectrum).

112. When I apply the sum of squared errors test used by the AER in the past to select a fair value curve I find the Bloomberg fair value curve is a better fit to the data than the implied APT fair value curve. This result is obvious to the naked eye with the Bloomberg fair value curve passing through the middle of the data and the implied AER curve passing below the bottom of the data. It is also the case that the sum of squared errors test selects the Bloomberg fair value curve over the average of the Bloomberg and implied APT fair value curves.

113. Even when one ignores the fact that credit spreads should be rising with maturity the APT bond can be seen to have a very low credit spread relative to other bonds rated BBB to A- in the above scatter diagram. This is further illustrated in the below bar chart where the APT bond yield is marked in red. Despite having one of the longest maturities it has one of the lowest credit spreads in the sample (where only bonds with maturity greater than 4 years are included in the bar chart).

Figure 14: Yields on BBB to A- bonds with maturity greater than 4 years



Source: UBS, Bloomberg, CBASpectrum, CEG analysis.

114. In this sample the mean (median) credit spread is 4.3% (3.4%) while the mean maturity is only 6.0 years and the median credit rating is BBB+.

115. These figures include some issuers who have multiple bonds that meet the relevant criteria. If only one bond per issuer (the bond that is closest to 10 years maturity) is included in the sample then the mean (median) of the sample is 3.9% (3.3%). Table 4 below describes all the yields on bonds that meet these criteria and have an average maturity of more than 4 years. If more than one bond was issued on the same date the average of the two has been used. The average credit rating in this sample is BBB+.

Table 6: BBB to A- rated bonds (one per issuer) with maturity greater than 4 years

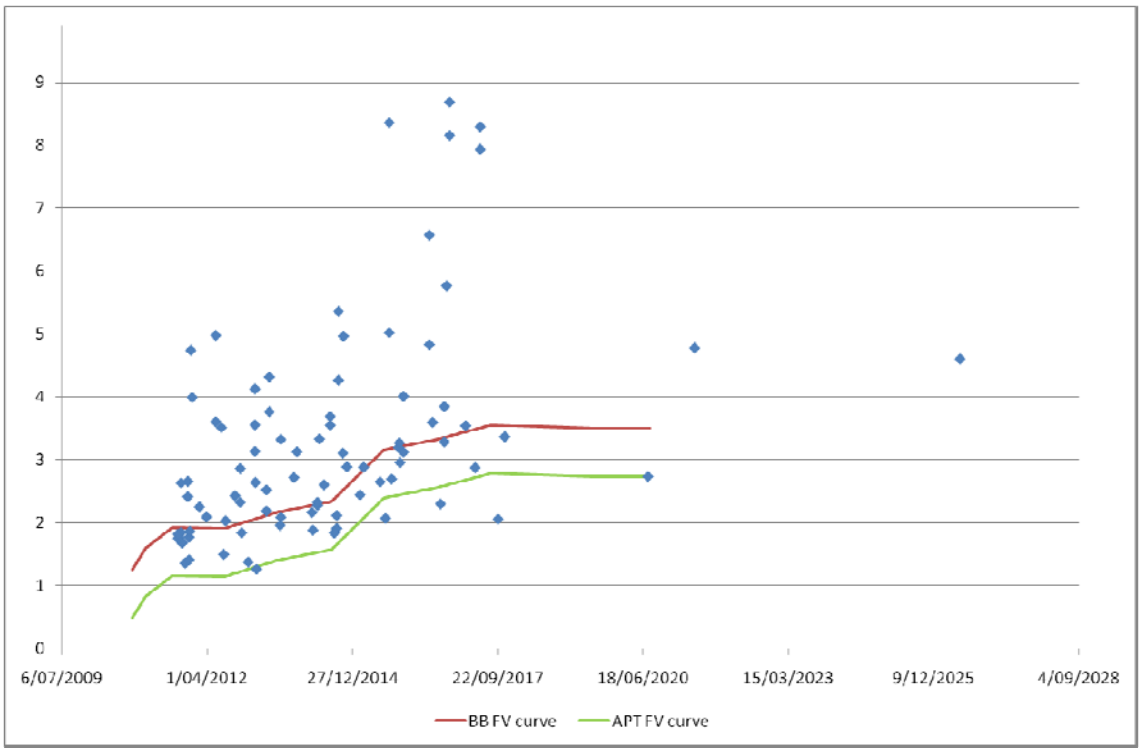
Issuer	Maturity (years)	Spread to CGS (%)
Wesfarmers (BBB+)	4.1	2.0
United Energy (BBB)	4.2	3.2
RBS (BBB)	4.2	5.1
Stockland (A-)	4.5	2.5
Mirvac (BBB)	4.6	3.0
SPIAA (A-)	5.0	2.2
Promina (A-)	5.1	6.8
Santos (BBB+)	5.1	2.8
CLP (BBB)	5.3	3.4
Sydney Airport (BBB)	5.3	3.1
Brisbane Airport (BBB)	5.9	3.7
Melbourne Airport (A-)	6.1	2.4
Adelaide Airport (BBB)	6.1	3.7
Sunins Sub (A-)	6.2	5.8
AXA (BBB)	6.2	8.5
Bank of America (A-)	6.5	3.6
DB Rreef (BBB+)	6.7	3.0
Swiss Re (A-)	6.8	8.2
SPI E&G (A-)	7.1	2.2
Transurban (A-)	7.3	3.5
APT (BBB)	10.0	2.8
BBI DBCT (BBB+)	10.9	4.9
Average	**6.0**	**3.9**

Source: UBS, Bloomberg, CBASpectrum, CEG analysis

116. The above statistics and graphical analysis demonstrate that adopting the APT DRP of 2.8% as a fair reflection of the 10-year DRP is simply not sustainable when one has regard to the full set of available information. The average DRP for BBB to A- rated bonds with more than 4 years to maturity is between 3.4% and 4.5% (depending on the measure of average used). The average maturity for this sample is around 6 years. A value of 2.8% for a maturity of 10 years (ie, 4 years greater than the average in the sample) is simply not consistent with the available data – unless one believes, contrary to the evidence, that DRP reduces with maturity.

117. For completeness I also present a version of Figure 13 above but with both fair value DRP curves flat between 7 and 10 years. Even with this assumption the implied AER curve still falls below all but one observation. It also remains the case that application of the AER's sum of squared error tests continue to select the Bloomberg fair value curve over the implied APT fair value curve and an average of the two curves.

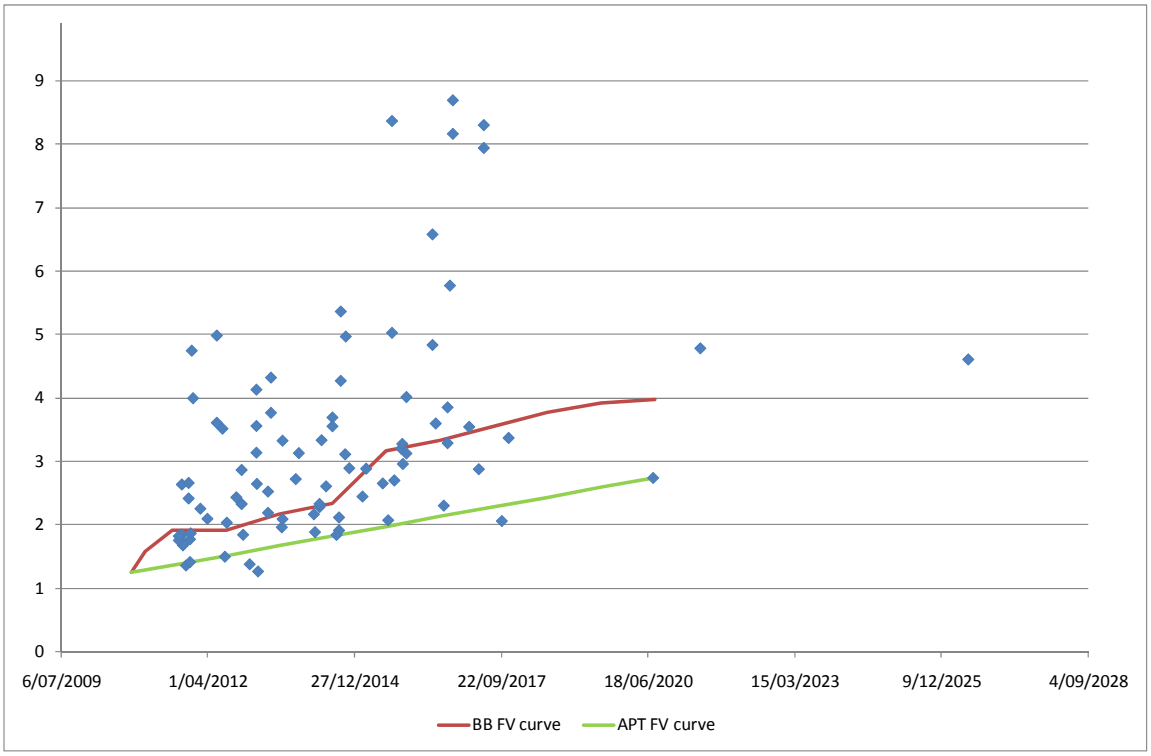
Figure 15: BBB to A- bonds yields: BB FV curve vs. APT FV curve(assuming no increase in DRP between 7 and 10 years)



Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond. Bloomberg fair value curve is extrapolated from 7 to 10 years using the contemporaneous AAA fair value curve. The APT fair value curve is equal to the Bloomberg fair value curve shifted down to pass through the APT 10 year bond.

118. I also present the same figure with the APT curve a straight line between the APT estimate and the bottom of the Bloomberg fair value curve. This assumes that while the APT fair value curve is lower than the Bloomberg fair value curve at 10 years this it not true at the shortest maturity. As described previously, I consider that this is a conservative approach most favourable to the APT fair value curve best fitting the data.

Figure 16: BBB to A- bonds yields: BB FV curve vs. APT FV curve (assuming linear APT FV curve)



Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond.

119. As can be seen, it is still the case that the Bloomberg curve is obviously the best fit to the available data.

5. Averaging period III (13/9/2010 – 30/9/2010)

120. Table 7 below provides the same information as in Table 3 and Table 5 above but with the average yields reported for SPAusNet averaging period.

Table 7: BBB to A- rated regulated infrastructure issuers with maturity greater than 4 years

Issuer	ISIN	Maturity (years)	Spread to CGS (%)
United Energy (BBB)	AU300UELM012	4.1	3.2
Sydney Airport	AU300SAFC025	4.2	2.8
Sydney Airport	AU3CB0154003	4.8	2.8
SPIAA	AU3CB0156230	4.9	2.1
Sydney Airport	AU300SAFC033	5.2	2.9
Melbourne Airport	AU300APAM054	5.3	2.9
Melbourne Airport	AU300APAM047	5.3	3.8
BBI DBCT (BBB+)	AU300BBIF026	5.7	5.0
BBI DBCT (BBB+)	AU300BBIF018	5.7	6.9
Brisbane Airport (BBB)	AU300BR40051	5.8	3.5
Melbourne Airport (A-)	AU3CB0157584	5.9	2.4
Adelaide Airport	AU300NTFC034	6.0	2.9
Adelaide Airport	AU300NTFC026	6.0	3.4
SPI E & G	AU3CB0145696	7.0	2.2
BBI DBCT	AU300BBIF034	10.7	5.0
BBI DBCT	AU300BBIF042	15.7	4.8
Average of above		**6.4**	**3.5**
APT	AU3CB0155133	9.9	2.8

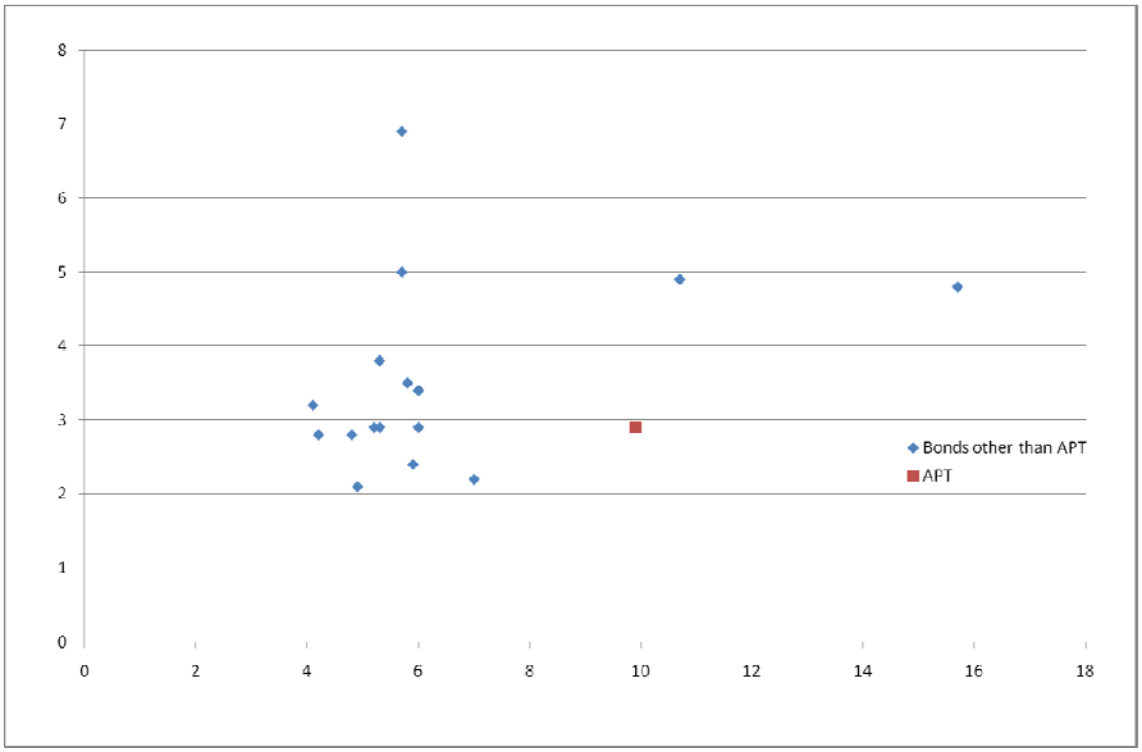
Source: Bloomberg, UBS, CBASpectrum

121. The average spread to CGS for the sixteen BBB to A- rated owners of regulated infrastructure is notably higher than the spread for APT. This is despite the average maturity of the five issuers being only 6.4 years which, given an upward slope in credit spreads with maturity, one would expect their average yield to be lower other things equal.

122. If one reflects on the information contained in the above table then, in my opinion, one could not reach the conclusion that the spread CGS for the APT bond is a conservative estimate of the spread to CGS for a 10-year BBB+ bond. One could reasonably reach the conclusion that the spread to CGS for the APT bond is unusually low for BBB bond.

123. The spreads to CGS in the above table are also shown plotted against maturity. It can once more be seen that the APT bond has an unusually low DRP in both absolute terms and for its maturity.

Figure 17: BBB to BBB+ rated bonds issued by regulated infrastructure owners

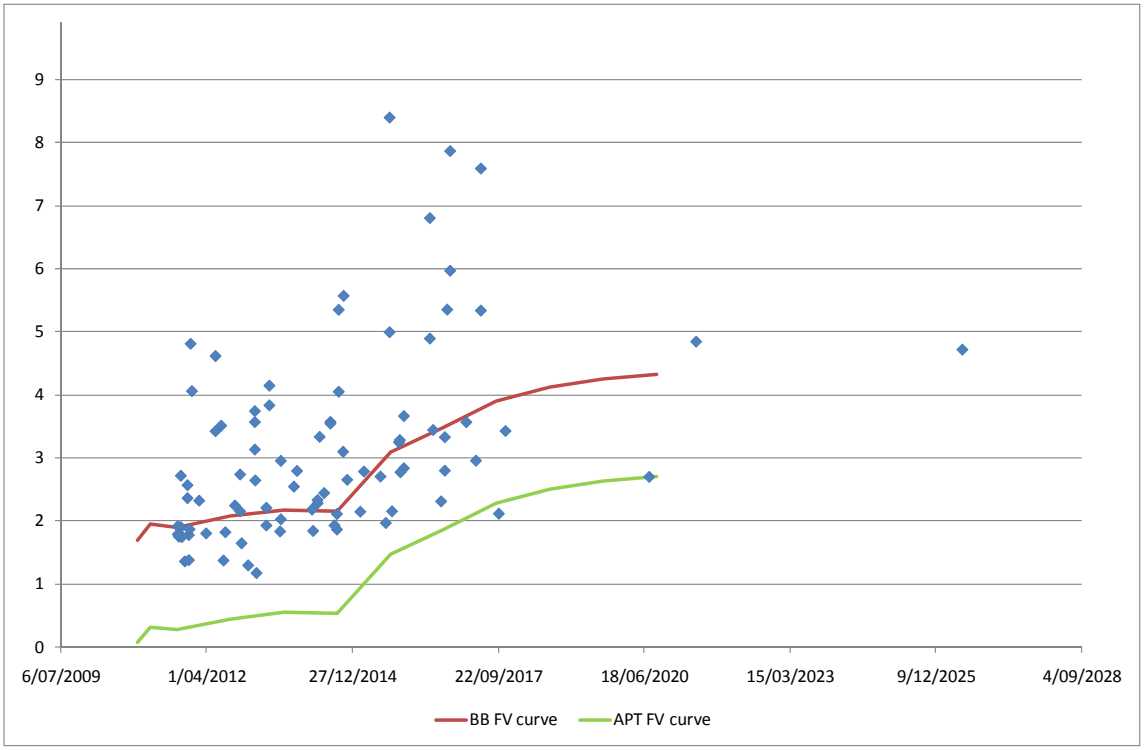


Source: Bloomberg, UBS, CBASpectrum

124. If one reflects on the information contained in the above table then, in my opinion, one could not reach the conclusion that the spread to CGS for the APT bond is a conservative estimate of the spread to CGS for a 10-year BBB+ bond. One could reasonably reach the conclusion that the spread to CGS for the APT bond is unusually low for BBB bond.

125. This conclusion is confirmed by an analysis which takes into account all of the available information on bonds rated BBB to A-. The below figure plots all BBB to A- bond yields against maturity. Superimposed on this chart is the Bloomberg DRP fair value curve (extrapolated from 7 to 10 years using the contemporaneous Bloomberg AAA FV curve between 7 and 10 years). Also superimposed on this chart is the same curve shifted down so that it passes through the AER's proposed APT DRP estimate – described as the "APT fair value curve".

Figure 18: BBB to A- bonds yields: BB FV curve vs. AER FV curve



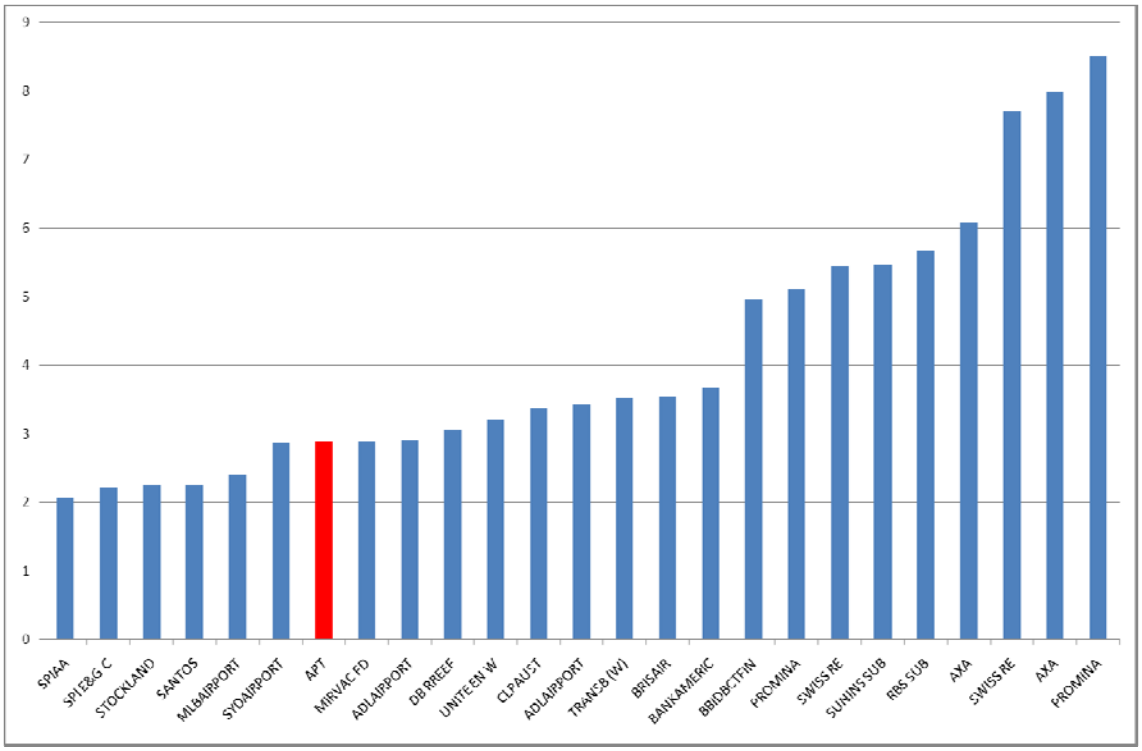
Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond. Bloomberg fair value curve is extrapolated from 7 to 10 years using the contemporaneous AAA fair value curve. The APT fair value curve is equal to the Bloomberg fair value curve shifted down to pass through the APT 10 year bond.

126. As was the case for the JEN averaging period, it is striking that this implied APT fair value curve passes below all but one of the observations for DRP associated with all BBB to A- rated bonds (where these observations are the average DRP estimate from one or more of Bloomberg, UBS and CBASpectrum).

127. When I apply the sum of squared errors test used by the AER in the past to select a fair value curve I find the Bloomberg fair value curve is a better fit to the data than the implied APT fair value curve. This result is obvious to the naked eye with the Bloomberg fair value curve passing through the middle of the data and the implied AER curve passing below the bottom of the data. It is also the case that the sum of squared errors test selects the Bloomberg fair value curve over the average of the Bloomberg and implied APT fair value curves.

128. Even when one ignores the fact that credit spreads should be rising with maturity the APT bond can be seen to have a very low credit spread relative to other bonds rated BBB to A- in the above scatter diagram. This is further illustrated in the below bar chart where the APT bond yield is marked in red. Despite having one of the longest maturities it has one of the lowest credit spreads in the sample (where only bonds with maturity greater than 4 years are included in the bar chart).

Figure 19: Yields on BBB to A- bonds with maturity greater than 4 years



Source: UBS, Bloomberg, CBASpectrum, CEG analysis

129. In this sample the mean (median) credit spread is 4.1% (3.4%) while the mean maturity is only 6.0 years. The median credit rating for this sample is BBB+.

130. These figures include some issuers who have multiple bonds that meet the relevant criteria. If only one bond per issuer (the bond that is closest to 10 years maturity) is included then the mean (median) of the sample is 3.8% (3.2%). Table 8 below describes all the yields on bonds that meet these criteria and have an average maturity of more than 4 years. If more than one bond was issued on the same date the average of the two has been used. The average credit rating in this sample is BBB+.

Table 8: BBB to A- rated bonds (one per issuer) with maturity greater than 4 years

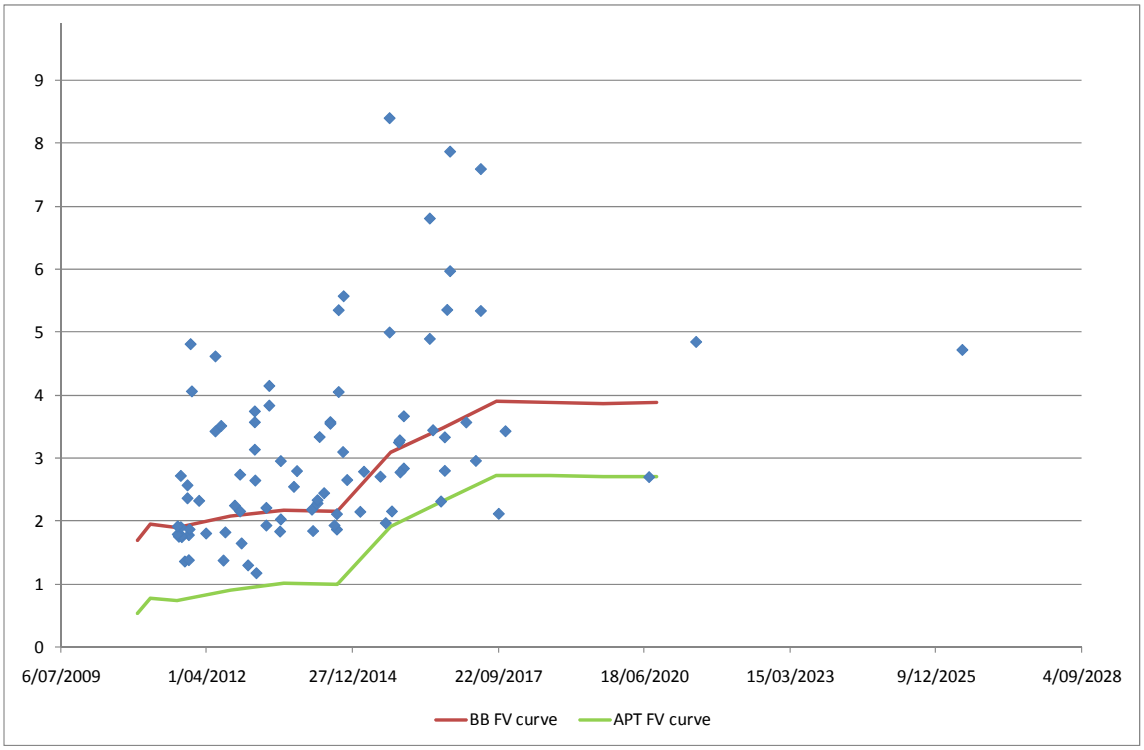
Issuer	Maturity (years)	Spread to CGS (%)
United Energy (BBB)	4.1	3.2
RBS (BBB)	4.1	5.7
Stockland (A-)	4.4	2.2
Mirvac (BBB)	4.5	2.9
SPIAA (A-)	4.9	2.1
Promina (A-)	5.0	6.8
Santos (BBB+)	5.0	2.3
CLP (BBB)	5.2	3.4
Sydney Airport (BBB)	5.2	2.9
Brisbane Airport (BBB)	5.8	3.5
Melbourne Airport (A-)	5.9	2.4
Adelaide Airport (BBB)	6.0	3.2
Sunins Sub (A-)	6.1	5.4
AXA (BBB)	6.1	7.0
Bank of America (A-)	6.4	3.7
DB Rreef (BBB+)	6.6	3.1
Swiss Re (A-)	6.7	6.6
SPI E & G (A-)	7.0	2.2
Transurban (A-)	7.2	3.5
APT (BBB)	9.9	2.8
BBI DBCT (BBB+)	10.7	5.0
Average	**6.0**	**3.8**

Source: UBS, Bloomberg, CBASpectrum, CEG analysis

131. The above statistics and graphical analysis demonstrate that adopting the APT DRP of 2.90% as a fair reflection of the 10 year DRP is simply not sustainable when one has regard to the full set of available information. The average DRP for BBB to A- rated bonds with more than 4 years to maturity is between 3.4% and 4.0%. The average maturity for this sample is around 6 years. A value of 2.9% for a maturity of 10 years (ie, 4 years greater than the average in the sample) is simply not consistent with the available data – unless one believes, contrary to the evidence, that DRP reduces with maturity.

132. For completeness I also present a version of Figure 18 above but with both fair value DRP curves flat between 7 and 10 years. Even with this assumption the implied AER curve still falls below all but one observation. It also remains the case that application of the AER's sum of squared error tests continue to select the Bloomberg fair value curve over the implied APT fair value curve and an average of the two curves.

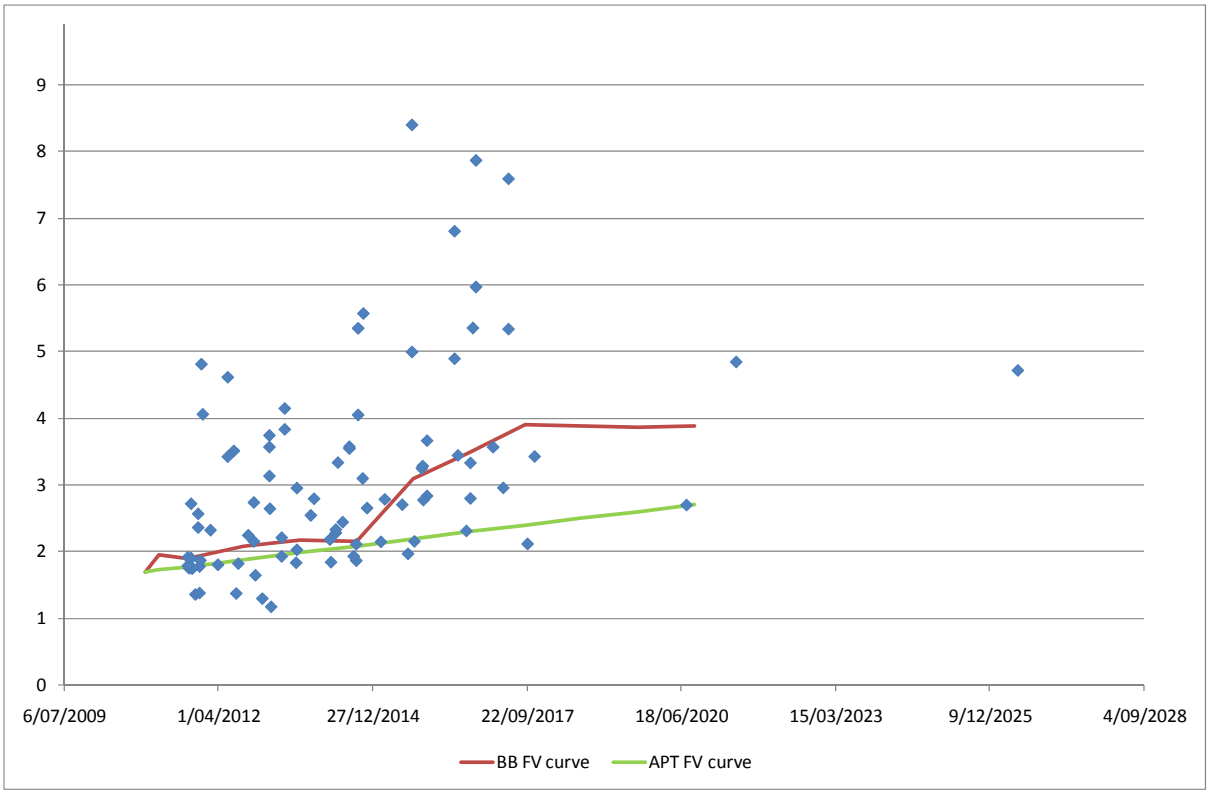
Figure 20: BBB to A- bonds yields: BB FV curve vs. APT FV curve(assuming no increase in DRP between 7 and 10 years)



Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond. Bloomberg fair value curve is extrapolated from 7 to 10 years using the contemporaneous AAA fair value curve. The APT fair value curve is equal to the Bloomberg fair value curve shifted down to pass through the APT 10 year bond.

133. I also present the same figure with the APT curve a straight line between the APT estimate and the bottom of the Bloomberg fair value curve. This assumes that while the APT fair value curve is lower than the Bloomberg fair value curve at 10 years this it not true at the shortest maturity. As described previously, I consider that this is a conservative approach most favourable to the APT fair value curve best fitting the data.

Figure 21: BBB to A- bonds yields: BB FV curve vs. APT FV curve (assuming linear APT FV curve)



Source: Bloomberg, UBS, CBASpectrum. Yields are averages of all available yield estimates for each bond.

134. As can be seen, it is still the case that the Bloomberg curve is the best fit to the available data. However, because the Bloomberg fair value curve adopts a relatively flat section between 0.25 and four years both curves have a similar fit at low maturities but the APT fair value curve fails to significantly increase at higher maturities.

6. Extrapolating Bloomberg's BBB fair value curve to ten years

135. On 22 June 2010, Bloomberg ceased to publish values for its AAA fair value curve beyond the term of five years. This means that the AER's preferred method of extrapolating Bloomberg's BBB fair curve to a term of ten years, as used in its Draft Decision, can no longer be used for periods subsequent to 22 June 2010.[18] The Victorian DBs have asked me to provide my opinion in relation to which is the most appropriate method of extrapolation of the Bloomberg BBB fair value curve.

136. In its Consultation Paper the AER does not state explicitly which methodology it proposes to use to extrapolate Bloomberg's BBB fair value curve. However, the AER does restate the results of its previous analysis which indicated that extrapolation using the CGS yield curve was the next best option behind using the Bloomberg AAA fair value curve. The AER did not seek comment on options for this extrapolation despite the absence of any corporate fair value curves extending to ten years.

6.1. The AER's methodology for determining the best extrapolation of Bloomberg

137. The methodology that has been adopted by the AER twice in the past when determining the best extrapolation of the Bloomberg BBB fair value curve is to select the method of extrapolation that minimises the sum of squared errors between that extrapolation and Bloomberg's estimate of the 10-year BBB fair value over the period from 10 November 2005 to 9 October 2007.[19] This period was used because it was the most recent period for which the Bloomberg 10-year BBB fair value curve is available.

138. The AER tests a number of extrapolation methods using other Bloomberg fair value curves, including A, AA and AAA corporate debt, CGS and various State Government fair value curves, as well as linear extrapolation. Its results suggest that, in the absence of any corporate fair value curve extending to ten years, the next best alternative for extrapolating the Bloomberg BBB fair value curve is using Bloomberg's CGS fair value curve.

139. In my opinion, there are a number of issues that limit the usefulness of the AER's analysis in being able to select the most appropriate method of extrapolation. These include:

    - the AER's analysis focuses only on a two year period before the onset of the global financial crisis. This period is not representative of the current state of debt

[18] However, I believe that the Bloomberg AAA fair value curve should be continued as the basis for extrapolation for JEN's averaging period which occurs prior to 22 June 2010. Section 0 below details the basis for this opinion.

[19] AER, *Final decision: SP AusNet transmission determination* January 2008, pp.95-98; AER, *Final decision: ACT, Queanbeyan and Palerang gas distribution network*, March 2010, pp.43-45

markets and may result in the selection of a methodology that is not appropriate for estimating the current cost of debt;

- the range of extrapolations examined by the AER do not include at least one other alternatives that I consider should be considered at the current time, namely using the most recent evidence available from Bloomberg's AAA fair value curve; and
- the AER's method assumes that the DRP is constant between seven and ten years subsequent to 22 June 2010.[20] This method further implies that as of 22 June 2010 the estimated DRP margin was 46 bps whereas immediately after it was 0 bps.

140. I address these issues in sections below.

6.2. Extending the AER's methodology to consider recent data

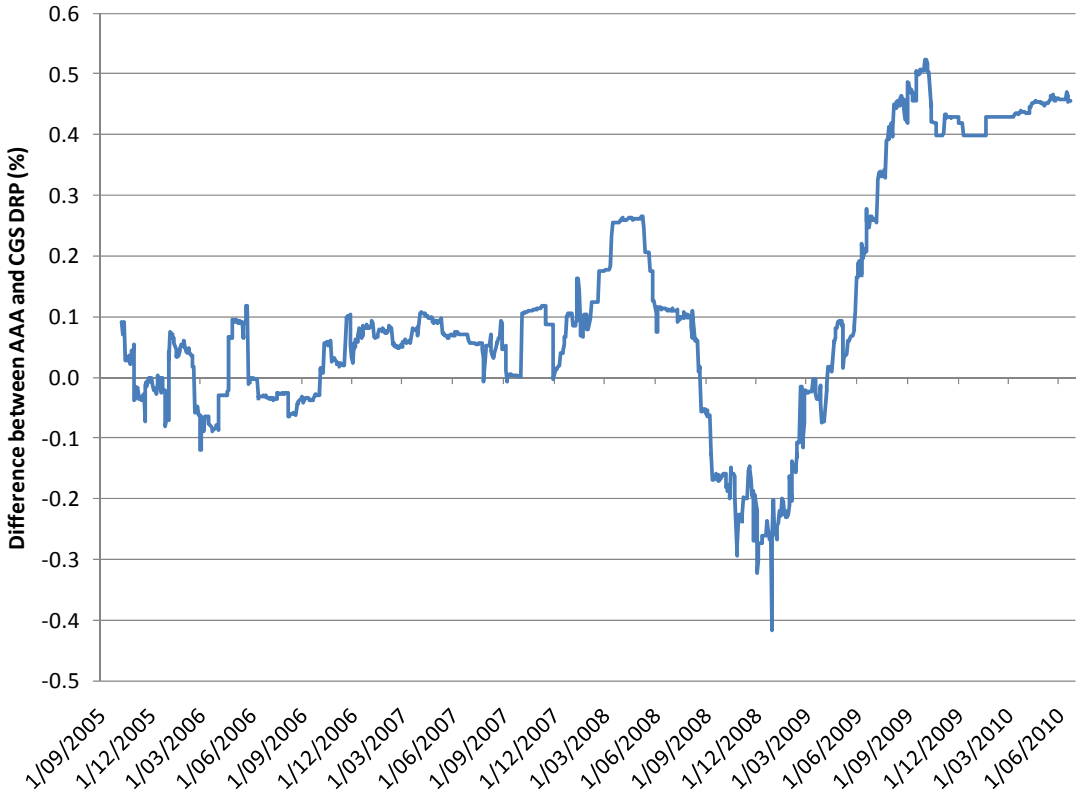
141. The period that the AER used to test possible extrapolations of the BBB fair value curve was from 10 November 2005 to 9 October 2007 which is the most recent period for which Bloomberg published ten year BBB fair value estimates. This time period is no longer reflective of today's debt markets.

142. Given that this extrapolation is to be applied to an averaging period in August 2010, it would be appropriate to take into account more recent data in assessing the best method of extrapolation. In particular, the structure of yields and spreads to CGS on corporate bonds has changed significantly since before the global financial crisis. It would be unreasonable to only take account of a two year period before the global financial crisis in determining the best extrapolation of the Bloomberg curve if more recent data is available.

143. Figure 22 below demonstrates why it is important to take into account more recent data. This figure demonstrates that prior to 2008, the difference in the BBB 10 year DRP extrapolated using AAA and CGS fair value curves was almost always less than 0.10%. However, since 2008 the increase in DRP has been materially different from zero, as estimated by Bloomberg.

[20] Although it is unclear from the discussion in the Consultation Paper, the AER may also be proposing the same in respect of the JEN averaging period, even though 10-year AAA fair value estimates are available over this period.

Figure 22: Difference between Bloomberg's AAA and CGS DRP over time



Source: Bloomberg, CEG analysis

144. Replication of the AER's tests of possible extrapolations of the Bloomberg BBB fair value curve to ten years over the period from 10 November 2005 to 9 October 2007 show that extrapolations using the A fair value curve (from eight years) and the AAA fair value curve (from seven years) performed 54% and 38% better than the best other alternative tested over that period, which was to use the CGS fair value curve. Importantly, since the extrapolations based on A and AAA ratings are measures of corporate debt, they are more likely to take account of changes since the financial crisis in the structure of corporate debt. On the basis of the above factors, it would be reasonable to test possible extrapolations of the Bloomberg fair value curve against a proxy Bloomberg BBB ten year series formed as follows:

- between 10 November 2005 and 9 October 2007, Bloomberg's ten year BBB fair value estimate;
- between 10 October 2007 and 19 August 2009, Bloomberg's eight year BBB fair value estimate, plus the difference between Bloomberg's ten year and eight year A fair value estimates; and
- between 20 August 2009 and 22 June 2010, Bloomberg's seven year BBB fair value estimate, plus the difference between Bloomberg's ten year and seven year AAA fair value estimates.

145. I note that the proxies used above were deemed the most reasonable approach at the time by previous analysis undertaken by the AER.

146. I have calculated the mean square difference between this proxy and possible extrapolations of the Bloomberg BBB curve to ten years for three different periods. The first period is the period which contains the most recent period for which 10 year Bloomberg BBB data is available, from 10 November 2005 until 9 October 2007. The second period also starts on the 10 November 2005 and continues until the point at which Bloomberg ceased to publish estimates for its AAA fair value curve, ie, 22 June 2010. The third period starts on the date when Bloomberg ceased to publish its BBB fair values curve, 9 October 2007, and again ends on the date when it ceased to publish estimates for its AAA fair value curve. The results of this analysis are shown in Table 3 below.

Table 9: Results of testing extrapolation of Bloomberg BBB fair value curve

	Mean square difference		
	Last period when Bloomberg published 10 year BBB	*Entire period including when extrapolation required to estimate 10 year BBB*	*Period where extrapolation used to estimate 10 year BBB*
	10/11/2005-9/10/2007	10/11/2005-22/6/2010	9/10/2007-22/6/2010
Bloomberg CGS	**0.0041**	0.0414	0.0677
Bloomberg NSW	0.0048	0.0524	0.0793
Bloomberg VIC	0.0053	0.0414	0.0601
Bloomberg QLD	0.0047	0.0395	0.0641
Bloomberg WA	0.0049	0.0397	0.0643
Linear extrapolation	0.0122	**0.0290**	**0.0408**

Source: Bloomberg, CEG analysis

147. Table 3 shows that analysis over the period between 10 November 2005 and 9 October 2007 would select the Bloomberg CGS fair value curve as the best method of extrapolation. However, looking at the extended period from 10 November 2005 to 22 June 2010, or just the most recent part of that period shows that linear extrapolation generates a closer fit to my proxy than Bloomberg CGS. The difference between the performance of CGS in the early period and more recently clearly indicates that there has been a considerable change in the structure of yields on corporate debt. This underlines the need to take into account the more recent period.

148. Based on this analysis, I consider that the linear extrapolation based on Bloomberg five and seven year BBB fair value estimates is the method that would have been most accurate if applied retrospectively. Application of linear extrapolation to the Bloomberg BBB fair value curve would result in an estimated DRP at ten years of:

- 4.50% over the period from 19 April 2010 to 31 May 2010 – 0.74% higher than at seven years;

- 4.33% over the period from 2 August 2010 to 27 August 2010 – 0.67% higher than at seven years; and
- 5.24% over the period from 13 September 2010 to 30 September 2010 – 1.26% higher than at seven years.

6.3. Increase in the DRP between 7 years and 10 years

149. By proposing to use the CGS fair value curve to extend out the Bloomberg BBB fair value yield curve, the AER is explicitly assuming that the DRP is flat between seven and ten years. That is, the AER is setting the 10-year BBB fair value estimate equal to the 7-year BBB FV plus the 10-year CGS FV less the 7-year CGS fair value. But this means that the DRP at ten years, which is equal to the 10-year BBB FV less the 10-year CGS FV, is set to equal the 7-year BBB FV less the 7-year CGS FV. That is, the AER is assuming that the DRP at ten years is the same as it is at seven years. This is contrary to both historical evidence and the most recent evidence about the nature of the DRP.

150. As an illustration of this point, I show in Table 10 below the extent to which the 10-year DRP is higher than the 7-year DRP across four time periods, namely:

- 4 December 2001 to 9 November 2005, being the date range in which Bloomberg fair value estimates are reported before the time period over which the AER tests extrapolations to the Bloomberg BBB fair value curve;
- 10 November 2005 to 9 October 2007, being the most recent period in which Bloomberg reported a 10-year BBB fair value estimate and the period used by the AER to test extrapolations to the Bloomberg BBB fair value curve;
- 10 October 2007 to 18 August 2009, over which both the Bloomberg A and AAA fair value curves reported a 10-year yield estimate and in which the AER extrapolated the BBB fair value curve with the A fair value curve; and
- 19 August 2009 to 22 June 2010, in which only the Bloomberg AAA fair value curve reported a 10-year yield estimate and was used by the AER to extrapolate the BBB fair value curve.

Table 10: Increase in debt risk premium between 7 and 10 years (%)

Bloomberg fair value curve	4 Dec 2001 to 9 Nov 2005*	10 Nov 2005 to 9 Oct 2007	10 Oct 2007 to 18 Aug 2009	19 Aug 2009 to 22 Jun 2010
BBB	0.12	0.03		
A	0.15	0.04	0.01	
AAA	0.06	0.03	0.05	0.44

*Source: Bloomberg, CEG analysis. * BBB and A 10-year fair value estimates were not available over some of this period and averages do not cover these dates.*

151. Historically the DRP has on average increased between seven years and ten years to maturity, with the magnitude of the increase depending upon which periods are

sampled. Recent evidence from Bloomberg's AAA fair value curve that was discontinued in June suggested that this increase was relatively constant at an average of 0.44% over the previous ten months and 0.46% at the time that the curve was discontinued.

152. On the basis of this information, in my opinion it would not be appropriate to adopt an extrapolation of the Bloomberg BBB fair value curve from seven to ten years that resulted in no change to the DRP over that interval.

6.4. Concurrent testing within averaging period

153. Another way in which the method of extrapolation of the Bloomberg BBB fair value curve may be tested against concurrent data is by examining which method is the best fit to observed yields on bonds with more than seven years to maturity. Bonds with maturities of fewer than seven years cannot be used to distinguish between extrapolations of the curve since they do not diverge until this maturity.

154. I have identified a sample of seven bonds with ratings between BBB and A- that have maturities of greater than seven years at some stage over the averaging period. Table 11 below shows these bonds and their maturities and indicates their average yields sourced from UBS during each averaging period.

Table 11: Bonds with more than seven years to maturity

Issuer	Maturity	ISIN	Yield 19 Apr to 31 May	Yield 2 Aug to 27 Aug	Yield 13 Sep to 8 Oct
SWISS RE	25 May 2017	AU3CB0024743	12.46[1]	-[2]	-[2]
SWISS RE	25 May 2017	AU3FN0002531	12.26[1]	-[2]	-[2]
SPI E&G	25 Sep 2017	AU3CB0145696	7.45	7.05	7.24[3]
TRANSURBAN	10 Nov 2017	AU300TFC0090	8.75	8.17	8.36
APT	22 Jul 2020	AU3CB0155133	-[4]	7.89	8.02
DBCT	9 Jun 2021	AU300BBIF034	10.52	9.93	10.00
DBCT	9 Jun 2026	AU300BBIF042	10.57	10.05	10.10

Source: UBS, CEG analysis. 1. Average yield until 25 May 2010. Swiss Re bonds had maturity less than 7 years after this date. 2. Swiss Re bonds had maturity less than 7 years in the second and third averaging periods. 3. Average calculated up to 25 September 2010. SPI had maturity less than 7 years after this date. 4. Yield data for APT was not available in the first averaging period.

155. This is quite a small number of bonds upon which to rely. However, it is possible to test three different methods of extrapolation using a sum of squares test – calculating the average daily squared divergence between each observed yield and each fair value curve extrapolation, averaged across bonds.[21] The results of these calculations are shown in Table 12 below.

[21] This test is analogous to, and conducted in the same manner as, the AER's sum of squares test to determine the most closely aligned fair value curve that was applied in the Draft Decision.

Table 12: Testing extrapolation of the Bloomberg fair value curve against bond data

Averaging period	Average sum of squared errors by method of extrapolation		
	CGS	Linear	AAA
19 April to 31 May	4.31	4.22	4.02
2 August to 27 August	1.09	1.08	0.88
13 September to 8 October	1.20	3.20	1.14

Source: UBS, CEG analysis

156. The tests indicate that the extrapolation of Bloomberg's BBB fair value curve based on the most recent data from the AAA fair value curve was the best fit to the observed data in all three averaging periods. The performance of the linear extrapolation deteriorated in the third averaging period due to the changing shape of the Bloomberg BBB fair value curve.

6.5. Recommendation for the extrapolation of Bloomberg BBB fair value curve

157. In the sections above, I consider a range of information for determining the most appropriate extrapolation of the Bloomberg BBB fair value curve to ten years, including:

- the AER's methodology, and my extension of the AER's methodology based on analysis of more recent data than relied upon by the AER;
- recent estimates of the increase in DRP between seven and ten years based on Bloomberg's fair value curves for AAA corporate debt; and
- comparison of alternative Bloomberg BBB fair value curves against yields on bonds with more than seven years to maturity.

158. Unamended, the AER's methodology recommends the use of Bloomberg's CGS fair value curve to extend forward the Bloomberg BBB fair value curve. However, this will result in the DRP remaining constant between seven and ten years. Given deficiencies in the AER's approach and that all other current and historic information suggests that the DRP should increase between seven and ten years, I do not regard this as a reasonable methodology.

159. My extension of the AER's analysis suggests that a linear extrapolation has performed best at extrapolating Bloomberg's BBB fair value curve over recent years. However, this indicator currently points to an increase in DRP between seven and ten years of between 0.67% and 1.26%. This is higher than suggested by other current and recent indicators. In particular, the most recent evidence from Bloomberg's AAA corporate fair value curve suggests an increase of only 0.46%.

160. From the above range of estimates, I believe that the best estimate at this point in time is that coming from the most recent Bloomberg AAA corporate fair value curve. This has a number of advantages over other approaches:

- it does not result in an increase in the DRP between seven and ten years of zero;
- it is based on estimated yields of corporate issuers;
- it was relatively stable in the six months leading up to 22 June 2010;
- it was the approach most recently utilised by the AER in its Draft Decision;
- it allows for the use of information contemporaneous to the JEN averaging period and, for the other averaging periods, relies on an estimate that is relatively recent; and
- it results in an increase in DRP that is within the range of results estimated by alternative approaches.

161. Over the period from 19 April 2010 to 31 May 2010, Bloomberg continued to publish its AAA corporate fair value curve out to ten years. The average DRP at ten years over this period is 4.19% in semi-annual terms, 0.42% higher than the DRP at seven years.

162. Over the period from 2 August 2010 to 27 August 2010 and 13 September 2010 to 8 October 2010, I utilise the last available day of data from the Bloomberg AAA corporate fair value curve (22 June 2010) to extrapolate the BBB fair value curve out to ten years. I do this by taking the increase in DRP between seven and ten years for the AAA fair value curve of 0.46%, and applying this during the subsequent averaging periods on top of the DRP estimated by Bloomberg at seven years.

7. Conclusions

163. I consider that the analysis in this report demonstrates that a methodology of averaging the Bloomberg BBB fair value curve with the estimated yield on the APT bond is an unreasonable method for arriving at a benchmark cost of debt under the NER. This report demonstrates that the APT bond has an unusually low estimated DRP for its credit rating. Similarly, the APT bond has an unusually low estimated DRP for an infrastructure issuer of similar credit rating.

164. In my view a more accurate estimate of the NER cost of debt would involve giving 100% weight to the Bloomberg BBB fair value estimates. I consider that this report demonstrates that the Bloomberg BBB fair value curve is a good fit to the relevant bond data.

165. I also conclude that, consistent with the AER Draft Decision, the Bloomberg fair value curve should be extrapolated from 7 to 10 years using the AAA fair value curve where it has been published during the relevant averaging period. For later averaging periods I consider that the most recently available shape to the AAA fair value (DRP) curve should be used to extrapolate the Bloomberg BBB fair value curve.

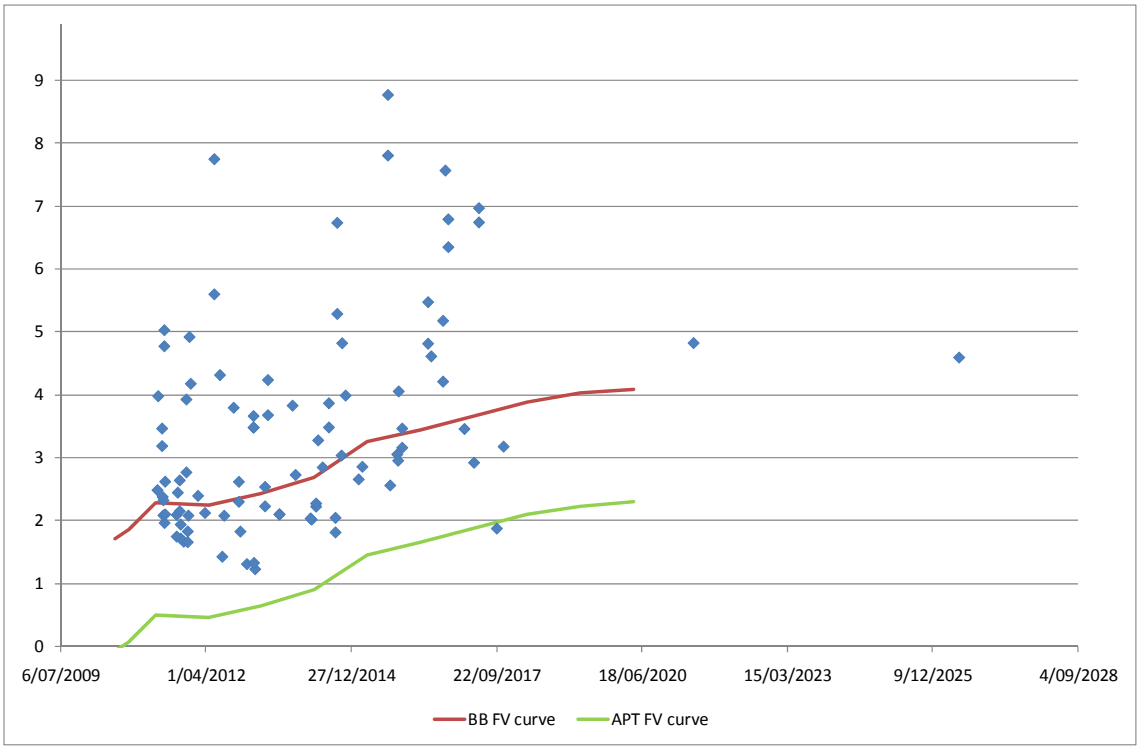
Appendix A. Sensitivity analysis

166. This appendix examines the sensitivity of my conclusions to changes in the data used and other assumptions. In order to avoid repetition, for the purpose of this appendix I have only reported data for the JEN averaging period.

A.1. Sole reliance on UBS

167. In the body of this report I generally report an average of yield estimates where more than one yield estimate is available from UBS, Bloomberg and CBASpectrum. However, UBS has the most complete coverage (each bond covered by the other services is also covered by UBS plus other bonds). The below figure describes the full set of UBS bond data only.

Figure 23: Full sample of BBB to A- bonds – UBS data only



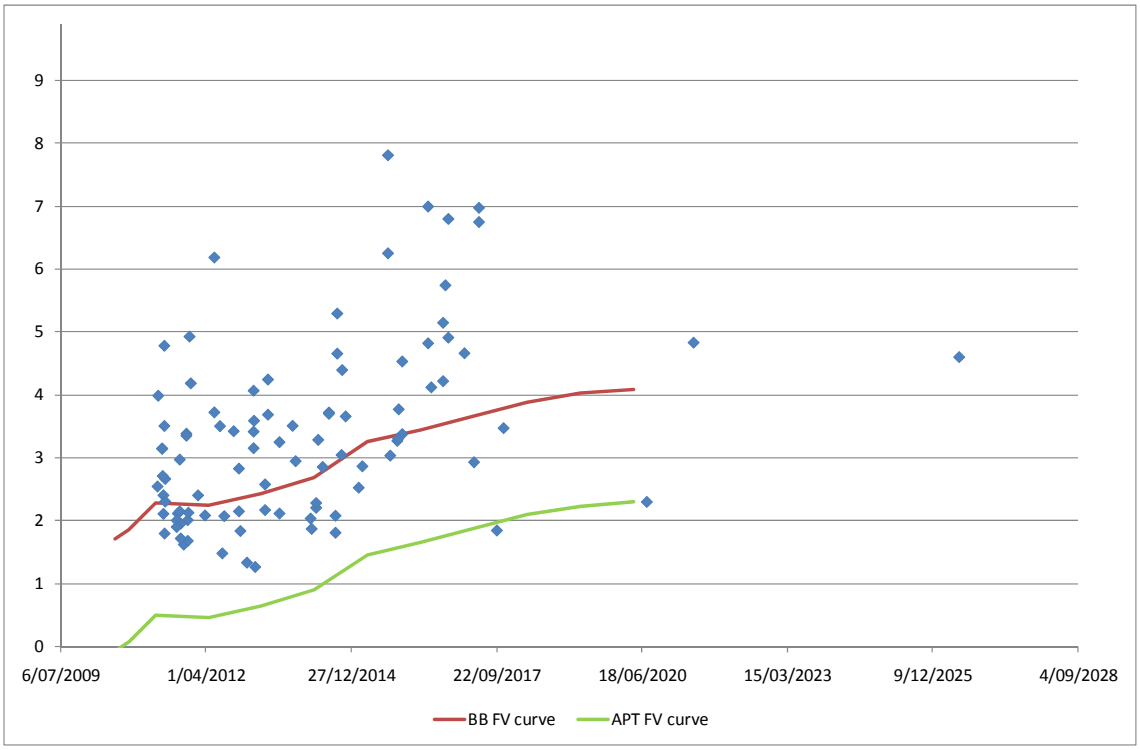
Source: UBS, CEG analysis

168. Having regard to UBS data only would not alter my conclusion that a fair value curve based on the APT observation is a worse fit to the data than the Bloomberg fair value curve.

A.2. Sum of squared errors - full sample, APT FV curve has the same shape as Bloomberg FV curve

169. The conclusion that the Bloomberg fair value curve is a materially better fit to Australian bond market data than a fair value curve ending at the APT bond yield is not sensitive to the removal of the highest yielding bonds from the sample. In this and the following section I examine how many of the highest yielding bonds would have to be removed in order for the APT fair value curve to be a better fit to the data. I conclude that this would generally require the majority of bonds to be removed. Obviously, the majority of bonds can not in any normal sense be considered 'outliers'. As such, I consider that this analysis demonstrates that the conclusion that the Bloomberg fair value curve best fits the data is not sensitive to the exclusion of any potential outliers.

Figure 24: Full sample of BBB to A- bonds – APT FV has the same shape as Bloomberg FV



Source: Bloomberg, UBS, CBASpectrum

170. The full sample of BBB to A- bonds of maturity greater than 1 year is comprised of 98 bonds. As can be seen from the above figure, the Bloomberg fair value curve is clearly a better fit to this data than a fair value curve that has the same shape but has a level such that it ends at the proposed APT DRP. When I perform a sum of squared errors test I find the following:

Table 13: Sum of squared errors – Full sample of BBB to A- bonds – APT FV has the same shape as Bloomberg FV

Number (%) of highest DRP bonds excluded	Bloomberg FV curve	APT FV curve	Average
None out of 98 (0%)	8.0	14.9	10.7
60 out of 98 (61%)	0.4	2.2	0.5
93 out of 98 (95%)	0.8	0.9	0.0

Source: UBS, Bloomberg, CBASpectrum, CEG analysis

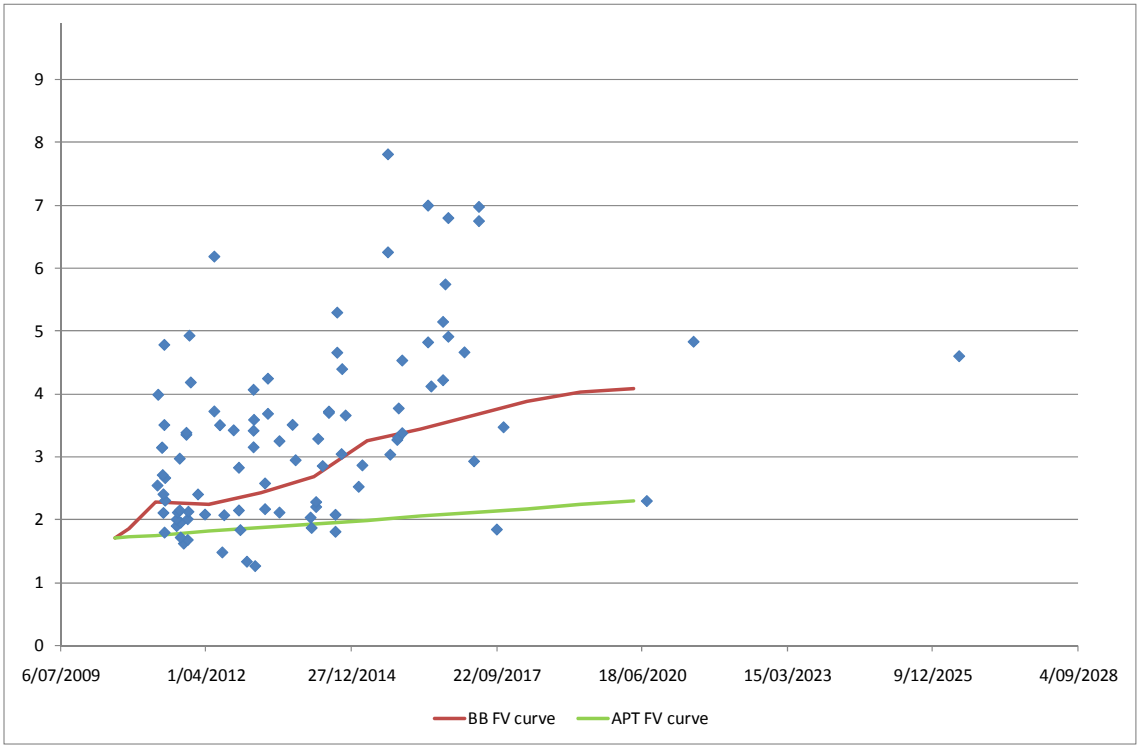
171. The fact that the average squared error is lower for the Bloomberg curve is a statistical statement of what is obvious to the naked eye – namely that the Bloomberg curve is closest to the majority of the observations. However, it might be argued that this result is due to the existence of high yielding "outliers" in the sample.

172. I conclude that this is not the case on the basis that, even if I remove the 60 bonds with the highest DRP (spread to CGS), the Bloomberg fair value curve remains a better fit to the data than the APT fair value curve shown or than an average of the two. In fact, I have to remove more than 93 of the 98 observations for the APT fair value curve to better fit the data than the Bloomberg fair value curve.

A.3. Sum of squared errors - full sample, APT FV curve has a linear shape

173. It might also be argued that this result is dependent on the assumption that the hypothecated APT fair value curve has the same shape as the Bloomberg fair value curve. In order to address this I have made the most conservative, in the sense of favouring a conclusion that the APT fair value curve is the best fit to the data, assumption that I consider reasonable. Specifically, I have assumed that the APT fair value curve is a straight line joining the APT bond yield at 10 years and the bottom of the Bloomberg fair value curve at 0.25 years. This is shown graphically in the figure below.

Figure 25: Full sample of BBB to A- bonds – APT FV has straight line shape



Source: Bloomberg, UBS, CBASpectrum, CEG analysis

174. Even when I make this assumption it is clear that the Bloomberg fair value curve is a better fit to the available data (98 observations). This is confirmed in a statistical sum of squared errors test as shown in the first row of the below table.

Table 14: Sum of squared errors – Full sample of BBB to A- bonds – APT FV has straight line shape

Number (%) of highest DRP bonds excluded	Bloomberg FV curve	APT FV curve	Average
None out of 98 (0%)	8.0	10.4	9.0
36 out of 98 (37%)	0.5	0.8	0.5
50 out of 98 (51%)	0.4	0.4	0.3

Source: UBS, Bloomberg, CBASpectrum, CEG analysis

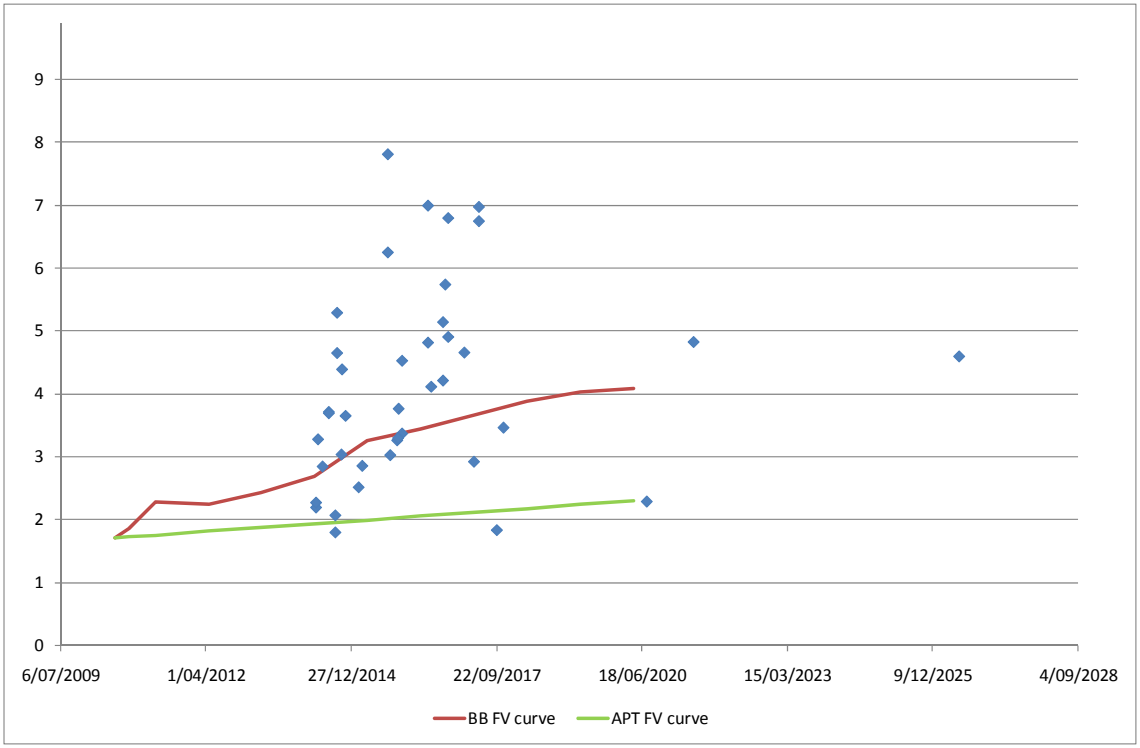
175. However, it might be argued that this result is due to the existence of high yielding "outliers" in the sample. I conclude that this is not the case on the basis that, even if I remove the 36 bonds with the highest DRP (spread to CGS), the Bloomberg fair value curve remains a better fit to the data than the APT fair value curve shown (or even an average of the two). That is, even if one removes more than one third of the sample with the highest yields (and leaves the lowest yields in the sample) the Bloomberg fair value curve is a better fit to the data.

176. Even if I remove the 50 highest DRP bonds (ie, more than half of the observations in the full sample) the APT fair value curve remains a worse fit to the data than the Bloomberg fair value curve. It is the case that the average fair value curve performs better than the Bloomberg fair value curve but this is not surprising given that more than half the sample of high yielding bonds has been removed. Based on this evidence, I do not consider it reasonable to start from a presumption that equal weight be given to the Bloomberg and APT observations when arriving at a benchmark estimate of the cost of debt.

A.4. Sum of squared errors – bonds greater than 4 years maturity, APT FV curve has a linear shape

177. It might be argued that this result is due to the inclusion of low maturity bonds and that if the test focussed on longer maturity bonds a different conclusion would hold. I have performed the same analysis restricting my sample to all bonds with a maturity of greater than 4 years. These bonds are depicted in the below figure (along with the Bloomberg fair value curve and a straight line APT fair value curve).

Figure 26: BBB to A- bonds greater than 4 years maturity – APT FV has straight line shape



Source: Bloomberg, UBS, CBASpectrum, CEG analysis

178. It remains clear to the naked eye that the Bloomberg curve is the better fit to the data. This is confirmed by a sum of squared errors test. In fact, the Bloomberg fair value curve is a relatively more superior fit to the data greater than 4 years in the sense that

an even higher proportion of (high yielding) bonds must be removed from the sample in order for the APT fair value curve to be a better fit to the data.

Table 15: Sum of squared errors – Only BBB to A- bonds with maturity greater than 4 years – APT FV has straight line shape

Number (%) of highest DRP bonds excluded	Bloomberg FV curve	APT FV curve	Average
None out of 40 (0%)	2.8	6.5	4.2
18 out of 40 (45%)	0.6	1.3	0.6
24 out of 40 (60%)	0.7	0.7	0.3

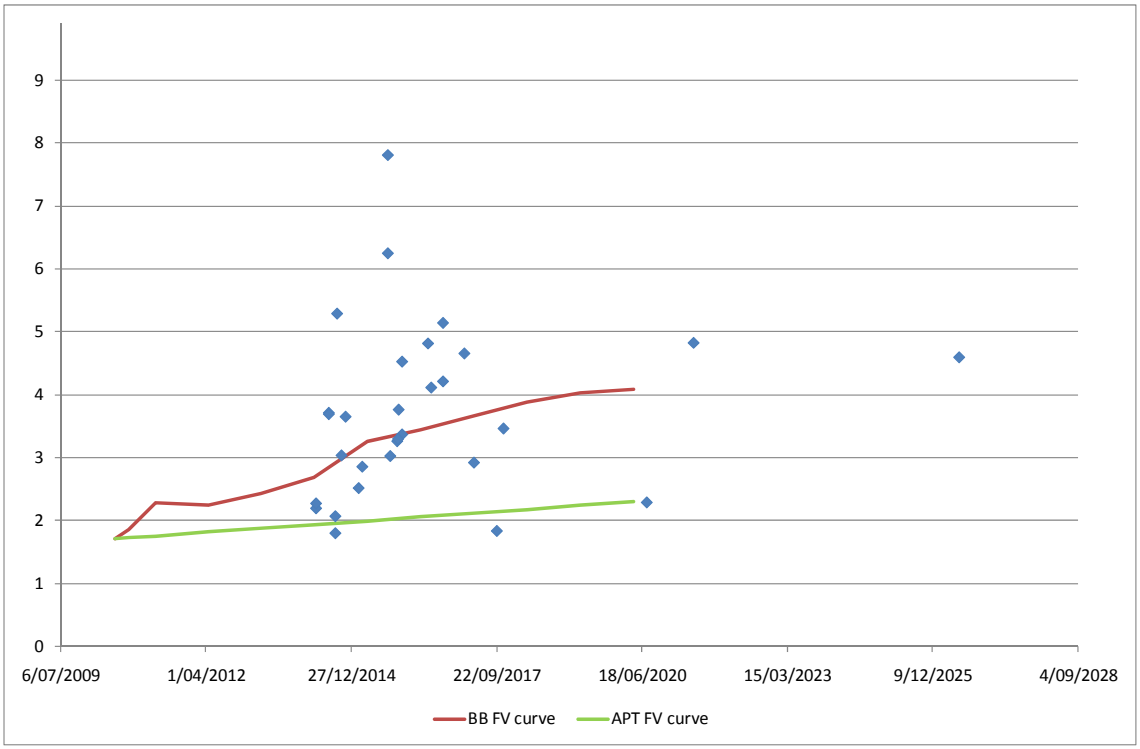
Source: UBS, Bloomberg, CBASpectrum, CEG analysis

179. Even if 60% (24 out 40) of the highest DRP observations are removed the Bloomberg fair value curve remains a better fit to the data than the APT fair value curve depicted in the figure above. The Bloomberg fair value curve is a better fit to the data than the average fair value curve even if the 45% (18 out of 40) of the bonds with the highest DRP are removed.

A.5. Sum of squared errors – non callable bonds greater than 4 years maturity, APT FV curve has a linear shape

180. Finally, it might be argued that the inclusion of callable bonds explains the better fit of the Bloomberg data. As explained below, I do not consider that callable bonds issued prior to the GFC are likely to have materially higher yields than comparable non-callable bonds in the current market circumstances. Nonetheless, as can be seen in the below figure and table, the Bloomberg fair value curve remains a better fit to the data after all callable bonds are removed from the sample.

Figure 27: BBB to A- bonds greater than 4 years maturity excluding callable bonds – APT FV has straight line shape



Source: Bloomberg, UBS, CBASpectrum,

181. There are 30 bonds in the sample of non-callable bonds with maturity greater than 4 years. Within this sample, the sum of squared errors for the Bloomberg fair value curve is lower than for the APT fair value curve (and than for the average of the curves). This remains true even if the 30% (9 out of 30) of bonds with the highest DRP are removed. The Bloomberg fair value curve is a better fit than the APT fair value curve even if the 50% (15 out of 30) of bonds with the highest DRP are removed.

Table 16: Sum of squared errors –non-callable BBB to A- bonds with maturity greater than 4 years – APT FV has straight line shape

Number (%) of highest DRP bonds excluded	Bloomberg FV curve	APT FV curve	Average
None out of 30 (0%)	1.8	4.4	2.7
9 out of 30 (30%)	0.6	1.5	0.7
15 out of 30 (50%)	0.7	0.7	0.3

Source: UBS, Bloomberg, CBASpectrum, CEG analysis

A.6. Conclusion

182. Based on the facts described in this section I conclude that:

- The Bloomberg fair value curve is a materially better fit to the bond data than any reasonably shaped fair value curve that passes through the APT bond yield;
- The Bloomberg fair value curve is a materially better fit to the bond data than an average of the Bloomberg fair value curve and any reasonably shaped APT fair value curve;
- In order for the APT fair value curve to have the same fit to the data (and therefore to justify giving it the same weight as the Bloomberg fair value curve) an unreasonably large proportion of the sample must be excluded – more than 50% of all bonds.
- This is true when starting with:
  - the full sample of all BBB to A- rated bonds,
  - a sample only including bonds with more than 4 years maturity; and
  - a sample excluding callable bonds.
- On this basis I consider that it is unreasonable for a methodology to give the 10 year Bloomberg fair value estimate the same weight as the APT fair value estimate when arriving at an estimate of the NER cost of debt.

A.7. Callable (and puttable bonds)

183. In addition to issues relating to credit-worthiness and the underlying risk of a default on debt, other factors that determine the yields on a bond are specific features that attach to that instrument. In particular, a bond may be callable or puttable (and some callable bonds may be perpetual in the sense that they never expire until they are called by the issuer).

184. A callable bond is a bond where the issuer retains the option of purchasing back the bond at a pre-determined price (the call price which may be defined by a formula rather than a specified price) at a specified time or period of time before the bond matures. By providing the issuer some option value, a callable bond will normally have a lower price and therefore a higher yield than an equivalent bond that is not callable. The extent of this difference depends upon the value of that option, which depends on the call price and the difference between the coupon interest rate and prevailing cost of funds to the firm. In some circumstances this option value may be close to zero.

185. For example, an issuer would be unlikely to exercise a call option if the prevailing corporate cost of debt was higher than the level at the time the bond was issued (ie, the issuer is better off paying the lower current coupon rate on the bond rather than the prevailing corporate interest rate). Similarly, if the call price requires the issuer to pay a premium above the face value of a bond, as is often the case, the issuer would only exercise the option if prevailing corporate interest rates had fallen materially below the levels at the time the bond was issued.

186. Corporate yields are, post the global financial crisis, currently at historically high levels – as can be seen in the figure below. Of the callable bonds identified in my dataset,

none were issued between June 2008 and April 2010. 24 of the 28 bonds were issued before April 2007. It is likely that call options associated with bonds issued before the GFC, ie, most of the callable bonds in my dataset, are likely to have low values and are unlikely to materially affect yields on those bond. This is because bonds issued prior to the GFC are a valuable source of low cost debt and a firm would be unlikely to exercise the call option and buy these bonds back now given the materially higher prevailing cost of funds.

Figure 28: Bloomberg 7 year BBB fair value curve – 2001 to 2010

Source: Bloomberg

187. Similarly, a bond is puttable where the purchaser has the option of selling the bond back to the issuer at a pre-determined price (the put price). This feature of a bond has the effect of increasing the price of a bond and lowering its yield.

188. Each of the features identified above may affect the yield of a bond, either up (for callable bonds) or down (for puttable bonds) relative to a bond that has none of these features. However, each of these features can be clearly defined and it is, in theory, possible to quantitatively estimate the effect of these features on the yield of a bond. In the case of bonds that are callable or puttable, this requires valuation of the option attached to the bond, which will vary over time and according to prevailing debt market yields. I note that UBS and Bloomberg both make adjustments to either the maturity or yield of callable bonds that amount to compensating for this feature. I discuss these adjustments below.

189. A number of the bonds in the population of BBB- to A bonds have some of the features identified above that might influence their yield. Table 17 below exhaustively identifies these bonds by reference to their unique ISIN identifiers and the properties of each bond.

Table 17: Bonds that are callable, puttable or perpetual, BBB- to A

Issuer	Maturity (UBS)	Maturity (full)	ISIN	Features
BKQLD SUB	11/05/2011	11/05/2011	AU300BQ40459	Callable
SUNC SUB	22/06/2011	22/06/2016	AU300MET0164	Callable
SNS BANK	8/11/2011	8/11/2016	AU3FN0000618	Callable
SNS BANK	8/11/2011	8/11/2016	AU3CB0006807	Callable
BENDIGO	21/12/2011	21/12/2016	AU3FN0001665	Callable
RBS SUB	17/02/2012	17/02/2017	AU3FN0000790	Callable
RBS SUB	17/02/2012	17/02/2017	AU3CB0008217	Callable
DBNGP	25/04/2012	25/04/2012	AU300DBNF014	Callable
HBOS SUB	1/05/2012	1/05/2017	AU3CB0024883	Callable
HBOS SUB	1/05/2012	1/05/2017	AU3FN0002549	Callable
DBNGP	25/04/2013	26/04/2018	AU300DBNF048	Callable
DBNGP	26/04/2013	26/04/2013	AU300DBNF030	Callable
BKQLD SUB	4/06/2013	4/06/2013	AU3CB0072148	Callable
BKQLD SUB	4/06/2013	4/06/2013	AU3FN0005914	Callable
DTSCHE SUB	23/04/2014	23/04/2014	AU0000DBAHC4	Puttable
AMP SUB	15/05/2014	1/04/2019	AU0000AQNHA5	Callable
ADLAIRPORT	15/06/2014	15/06/2014	AU3FN0010500	Callable
SUNINS SUB	23/09/2014	23/09/2024	AU300SUNQ019	Callable
RBS SUB	27/10/2014	27/10/2014	AU300RSCT012	Callable
BBIDBCTFIN	9/06/2016	9/06/2016	AU300BBIF018	Callable
NWMH SUB	16/06/2016	16/06/2026	AU300NWML027	Callable
NWMH SUB	16/06/2016	16/06/2026	AU300NWML019	Callable
SUNINS SUB	6/10/2016	6/10/2026	AU3CB0003309	Callable
AXA	26/10/2016	6/10/2026	AU0000AXJHA9	Callable
AXA	26/10/2016	n/a	AU0000AXJHB7	Callable, perpetual
DBNGP	25/04/2017	25/04/2017	AU300DBNF022	Callable
SWISS RE	25/05/2017	n/a	AU3FN0002531	Callable, perpetual
SWISS RE	25/05/2017	n/a	AU3CB0024743	Callable, perpetual

Source: UBS

190. As identified in Table 17 above, 29 bonds in the wider BBB- to A rated sample are callable and three of these are also perpetual. Only one bond, issued by Deustche Bank, is puttable.

191. I note that UBS appears to adopt a maturity for callable bonds that is equal to the first call date for the bond. This is not obvious in Table 17 above, where all maturity dates are sourced from UBS. However, I note that two bonds issued by Suncorp-Metway Insurance which mature in 2024 and 2026 are accorded maturity dates of 2014 and

2016, equal to their first call dates. This is also the case with bonds issued by Swiss Re and Axa.

192. In my graphical analysis I have used the UBS maturity (which is adjusted for the call option on the bond). That is why my graphs do not include the Suncorp Metway and Vero bonds as having maturities greater than 10 years – this is in contrast to Figure 1 in the AER consultation paper that does include these bonds at their full maturity.

193. Bloomberg appears to make an adjustment in relation to some callable bonds such that its BGN yield is lower than its BCMP yield, whereas the two are the same for all other bonds.[22] It is relevant to note that in these cases, the yields provided by banking contributors align with the BCMP yield and the BGN yield is set lower than this.

194. It is an open question as to whether or not any interest rate premium on callable bonds should be removed from the sample of bonds for the purpose of determining the benchmark cost of debt under the NER. Issuing callable bonds gives firms greater options in managing interest rate risk (this is the quid pro quo for paying any interest rate premium). Consequently, if a benchmark firm can be expected to use callable bonds to manage interest rate risk in the same proportion to those issued in the market then excluding callable bonds may not be appropriate. In this regard I note that there are at least four infrastructure companies issuing callable bonds in the above list – DBNG, Adelaide Airport, DBCT and Lane Cove Tunnel.

195. To the extent that it is appropriate to remove any interest rate premium on callable bonds I consider that there are three options available. There are:

    i. To make quantitative adjustments for the properties of each bond to its yield so that this is comparable to yields for other bonds without these features.

    ii. To make no adjustments and to conduct the analysis using all callable bonds on the basis, as described above, that the effect of the call option on yields is not generally significant.

    iii. To set aside all such bonds and conduct the analysis without them.

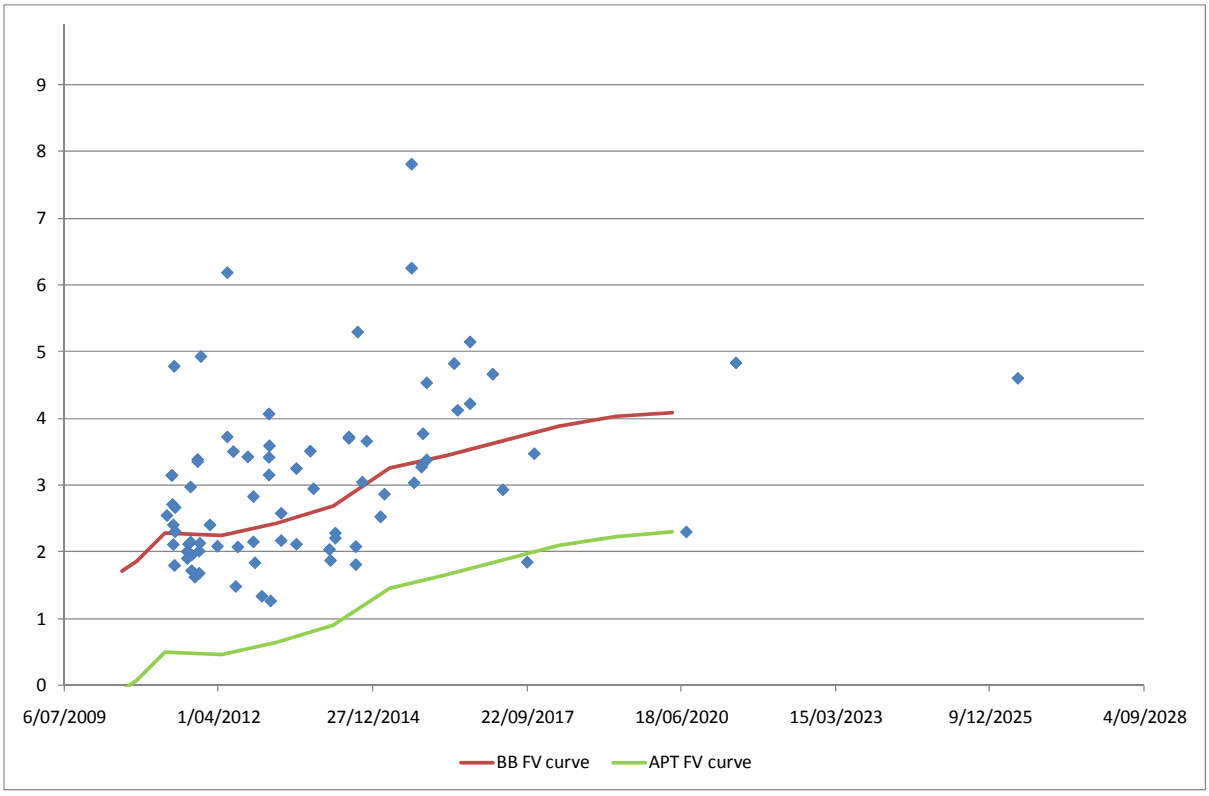
196. In my opinion, of the options listed above, i) is the most preferable, in that it involves a precise quantitative adjustment that enables the relevant information from callable bonds to most effectively and appropriately contribute to determining the NER cost of debt. This would involve examining the documentation for the bond including level of call premium involved in the exercise of the option. However, given the limited window of time made available since the AER issued its consultation paper, I have not had an adequate opportunity to collect the necessary information and calculate the required yield adjustments for each bond.

[22] The BGN and BCMP are two alternative Bloomberg pricing series. BGN is defined by Bloomberg as "Bloomberg Generic Pricing", whereas BCMP is defined as "BGN Australia Intraday".

197. I can conclude that it is likely that, in general, a call option will exert little influence on the yield of a bond issued prior to the GFC due to the general rise in corporate cost of funds post GFC (as discussed above). This appears to be borne out by the fact that UBS currently tends to put the price of callable bonds at materially less than face value of those bonds. The average UBS estimated price of callable bonds over 19 April 2010 to 8 October 2010 was 85.6% of face value. This suggests that the issuer would incur higher costs in refinancing even if those bonds were called at face value (ie, without any call premium). That is, issuers will not be likely to buy back a bond at face value if the market value is less than this.

198. On this basis I prefer option ii) because option iii) involves the wastage of large quantities of information that may be relevant to the determination of the NER cost of debt. Throughout the analysis body of this report, I have adopted approach ii). However, in this appendix I have sought to confirm the materiality of the inclusion of these bonds to my conclusions by also testing whether adopting approach iii) and excluding them would affect the results. I have already described above the impact of excluding callable bonds as a sensitivity in section A.5 above. I do not find it changes my conclusions. The below figure describes the full sample excluding callable bonds.

Figure 29: BBB to A- bonds excluding all callable bonds



Source: Bloomberg, UBS, CBASpectrum, CEG analysis

Appendix B. Bond yield data relied upon

Table 18: Averaging period 1 (19/4/2010 – 31/5/2010)

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300BAAC063	BANKAMERIC	23/08/2010	Fixed	A	None	6.20		5.65	5.92
AU3CB0002798	MIRVAC FD	15/09/2010	Fixed	BBB	None	6.87		6.81	6.84
AU300MRL1116	MERRILL-CO	6/10/2010	Fixed	A	None	6.33	5.89	6.19	6.14
AU300GPTC037	GPT	7/11/2010	Fixed	A-	None	6.22	5.75	6.09	6.02
AU300CFS0067	GANDEL	12/11/2010	Fixed	A	None	6.06	5.77	6.14	5.99
AU300BQ40434	BKQLD	2/12/2010	Fixed	BBB+	None	6.53	5.80	5.90	6.08
AU300SLMC044	SALLIE MAE	15/12/2010	Fixed	BBB-	None	8.67	14.95		11.81
AU300CFCC033	COUNTRYWD	16/12/2010	Fixed	A	None	6.14	6.05	6.42	6.20
AU3CB0016673	DB RREEF	8/02/2011	Fixed	BBB+	None	6.71	7.11	6.72	6.85
AU300WW20067	WOOLWORTHS	14/03/2011	Fixed	A-	None	5.57	5.68	5.76	5.67
AU300GSGI043	GOLDMANS	12/04/2011	Fixed	A	None	6.24	6.32	6.17	6.24
AU300PBLF046	PBL	6/05/2011	Fixed	BBB	None	6.98	7.16	7.01	7.05
AU3CB0069037	AMPGROUP	16/05/2011	Fixed	A	None	6.50		6.36	6.43
AU3CB0071173	SUNCORP	30/05/2011	Fixed	A	None	6.12	6.29	6.06	6.16
AU300BAAC089	BANKAMERIC	15/06/2011	Fixed	A	None	6.61	6.46	6.40	6.49
AU300MRL1124	MERRILL-CO	15/06/2011	Fixed	A	None	6.89	6.71	6.58	6.73
AU300SPT0116	STOCKLAND	16/06/2011	Fixed	A-	None	6.57	6.60	6.69	6.62
AU300MET0164	SUNC SUB	22/06/2011	Fixed	A-	Callable	9.51		6.46	7.99

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0117778	VWGN	24/06/2011	Fixed	A-	None	6.45	6.04	6.20	6.23
AU300CPOF071	CPOF	28/06/2011	Fixed	A-	None	6.59	7.12	6.77	6.83
AU300EPGL030	EPG (W)	29/07/2011	Fixed	BBB-	None	8.54	9.19	7.72	8.48
AU3CB0001998	TRANSURBAN	15/09/2011	Fixed	A-	None	6.67		6.48	6.57
AU3CB0002822	HSBC FIN	22/09/2011	Fixed	A	None	7.05	6.80	7.11	6.99
AU3CB0004117	ORIGINERGY	6/10/2011	Fixed	BBB+	None	6.76		6.74	6.75
AU300TPP0010	TABCORP	13/10/2011	Fixed	BBB+	None	6.34	6.38	6.39	6.37
AU300GSGI035	GOLDMANS	21/10/2011	Fixed	A	None	6.47	6.48	6.39	6.45
AU300TXUH015	SPI E&G C	3/11/2011	Fixed	A-	None	6.32	6.30	6.28	6.30
AU3CB0006807	SNS BANK	8/11/2011	Fixed	BBB+	Callable	27.70	22.79		25.24
AU3CB0011021	SYDAIRPORT	21/11/2011	Fixed	BBB	None	7.43	8.27	8.42	8.04
AU300SPI0176	SPIPOWER	30/11/2011	Fixed	A-	None	6.34		6.36	6.35
AU3CB0010213	AMEX	5/12/2011	Fixed	BBB+	None	6.76	6.89	6.85	6.83
AU3CB0017028	CITIGROUP	13/02/2012	Fixed	A	None	7.20	7.09	7.04	7.11
AU3CB0018281	MERRILL-CO	16/02/2012	Fixed	A	None	7.24	7.14	7.05	7.14
AU3CB0008217	RBS SUB	17/02/2012	Fixed	BBB	Callable	18.58	14.44		16.51
AU3CB0024883	HBOS SUB	1/05/2012	Fixed	BBB-	Callable	18.22	15.36	9.25	14.28
AU300SLMC036	SALLIE MAE	10/05/2012	Fixed	BBB-	None	10.56	14.85		12.71
AU300MQ20318	MACQ SUB	31/05/2012	Fixed	A-	None	10.47		6.70	8.59
AU300CML1014	COLESMYER	25/07/2012	Fixed	BBB+	None	6.38	6.48	6.53	6.46
AU3CB0121382	APPFR	30/07/2012	Fixed	A	None	7.94	7.46	7.80	7.73
AU3CB0122778	HOLCIM	7/08/2012	Fixed	BBB	None	7.05		7.03	7.04

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300CFS0091	GANDEL	2/09/2012	Fixed	A	None	6.98	7.10	6.95	7.01
AU0000TLSHV1	TELSTRA	15/11/2012	Fixed	A	None	5.91	5.94	5.92	5.93
AU300CLPF010	CLPAUST	16/11/2012	Fixed	BBB	None	7.39	7.17	7.16	7.24
AU3CB0136059	VWGN	26/11/2012	Fixed	A-	None	6.91			6.91
AU3CB0135887	CATERPILAR	3/12/2012	Fixed	A	None	6.92		6.90	6.91
AU300VODA011	VODAFONE	10/01/2013	Fixed	A-	None	6.42	6.39	6.21	6.34
AU000SHL0034	SNOWYHYDRO	25/02/2013	Fixed	BBB+	None	8.78	10.26	8.54	9.19
AU300SPT0090	STOCKLAND	15/05/2013	Fixed	A-	None	7.37	7.29	7.32	7.33
AU3CB0072148	BKQLD SUB	4/06/2013	Fixed	BBB	Callable	8.83			8.83
AU3CB0157394	VWGN	17/08/2013	Fixed	A-	None				
AU300GPTM218	GPT	22/08/2013	Fixed	A-	None	7.31	7.38	7.31	7.33
AU3CB0158657	BANKAMERIC	9/09/2013	Fixed	A	None				
AU0000TLSHA5	TELSTRA	15/11/2013	Fixed	A	None	6.25	6.32	6.41	6.33
AU300MRL1058	MERRILL-CO	12/03/2014	Fixed	A	None	7.95	7.64	7.85	7.82
AU3CB0145381	TRANSURBAN	24/03/2014	Fixed	A-	None	7.33		7.32	7.32
AU3CB0146256	VWGN	31/03/2014	Fixed	A-	None	7.31	6.70		7.01
AU3CB0121234	LEIGHTON	28/07/2014	Fixed	BBB	None	9.19		8.89	9.04
AU3CB0157576	MLBAIRPORT	25/08/2014	Fixed	A-	None				
AU3CB0126860	WESFARMERS	11/09/2014	Fixed	BBB+	None	7.16	7.15	7.15	7.15
AU300SUNQ019	SUNINS SUB	23/09/2014	Fixed	A-	Callable	12.07		7.89	9.98
AU3CB0135820	AMP WOF	5/10/2014	Fixed	A	None	7.78			7.78
AU300CFS0083	GANDEL	22/12/2014	Fixed	A	None	7.64	7.72	7.55	7.64

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0138030	STOCKLAND	18/02/2015	Fixed	A-	None	8.04	7.65	7.73	7.81
AU3CB0145837	MIRVAC FD	15/03/2015	Fixed	BBB	None	8.24			8.24
AU0000TLSHX7	TELSTRA	15/04/2015	Fixed	A	None	6.89	6.80	6.74	6.81
AU3CB0148302	AMP SHOPCF	28/04/2015	Fixed	A	None	7.44		7.59	7.51
AU3CB0154003	SYDAIRPORT	6/07/2015	Fixed	BBB	None				
AU3CB0156230	SPIAA	12/08/2015	Fixed	A-	None				
AU300VERO013	PROMINA	7/09/2015	Fixed	A-	None	14.19		9.11	11.65
AU300ST50076	SANTOS	23/09/2015	Fixed	BBB+	None	7.99	8.15	9.27	8.47
AU300APAM047	MLBAIRPORT	14/12/2015	Fixed	A-	None	8.91	11.78	9.27	9.98
AU300CGRP056	CITIGROUP	22/03/2016	Fixed	A	None	8.48	8.38	8.30	8.39
AU300GSGI068	GOLDMANS	12/04/2016	Fixed	A	None	8.16	8.11	8.02	8.09
AU300BBIF018	BBIDBCTFIN	9/06/2016	Fixed	BBB+	Callable	10.96	15.89	10.61	12.49
AU300NWML019	NWMH SUB	16/06/2016	Fixed	A	Callable	10.65		7.83	9.24
AU3CB0157584	MLBAIRPORT	25/08/2016	Fixed	A-	None				
AU300NTFC026	ADLAIRPORT	20/09/2016	Fixed	BBB	None	10.69		10.62	10.66
AU3CB0003309	SUNINS SUB	6/10/2016	Fixed	A-	Callable	13.08		9.40	11.24
AU0000AXJHB7	AXA	26/10/2016	Fixed	BBB	Callable	11.91		9.22	10.56
AU3CB0017036	CITIGROUP	13/02/2017	Fixed	A	None	8.66	8.48	8.45	8.53
AU3CB0147833	DB RREEF	21/04/2017	Fixed	BBB+	None	8.42			8.42
AU3CB0024743	SWISS RE	25/05/2017	Fixed	A-	Callable	12.55			12.55
AU3CB0145696	SPI E&G C	25/09/2017	Fixed	A-	None	7.45		7.37	7.41
AU3CB0152940	TELSTRA	15/07/2020	Fixed	A	None				

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0155133	APT	22/07/2020	Fixed	BBB	None			7.97	7.97
XS0113922297	QBE SUB	3/08/2010	Floating	A-	None	9.12			9.12
AU300CCAL019	COCACOLA	10/08/2010	Floating	A-	None	5.30		5.25	5.28
AU300BE30613	BENDIGO	25/08/2010	Floating	BBB+	None	6.44		5.63	6.03
AU300MRL1108	MERRILL-CO	2/09/2010	Floating	A	None	6.19			6.19
AU3FN0000238	MIRVAC FD	15/09/2010	Floating	BBB	None	6.71		6.79	6.75
AU300MET0156	SUNC SUB	15/09/2010	Floating	A-	None	8.45			8.45
AU300GPTC045	GPT	7/11/2010	Floating	A-	None	6.30		6.18	6.24
AU300BQ40442	BKQLD	2/12/2010	Floating	BBB+	None	6.23		5.60	5.92
AU000NTFC014	ADLAIRPORT	15/12/2010	Floating	BBB	None	6.53		7.47	7.00
AU300SLMC051	SALLIE MAE	15/12/2010	Floating	BBB-	None	7.67			7.67
AU300SNSB049	SNS BANK	15/12/2010	Floating	A-	None	8.08			8.08
AU0000HYPHA9	HYPO	22/02/2011	Floating	BBB	None	15.33			15.33
AU300WW20075	WOOLWORTHS	14/03/2011	Floating	A-	None	5.54		5.68	5.61
AU300NORK033	NTH ROCK	24/03/2011	Floating	A	None	8.88			8.88
AU300BQ40459	BKQLD SUB	11/05/2011	Floating	BBB	Callable	8.47			8.47
AU3FN0005591	AMPGROUP	16/05/2011	Floating	A	None	6.41		6.45	6.43
AU000PLLC014	POWERCOR	7/06/2011	Floating	A-	None	7.66		7.50	7.58
AU300QICF055	QICF	7/06/2011	Floating	A-	None	7.95		7.30	7.62
AU000APAM035	MLBAIRPORT	11/06/2011	Floating	A-	None	6.85		7.51	7.18
AU300MRL1132	MERRILL-CO	15/06/2011	Floating	A	None	6.76			6.76
AU300SPT0124	STOCKLAND	16/06/2011	Floating	A-	None	6.80		6.95	6.88

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300MET0172	SUNC SUB	22/06/2011	Floating	A-	None	9.26			9.26
AU300CPOF089	CPOF	28/06/2011	Floating	A-	None	7.11		7.19	7.15
AU300EPGL022	EPG (W)	29/07/2011	Floating	BBB-	None	8.99		8.27	8.63
AU3FN0000113	TRANSURBAN	15/09/2011	Floating	A-	None	6.33		6.52	6.43
AU300ST50068	SANTOS	23/09/2011	Floating	BBB+	None	7.04	6.57	6.61	6.74
AU3FN0000444	ORIGINERGY	6/10/2011	Floating	BBB+	None	7.25		7.90	7.58
AU300TPP0028	TABCORP	13/10/2011	Floating	BBB+	None	6.56		6.58	6.57
AU3FN0000618	SNS BANK	8/11/2011	Floating	BBB+	Callable	25.30	11.09		18.20
AU3FN0001327	SYDAIRPORT	21/11/2011	Floating	BBB	None	8.59	7.63	7.80	8.01
AU300SPI0184	SPIPOWER	30/11/2011	Floating	A-	None	6.51		6.85	6.68
AU3FN0001368	BBIDBCTFIN	12/12/2011	Floating	BBB+	None	9.61			9.61
AU3FN0001392	SALLIE MAE	15/12/2011	Floating	BBB-	None	9.35	15.11		12.23
AU3FN0001665	BENDIGO	21/12/2011	Floating	BBB	Callable	8.85			8.85
AU000MEGL017	MERIDIAN	9/02/2012	Floating	BBB+	None	7.15			7.15
AU3FN0001822	MERRILL-CO	16/02/2012	Floating	A	None	7.07	7.32		7.19
AU3FN0000790	RBS SUB	17/02/2012	Floating	BBB	Callable	18.36	12.16		15.26
AU0000BENHE1	ADELAIDEBK	28/03/2012	Floating	BBB+	None	6.94	7.02	6.82	6.93
AU300DBNF014	DBNGP	25/04/2012	Floating	BBB-	Callable	8.96			8.96
AU3FN0002549	HBOS SUB	1/05/2012	Floating	BBB-	Callable	19.85	17.22		18.54
AU300MQ20326	MACQ SUB	31/05/2012	Floating	A-	None	12.54		9.36	10.95
AU3FN0010914	CATERPILAR	29/06/2012	Floating	A	None				
AU000BCAF035	BROADCAST	9/07/2012	Floating	BBB	None	9.25		7.62	8.43

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU000SCA0040	SYDAIRPORT	11/10/2012	Floating	BBB	None	8.84	7.83	8.61	8.43
AU300CLPF028	CLPAUST	16/11/2012	Floating	BBB	None	7.71	8.06	7.99	7.92
AU000SHL0042	SNOWY (W)	25/02/2013	Floating	BBB+	None	8.60	7.89	8.19	8.23
AU000SHL0059	SNOWYHYDRO	25/02/2013	Floating	BBB+	None	8.60		8.31	8.45
AU000CPR0044	CPOWER (W)	28/02/2013	Floating	A-	None	6.45	11.11	8.58	8.71
AU300CCAL035	COCACOLA	8/03/2013	Floating	A-	None	6.35	6.45	6.38	6.39
AU300DBNF048	DBNGP	25/04/2013	Floating	BBB-	Callable	9.12			9.12
AU300DBNF030	DBNGP	26/04/2013	Floating	BBB-	Callable	9.06		8.42	8.74
AU300SPT0108	STOCKLAND	15/05/2013	Floating	A-	None	7.68		7.52	7.60
AU3FN0005914	BKQLD SUB	4/06/2013	Floating	BBB	Callable	9.39			9.39
AU300GPTM226	GPT	22/08/2013	Floating	A-	None	7.30	9.64		8.47
AU3FN0011524	BANKAMERIC	9/09/2013	Floating	A	None				
AU3FN0001335	SYDAIRPORT	20/11/2013	Floating	BBB	None	9.08	8.27	8.81	8.72
AU300BR40044	BACL	11/12/2013	Floating	BBB	None	8.00	8.18	8.04	8.07
AU0000DBAHC4	DTSCHE SUB	23/04/2014	Floating	A	Callable	9.22	9.50		9.36
AU3FN0008488	TABCORP	1/05/2014	Floating	BBB+	None	7.52		7.26	7.39
AU0000TAHHA1	TAHHA	1/05/2014	Floating	BBB+	None	7.57			7.57
AU0000AQNHA5	AMP SUB	15/05/2014	Floating	A-	Callable	8.58			8.58
AU3FN0010500	ADLAIRPORT	15/06/2014	Floating	BBB	Callable	8.11			8.11
AU3FN0008835	DB RREEF	28/07/2014	Floating	BBB+	None	8.81		9.05	8.93
AU3FN0009098	WESFARMERS	11/09/2014	Floating	BBB+	None	7.38	7.57	7.14	7.37
AU300SUNQ027	SUNINS SUB	23/09/2014	Floating	A-	None	10.62			10.62

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300UELM012	UNITE EN W	23/10/2014	Floating	BBB	None	8.38			8.38
AU300RSCT012	RBS SUB	27/10/2014	Floating	BBB	Callable	10.18	9.07		9.63
AU300SAFC025	SYDAIRPORT	20/11/2014	Floating	BBB	None	9.34	8.70		9.02
AU300VERO021	PROMINA	7/09/2015	Floating	A-	None	13.23			13.23
AU300TFC0082	TRANSB (W)	10/11/2015	Floating	A-	None	8.50	8.94		8.72
AU300CLPF036	CLPAUST	16/11/2015	Floating	BBB	None	8.40	9.11		8.76
AU300SAFC033	SYDAIRPORT	20/11/2015	Floating	BBB	None	9.50	8.94		9.22
AU300APAM054	MLBAIRPORT	14/12/2015	Floating	A-	None	8.61	8.98	8.90	8.83
AU300GSGI076	GOLDMANS	12/04/2016	Floating	A	None	8.13	8.26		8.19
AU300BBIF026	BBIDBCTFIN	9/06/2016	Floating	BBB+	None	10.30			10.30
AU300BAAC105	BANKAMERIC	15/06/2016	Floating	A	None	7.86	8.33		8.10
AU300NWML027	NWMH SUB	16/06/2016	Floating	A	Callable	11.17			11.17
AU300BR40051	BRISAIR	1/07/2016	Floating	BBB	None	10.11		8.96	9.53
AU300NTFC034	ADLAIRPORT	20/09/2016	Floating	BBB	None	9.73			9.73
AU0000AXJHA9	AXA	26/10/2016	Floating	BBB	Callable	12.32			12.32
AU3FN0000931	TELSTRA	1/12/2016	Floating	A	None	7.19	7.25	7.15	7.20
AU3FN0001772	BANKAMERIC	14/02/2017	Floating	A-	None	9.01	11.41		10.21
AU300DBNF022	DBNGP	25/04/2017	Floating	BBB-	Callable	9.62			9.62
AU3FN0002531	SWISS RE	25/05/2017	Floating	A-	Callable	12.32			12.32
AU300TFC0090	TRANSB (W)	10/11/2017	Floating	A-	None	8.75	9.34		9.04
AU300BBIF034	BBIDBCTFIN	9/06/2021	Floating	BBB+	None	10.52			10.52
AU300BBIF042	BBIDBCTFIN	9/06/2026	Floating	BBB+	None	10.57			10.57

Table 19: Averaging period 2 (2/8/2010 – 27/8/2010)

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300BAAC063	BANKAMERIC	23/08/2010	Fixed	A	None	5.44		5.63	5.54
AU3CB0002798	MIRVAC FD	15/09/2010	Fixed	BBB	None	6.68		6.27	6.48
AU300MRL1116	MERRILL-CO	6/10/2010	Fixed	A	None	5.95	5.55	5.94	5.81
AU300GPTC037	GPT	7/11/2010	Fixed	A-	None	5.90	5.76	6.00	5.89
AU300CFS0067	GANDEL	12/11/2010	Fixed	A	None	5.97	5.64	6.00	5.87
AU300BQ40434	BKQLD	2/12/2010	Fixed	BBB+	None	5.99	5.56	5.67	5.74
AU300SLMC044	SALLIE MAE	15/12/2010	Fixed	BBB-	None	9.44	14.55		11.99
AU300CFCC033	COUNTRYWD	16/12/2010	Fixed	A	None	6.13	5.66	6.09	5.96
AU3CB0016673	DB RREEF	8/02/2011	Fixed	BBB+	None	6.60	6.50	6.57	6.56
AU300WW20067	WOOLWORTHS	14/03/2011	Fixed	A-	None	5.42	5.34	5.50	5.42
AU300GSGI043	GOLDMANS	12/04/2011	Fixed	A	None	5.84	5.90	6.06	5.93
AU300PBLF046	PBL	6/05/2011	Fixed	BBB	None	6.73	6.92	6.71	6.79
AU3CB0069037	AMPGROUP	16/05/2011	Fixed	A	None	6.37		6.01	6.19
AU3CB0071173	SUNCORP	30/05/2011	Fixed	A	None	5.73	5.94	5.74	5.80
AU300BAAC089	BANKAMERIC	15/06/2011	Fixed	A	None	6.36	6.08	6.25	6.23
AU300MRL1124	MERRILL-CO	15/06/2011	Fixed	A	None	6.33	6.23	6.43	6.33
AU300SPT0116	STOCKLAND	16/06/2011	Fixed	A-	None	6.38	6.28	6.52	6.39
AU300MET0164	SUNC SUB	22/06/2011	Fixed	A-	Callable	9.27		6.29	7.78
AU3CB0117778	VWGN	24/06/2011	Fixed	A-	None	6.17	5.90	5.91	5.99
AU300CPOF071	CPOF	28/06/2011	Fixed	A-	None	6.30	6.62	6.56	6.49
AU300EPGL030	EPG (W)	29/07/2011	Fixed	BBB-	None	8.33	8.95	7.35	8.21

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0001998	TRANSURBAN	15/09/2011	Fixed	A-	None	6.37		6.29	6.33
AU3CB0002822	HSBC FIN	22/09/2011	Fixed	A	None	6.51	6.38	6.73	6.54
AU3CB0004117	ORIGINERGY	6/10/2011	Fixed	BBB+	None	6.37		6.47	6.42
AU300TPP0010	TABCORP	13/10/2011	Fixed	BBB+	None	6.30	6.26	6.25	6.27
AU300GSGI035	GOLDMANS	21/10/2011	Fixed	A	None	5.99	6.00	6.02	6.00
AU300TXUH015	SPI E&G C	3/11/2011	Fixed	A-	None	5.98	5.92	5.91	5.94
AU3CB0006807	SNS BANK	8/11/2011	Fixed	BBB+	Callable	29.39	22.03		25.71
AU3CB0011021	SYDAIRPORT	21/11/2011	Fixed	BBB	None	6.50	7.95		7.23
AU300SPI0176	SPIPOWER	30/11/2011	Fixed	A-	None	5.99		5.99	5.99
AU3CB0010213	AMEX	5/12/2011	Fixed	BBB+	None	6.49	6.35	6.52	6.45
AU3CB0017028	CITIGROUP	13/02/2012	Fixed	A	None	6.77	6.54	6.68	6.66
AU3CB0018281	MERRILL-CO	16/02/2012	Fixed	A	None	7.23	6.70	6.76	6.90
AU3CB0008217	RBS SUB	17/02/2012	Fixed	BBB	Callable	24.88	14.00		19.44
AU3CB0024883	HBOS SUB	1/05/2012	Fixed	BBB-	Callable	22.21	14.80		18.51
AU300SLMC036	SALLIE MAE	10/05/2012	Fixed	BBB-	None	10.36	14.29	10.06	11.57
AU300MQ20318	MACQ SUB	31/05/2012	Fixed	A-	None	9.59		6.80	8.19
AU300CML1014	COLESMYER	25/07/2012	Fixed	BBB+	None	6.04	6.11	6.13	6.09
AU3CB0121382	APPFR	30/07/2012	Fixed	A	None	7.29	7.08		7.18
AU3CB0122778	HOLCIM	7/08/2012	Fixed	BBB	None	6.62		6.61	6.62
AU300CFS0091	GANDEL	2/09/2012	Fixed	A	None	6.50	6.46	6.37	6.44
AU0000TLSHV1	TELSTRA	15/11/2012	Fixed	A	None	5.41	5.43	5.38	5.41
AU300CLPF010	CLPAUST	16/11/2012	Fixed	BBB	None	6.98	6.70	7.11	6.93

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0136059	VWGN	26/11/2012	Fixed	A-	None	6.44			6.44
AU3CB0135887	CATERPILAR	3/12/2012	Fixed	A	None	6.30		6.36	6.33
AU300VODA011	VODAFONE	10/01/2013	Fixed	A-	None	5.95	5.97	6.01	5.98
AU000SHL0034	SNOWYHYDRO	25/02/2013	Fixed	BBB+	None	8.32	9.74	8.11	8.73
AU300SPT0090	STOCKLAND	15/05/2013	Fixed	A-	None	6.82	6.69	6.81	6.77
AU3CB0072148	BKQLD SUB	4/06/2013	Fixed	BBB	Callable	8.36			8.36
AU3CB0157394	VWGN	17/08/2013	Fixed	A-	None	6.51		6.42	6.47
AU300GPTM218	GPT	22/08/2013	Fixed	A-	None	6.85	6.61	6.71	6.72
AU3CB0158657	BANKAMERIC	9/09/2013	Fixed	A	None				
AU0000TLSHA5	TELSTRA	15/11/2013	Fixed	A	None	5.79	5.74	5.76	5.76
AU300MRL1058	MERRILL-CO	12/03/2014	Fixed	A	None	7.49	6.92	7.40	7.27
AU3CB0145381	TRANSURBAN	24/03/2014	Fixed	A-	None	6.79	6.92	6.89	6.87
AU3CB0146256	VWGN	31/03/2014	Fixed	A-	None	6.60	6.57		6.58
AU3CB0121234	LEIGHTON	28/07/2014	Fixed	BBB	None	8.43		8.36	8.40
AU3CB0157576	MLBAIRPORT	25/08/2014	Fixed	A-	None	6.53		6.35	6.44
AU3CB0126860	WESFARMERS	11/09/2014	Fixed	BBB+	None	6.62	6.59	6.70	6.64
AU300SUNQ019	SUNINS SUB	23/09/2014	Fixed	A-	Callable	10.37		7.61	8.99
AU3CB0135820	AMP WOF	5/10/2014	Fixed	A	None	7.00			7.00
AU300CFS0083	GANDEL	22/12/2014	Fixed	A	None	7.07	6.97	6.83	6.96
AU3CB0138030	STOCKLAND	18/02/2015	Fixed	A-	None	7.24	7.24	7.12	7.20
AU3CB0145837	MIRVAC FD	15/03/2015	Fixed	BBB	None	7.64			7.64
AU0000TLSHX7	TELSTRA	15/04/2015	Fixed	A	None	6.19	6.23	6.26	6.22

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0148302	AMP SHOPCF	28/04/2015	Fixed	A	None	6.91		7.03	6.97
AU3CB0154003	SYDAIRPORT	6/07/2015	Fixed	BBB	None	7.40			7.40
AU3CB0156230	SPIAA	12/08/2015	Fixed	A-	None	6.82		6.87	6.84
AU300VERO013	PROMINA	7/09/2015	Fixed	A-	None	10.99		8.66	9.83
AU300ST50076	SANTOS	23/09/2015	Fixed	BBB+	None	7.17	7.37	8.00	7.51
AU300APAM047	MLBAIRPORT	14/12/2015	Fixed	A-	None	7.43	11.03	8.05	8.84
AU300CGRP056	CITIGROUP	22/03/2016	Fixed	A	None	7.49	7.21	7.50	7.40
AU300GSGI068	GOLDMANS	12/04/2016	Fixed	A	None	7.62	7.21	7.25	7.36
AU300BBIF018	BBIDBCTFIN	9/06/2016	Fixed	BBB+	Callable	10.23	14.94	9.24	11.47
AU300NWML019	NWMH SUB	16/06/2016	Fixed	A	Callable	9.95		8.54	9.25
AU3CB0157584	MLBAIRPORT	25/08/2016	Fixed	A-	None	7.00		7.15	7.08
AU300NTFC026	ADLAIRPORT	20/09/2016	Fixed	BBB	None	8.25		9.22	8.74
AU3CB0003309	SUNINS SUB	6/10/2016	Fixed	A-	Callable	11.27		10.09	10.68
AU0000AXJHB7	AXA	26/10/2016	Fixed	BBB	Callable	13.59			13.59
AU3CB0017036	CITIGROUP	13/02/2017	Fixed	A	None	7.64	7.38	7.49	7.51
AU3CB0147833	DB RREEF	21/04/2017	Fixed	BBB+	None	7.82			7.82
AU3CB0024743	SWISS RE	25/05/2017	Fixed	A-	Callable	13.23			13.23
AU3CB0145696	SPI E&G C	25/09/2017	Fixed	A-	None	7.05	7.01	7.04	7.04
AU3CB0152940	TELSTRA	15/07/2020	Fixed	A	None	7.07	7.12	7.08	7.09
AU3CB0155133	APT	22/07/2020	Fixed	BBB	None	7.89		7.82	7.86
XS0113922297	QBE SUB	3/08/2010	Floating	A-	None				
AU300CCAL019	COCACOLA	10/08/2010	Floating	A-	None	5.10		5.11	5.10

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300BE30613	BENDIGO	25/08/2010	Floating	BBB+	None	6.33		5.02	5.67
AU300MRL1108	MERRILL-CO	2/09/2010	Floating	A	None	6.04			6.04
AU3FN0000238	MIRVAC FD	15/09/2010	Floating	BBB	None	6.58			6.58
AU300MET0156	SUNC SUB	15/09/2010	Floating	A-	None	7.09			7.09
AU300GPTC045	GPT	7/11/2010	Floating	A-	None	5.77		6.04	5.91
AU300BQ40442	BKQLD	2/12/2010	Floating	BBB+	None	6.06		5.45	5.76
AU000NTFC014	ADLAIRPORT	15/12/2010	Floating	BBB	None	6.18		7.36	6.77
AU300SLMC051	SALLIE MAE	15/12/2010	Floating	BBB-	None	8.57			8.57
AU300SNSB049	SNS BANK	15/12/2010	Floating	A-	None	8.03			8.03
AU0000HYPHA9	HYPO	22/02/2011	Floating	BBB	None	15.23			15.23
AU300WW20075	WOOLWORTHS	14/03/2011	Floating	A-	None	5.41		5.46	5.43
AU300NORK033	NTH ROCK	24/03/2011	Floating	A	None	8.75			8.75
AU300BQ40459	BKQLD SUB	11/05/2011	Floating	BBB	Callable	8.32			8.32
AU3FN0005591	AMPGROUP	16/05/2011	Floating	A	None	6.48			6.48
AU000PLLC014	POWERCOR	7/06/2011	Floating	A-	None	7.37		7.44	7.40
AU300QICF055	QICF	7/06/2011	Floating	A-	None	7.27		7.28	7.27
AU000APAM035	MLBAIRPORT	11/06/2011	Floating	A-	None	6.34		7.35	6.85
AU300MRL1132	MERRILL-CO	15/06/2011	Floating	A	None	6.72			6.72
AU300SPT0124	STOCKLAND	16/06/2011	Floating	A-	None	6.62		6.72	6.67
AU300MET0172	SUNC SUB	22/06/2011	Floating	A-	None	9.07			9.07
AU300CPOF089	CPOF	28/06/2011	Floating	A-	None	6.93		7.07	7.00
AU300EPGL022	EPG (W)	29/07/2011	Floating	BBB-	None	8.78			8.78

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3FN0000113	TRANSURBAN	15/09/2011	Floating	A-	None	6.39			6.39
AU300ST50068	SANTOS	23/09/2011	Floating	BBB+	None	6.48	6.44	6.10	6.34
AU3FN0000444	ORIGINERGY	6/10/2011	Floating	BBB+	None	7.00		7.48	7.24
AU300TPP0028	TABCORP	13/10/2011	Floating	BBB+	None	6.30		6.23	6.27
AU3FN0000618	SNS BANK	8/11/2011	Floating	BBB+	Callable	27.47	10.83		19.15
AU3FN0001327	SYDAIRPORT	21/11/2011	Floating	BBB	None	6.46	7.23	7.31	7.00
AU300SPI0184	SPIPOWER	30/11/2011	Floating	A-	None	6.41		6.34	6.38
AU3FN0001368	BBIDBCTFIN	12/12/2011	Floating	BBB+	None	9.31			9.31
AU3FN0001392	SALLIE MAE	15/12/2011	Floating	BBB-	None	9.07	14.84		11.95
AU3FN0001665	BENDIGO	21/12/2011	Floating	BBB	Callable	8.57			8.57
AU000MEGL017	MERIDIAN	9/02/2012	Floating	BBB+	None	6.83			6.83
AU3FN0001822	MERRILL-CO	16/02/2012	Floating	A	None	6.93	6.97		6.95
AU3FN0000790	RBS SUB	17/02/2012	Floating	BBB	Callable	23.59	11.86		17.72
AU0000BENHE1	ADELAIDEBK	28/03/2012	Floating	BBB+	None	6.29	7.07	6.68	6.68
AU300DBNF014	DBNGP	25/04/2012	Floating	BBB-	Callable	8.60			8.60
AU3FN0002549	HBOS SUB	1/05/2012	Floating	BBB-	Callable	21.21	16.87		19.04
AU300MQ20326	MACQ SUB	31/05/2012	Floating	A-	None	9.56			9.56
AU3FN0010914	CATERPILAR	29/06/2012	Floating	A	None	6.11			6.11
AU000BCAF035	BROADCAST	9/07/2012	Floating	BBB	None	8.86		7.38	8.12
AU000SCA0040	SYDAIRPORT	11/10/2012	Floating	BBB	None	6.73	7.30		7.02
AU300CLPF028	CLPAUST	16/11/2012	Floating	BBB	None	7.33	7.64	7.50	7.49
AU000SHL0042	SNOWY (W)	25/02/2013	Floating	BBB+	None	8.15	7.32		7.73

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU000SHL0059	SNOWYHYDRO	25/02/2013	Floating	BBB+	None	8.15			8.15
AU000CPR0044	CPOWER (W)	28/02/2013	Floating	A-	None	6.00	7.52	8.24	7.25
AU300CCAL035	COCACOLA	8/03/2013	Floating	A-	None	5.90	5.81	5.91	5.87
AU300DBNF048	DBNGP	25/04/2013	Floating	BBB-	Callable	8.65			8.65
AU300DBNF030	DBNGP	26/04/2013	Floating	BBB-	Callable	8.66			8.66
AU300SPT0108	STOCKLAND	15/05/2013	Floating	A-	None	7.00		7.22	7.11
AU3FN0005914	BKQLD SUB	4/06/2013	Floating	BBB	Callable	8.91			8.91
AU300GPTM226	GPT	22/08/2013	Floating	A-	None	6.79	9.12		7.96
AU3FN0011524	BANKAMERIC	9/09/2013	Floating	A	None				
AU3FN0001335	SYDAIRPORT	20/11/2013	Floating	BBB	None	7.01	7.58	7.61	7.40
AU300BR40044	BACL	11/12/2013	Floating	BBB	None	7.69	7.90		7.80
AU0000DBAHC4	DTSCHE SUB	23/04/2014	Floating	A	Callable	9.60	9.20		9.40
AU3FN0008488	TABCORP	1/05/2014	Floating	BBB+	None	6.98			6.98
AU0000TAHHA1	TAHHA	1/05/2014	Floating	BBB+	None	7.03			7.03
AU0000AQNHA5	AMP SUB	15/05/2014	Floating	A-	Callable	8.03			8.03
AU3FN0010500	ADLAIRPORT	15/06/2014	Floating	BBB	Callable	7.29			7.29
AU3FN0008835	DB RREEF	28/07/2014	Floating	BBB+	None	8.26			8.26
AU3FN0009098	WESFARMERS	11/09/2014	Floating	BBB+	None	6.78	7.03	6.73	6.85
AU300SUNQ027	SUNINS SUB	23/09/2014	Floating	A-	None	10.08			10.08
AU300UELM012	UNITE EN W	23/10/2014	Floating	BBB	None	7.84			7.84
AU300RSCT012	RBS SUB	27/10/2014	Floating	BBB	Callable	10.63	8.76		9.70
AU300SAFC025	SYDAIRPORT	20/11/2014	Floating	BBB	None	7.22	7.99		7.61

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300VERO021	PROMINA	7/09/2015	Floating	A-	None	13.16			13.16
AU300TFC0082	TRANSB (W)	10/11/2015	Floating	A-	None	7.93	8.13		8.03
AU300CLPF036	CLPAUST	16/11/2015	Floating	BBB	None	7.77	8.43		8.10
AU300SAFC033	SYDAIRPORT	20/11/2015	Floating	BBB	None	7.41	8.14		7.77
AU300APAM054	MLBAIRPORT	14/12/2015	Floating	A-	None	7.38	8.19	8.32	7.96
AU300GSGI076	GOLDMANS	12/04/2016	Floating	A	None	7.52	7.66		7.59
AU300BBIF026	BBIDBCTFIN	9/06/2016	Floating	BBB+	None	9.73			9.73
AU300BAAC105	BANKAMERIC	15/06/2016	Floating	A	None	7.41	7.58		7.50
AU300NWML027	NWMH SUB	16/06/2016	Floating	A	Callable	9.63			9.63
AU300BR40051	BRISAIR	1/07/2016	Floating	BBB	None	8.63		8.36	8.50
AU300NTFC034	ADLAIRPORT	20/09/2016	Floating	BBB	None	8.15			8.15
AU0000AXJHA9	AXA	26/10/2016	Floating	BBB	Callable	13.07			13.07
AU3FN0000931	TELSTRA	1/12/2016	Floating	A	None	6.76	6.70	6.64	6.70
AU3FN0001772	BANKAMERIC	14/02/2017	Floating	A-	None	8.53	8.44		8.48
AU300DBNF022	DBNGP	25/04/2017	Floating	BBB-	Callable	9.04			9.04
AU3FN0002531	SWISS RE	25/05/2017	Floating	A-	Callable	12.89			12.89
AU300TFC0090	TRANSB (W)	10/11/2017	Floating	A-	None	8.17	8.52		8.35
AU300BBIF034	BBIDBCTFIN	9/06/2021	Floating	BBB+	None	9.93			9.93
AU300BBIF042	BBIDBCTFIN	9/06/2026	Floating	BBB+	None	10.00			10.00

Table 20: Averaging period 3 (13/9/2010 – 8/10/2010)

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300BAAC063	BANKAMERIC	23/08/2010	Fixed	A	None	N/A	N/A	N/A	N/A
AU3CB0002798	MIRVAC FD	15/09/2010	Fixed	BBB	None	6.00			6.00
AU300MRL1116	MERRILL-CO	6/10/2010	Fixed	A	None	5.34	5.12	5.87	5.45
AU300GPTC037	GPT	7/11/2010	Fixed	A-	None	5.92	5.51	5.82	5.75
AU300CFS0067	GANDEL	12/11/2010	Fixed	A	None	5.70	5.35	5.68	5.58
AU300BQ40434	BKQLD	2/12/2010	Fixed	BBB+	None	6.02	5.19	5.51	5.58
AU300SLMC044	SALLIE MAE	15/12/2010	Fixed	BBB-	None	8.14	14.45	8.85	10.48
AU300CFCC033	COUNTRYWD	16/12/2010	Fixed	A	None	6.16	5.68		5.92
AU3CB0016673	DB RREEF	8/02/2011	Fixed	BBB+	None	6.73	6.28	6.57	6.52
AU300WW20067	WOOLWORTHS	14/03/2011	Fixed	A-	None	5.61	5.49	5.59	5.56
AU300GSGI043	GOLDMANS	12/04/2011	Fixed	A	None	5.97	6.04	6.09	6.03
AU300PBLF046	PBL	6/05/2011	Fixed	BBB	None	6.90	6.59	6.66	6.72
AU3CB0069037	AMPGROUP	16/05/2011	Fixed	A	None	6.44		6.21	6.33
AU3CB0071173	SUNCORP	30/05/2011	Fixed	A	None	5.90	5.99	5.78	5.89
AU300BAAC089	BANKAMERIC	15/06/2011	Fixed	A	None	6.38	6.39	6.39	6.39
AU300MRL1124	MERRILL-CO	15/06/2011	Fixed	A	None	6.39	6.39	6.47	6.42
AU300SPT0116	STOCKLAND	16/06/2011	Fixed	A-	None	6.33	6.32	6.47	6.37
AU300MET0164	SUNC SUB	22/06/2011	Fixed	A-	Callable	9.39		6.23	7.81
AU3CB0117778	VWGN	24/06/2011	Fixed	A-	None	6.14	6.14	6.12	6.13
AU300CPOF071	CPOF	28/06/2011	Fixed	A-	None	6.45	6.68	6.62	6.58
AU300EPGL030	EPG (W)	29/07/2011	Fixed	BBB-	None	8.50	9.17	7.05	8.24

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0001998	TRANSURBAN	15/09/2011	Fixed	A-	None	6.62		6.53	6.58
AU3CB0002822	HSBC FIN	22/09/2011	Fixed	A	None	6.43	6.50	6.53	6.49
AU3CB0004117	ORIGINERGY	6/10/2011	Fixed	BBB+	None	6.60	6.76	6.71	6.69
AU300TPP0010	TABCORP	13/10/2011	Fixed	BBB+	None	6.58	6.55	6.52	6.55
AU300GSGI035	GOLDMANS	21/10/2011	Fixed	A	None	6.15	6.06	6.14	6.12
AU300TXUH015	SPI E&G C	3/11/2011	Fixed	A-	None	6.18	6.14	6.14	6.15
AU3CB0006807	SNS BANK	8/11/2011	Fixed	BBB+	Callable	29.39	22.16		25.77
AU3CB0011021	SYDAIRPORT	21/11/2011	Fixed	BBB	None	6.57	8.21	7.45	7.41
AU300SPI0176	SPIPOWER	30/11/2011	Fixed	A-	None	6.19		6.19	6.19
AU3CB0010213	AMEX	5/12/2011	Fixed	BBB+	None	6.77	6.53	6.73	6.68
AU3CB0017028	CITIGROUP	13/02/2012	Fixed	A	None	6.92	6.83	6.93	6.89
AU3CB0018281	MERRILL-CO	16/02/2012	Fixed	A	None	7.08	7.03	6.83	6.98
AU3CB0008217	RBS SUB	17/02/2012	Fixed	BBB	Callable	22.50	14.23		18.37
AU3CB0024883	HBOS SUB	1/05/2012	Fixed	BBB-	Callable	20.48	15.04		17.76
AU300SLMC036	SALLIE MAE	10/05/2012	Fixed	BBB-	None	9.53	14.53	10.23	11.43
AU300MQ20318	MACQ SUB	31/05/2012	Fixed	A-	None	9.82		6.77	8.30
AU300CML1014	COLESMYER	25/07/2012	Fixed	BBB+	None	6.24	6.24	6.27	6.25
AU3CB0121382	APPFR	30/07/2012	Fixed	A	None	7.21	7.36		7.28
AU3CB0122778	HOLCIM	7/08/2012	Fixed	BBB	None	6.70		6.71	6.70
AU300CFS0091	GANDEL	2/09/2012	Fixed	A	None	6.38	6.50	6.41	6.43
AU0000TLSHV1	TELSTRA	15/11/2012	Fixed	A	None	5.73	5.76	5.67	5.72
AU300CLPF010	CLPAUST	16/11/2012	Fixed	BBB	None	7.03	6.82	7.27	7.04

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0136059	VWGN	26/11/2012	Fixed	A-	None	6.61	6.61		6.61
AU3CB0135887	CATERPILAR	3/12/2012	Fixed	A	None	6.61		6.57	6.59
AU300VODA011	VODAFONE	10/01/2013	Fixed	A-	None	6.16	6.19	6.20	6.18
AU000SHL0034	SNOWYHYDRO	25/02/2013	Fixed	BBB+	None	8.64	10.03	7.22	8.63
AU300SPT0090	STOCKLAND	15/05/2013	Fixed	A-	None	6.84	6.79	6.79	6.81
AU3CB0072148	BKQLD SUB	4/06/2013	Fixed	BBB	Callable	8.68		8.77	8.73
AU3CB0157394	VWGN	17/08/2013	Fixed	A-	None	6.77	6.83	6.78	6.79
AU300GPTM218	GPT	22/08/2013	Fixed	A-	None	7.17	6.82	6.82	6.94
AU3CB0158657	BANKAMERIC	9/09/2013	Fixed	A	None	7.13	7.12	7.13	7.13
AU0000TLSHA5	TELSTRA	15/11/2013	Fixed	A	None	6.10	6.00	6.02	6.04
AU300MRL1058	MERRILL-CO	12/03/2014	Fixed	A	None	7.44	7.58	7.30	7.44
AU3CB0145381	TRANSURBAN	24/03/2014	Fixed	A-	None	7.10	7.20	7.13	7.15
AU3CB0146256	VWGN	31/03/2014	Fixed	A-	None	6.84	6.79	6.79	6.81
AU3CB0121234	LEIGHTON	28/07/2014	Fixed	BBB	None	8.61	8.47	8.59	8.56
AU3CB0157576	MLBAIRPORT	25/08/2014	Fixed	A-	None	6.93		6.93	6.93
AU3CB0126860	WESFARMERS	11/09/2014	Fixed	BBB+	None	6.82	6.87	6.88	6.86
AU300SUNQ019	SUNINS SUB	23/09/2014	Fixed	A-	Callable	10.69		7.43	9.06
AU3CB0135820	AMP WOF	5/10/2014	Fixed	A	None	7.30			7.30
AU300CFS0083	GANDEL	22/12/2014	Fixed	A	None	7.17	6.98	6.73	6.96
AU3CB0138030	STOCKLAND	18/02/2015	Fixed	A-	None	7.24	7.08	7.13	7.15
AU3CB0145837	MIRVAC FD	15/03/2015	Fixed	BBB	None	7.85	7.74	7.81	7.80
AU0000TLSHX7	TELSTRA	15/04/2015	Fixed	A	None	6.47	6.48	6.44	6.46

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3CB0148302	AMP SHOPCF	28/04/2015	Fixed	A	None	7.19		7.10	7.15
AU3CB0154003	SYDAIRPORT	6/07/2015	Fixed	BBB	None	7.39		8.06	7.72
AU3CB0156230	SPIAA	12/08/2015	Fixed	A-	None	6.99	6.95	7.00	6.98
AU300VERO013	PROMINA	7/09/2015	Fixed	A-	None	11.28		8.75	10.02
AU300ST50076	SANTOS	23/09/2015	Fixed	BBB+	None	7.45	7.50	6.57	7.17
AU300APAM047	MLBAIRPORT	14/12/2015	Fixed	A-	None	7.26	11.29	7.54	8.70
AU300CGRP056	CITIGROUP	22/03/2016	Fixed	A	None	7.58	7.60	7.70	7.62
AU300GSGI068	GOLDMANS	12/04/2016	Fixed	A	None	7.62	7.69		7.66
AU300BBIF018	BBIDBCTFIN	9/06/2016	Fixed	BBB+	Callable	10.49	15.17	9.93	11.86
AU300NWML019	NWMH SUB	16/06/2016	Fixed	A	Callable	10.20		8.33	9.26
AU3CB0157584	MLBAIRPORT	25/08/2016	Fixed	A-	None	7.35		7.41	7.38
AU300NTFC026	ADLAIRPORT	20/09/2016	Fixed	BBB	None	8.08		8.73	8.41
AU3CB0003309	SUNINS SUB	6/10/2016	Fixed	A-	Callable	11.52		9.33	10.43
AU0000AXJHB7	AXA	26/10/2016	Fixed	BBB	Callable	12.65		9.35	11.00
AU3CB0017036	CITIGROUP	13/02/2017	Fixed	A	None	7.75	7.65	7.63	7.68
AU3CB0147833	DB RREEF	21/04/2017	Fixed	BBB+	None	8.05			8.05
AU3CB0024743	SWISS RE	25/05/2017	Fixed	A-	Callable	12.62		8.18	10.40
AU3CB0145696	SPI E&G C	25/09/2017	Fixed	A-	None	7.26	7.16	7.21	7.21
AU3CB0152940	TELSTRA	15/07/2020	Fixed	A	None	7.22	7.32	7.21	7.25
AU3CB0155133	APT	22/07/2020	Fixed	BBB	None	8.02	8.07	7.72	7.94
XS0113922297	QBE SUB	3/08/2010	Floating	A-	None	N/A	N/A	N/A	N/A
AU300CCAL019	COCACOLA	10/08/2010	Floating	A-	None	N/A	N/A	N/A	N/A

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300BE30613	BENDIGO	25/08/2010	Floating	BBB+	None	N/A	N/A	N/A	N/A
AU300MRL1108	MERRILL-CO	2/09/2010	Floating	A	None	N/A	N/A	N/A	N/A
AU3FN0000238	MIRVAC FD	15/09/2010	Floating	BBB	None				
AU300MET0156	SUNC SUB	15/09/2010	Floating	A-	None				
AU300GPTC045	GPT	7/11/2010	Floating	A-	None	5.80		5.90	5.85
AU300BQ40442	BKQLD	2/12/2010	Floating	BBB+	None	5.73		5.42	5.57
AU000NTFC014	ADLAIRPORT	15/12/2010	Floating	BBB	None	6.29		7.48	6.89
AU300SLMC051	SALLIE MAE	15/12/2010	Floating	BBB-	None	7.64			7.64
AU300SNSB049	SNS BANK	15/12/2010	Floating	A-	None	8.19			8.19
AU0000HYPHA9	HYPO	22/02/2011	Floating	BBB	None	15.46			15.46
AU300WW20075	WOOLWORTHS	14/03/2011	Floating	A-	None	5.65		5.66	5.66
AU300NORK033	NTH ROCK	24/03/2011	Floating	A	None	9.01			9.01
AU300BQ40459	BKQLD SUB	11/05/2011	Floating	BBB	Callable	8.55			8.55
AU3FN0005591	AMPGROUP	16/05/2011	Floating	A	None	6.74			6.74
AU000PLLC014	POWERCOR	7/06/2011	Floating	A-	None	7.66		7.69	7.68
AU300QICF055	QICF	7/06/2011	Floating	A-	None	7.56		7.45	7.51
AU000APAM035	MLBAIRPORT	11/06/2011	Floating	A-	None	6.51		7.18	6.84
AU300MRL1132	MERRILL-CO	15/06/2011	Floating	A	None	6.68			6.68
AU300SPT0124	STOCKLAND	16/06/2011	Floating	A-	None	6.70		6.56	6.63
AU300MET0172	SUNC SUB	22/06/2011	Floating	A-	None	9.07			9.07
AU300CPOF089	CPOF	28/06/2011	Floating	A-	None	7.22		6.67	6.95
AU300EPGL022	EPG (W)	29/07/2011	Floating	BBB-	None	9.08			9.08

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU3FN0000113	TRANSURBAN	15/09/2011	Floating	A-	None	6.71			6.71
AU300ST50068	SANTOS	23/09/2011	Floating	BBB+	None	6.74	6.55	6.27	6.52
AU3FN0000444	ORIGINERGY	6/10/2011	Floating	BBB+	None	7.31		7.76	7.54
AU300TPP0028	TABCORP	13/10/2011	Floating	BBB+	None	6.62		6.52	6.57
AU3FN0000618	SNS BANK	8/11/2011	Floating	BBB+	Callable	28.32	11.07		19.70
AU3FN0001327	SYDAIRPORT	21/11/2011	Floating	BBB	None	6.53	7.48	7.54	7.18
AU300SPI0184	SPIPOWER	30/11/2011	Floating	A-	None	6.73		6.46	6.59
AU3FN0001368	BBIDBCTFIN	12/12/2011	Floating	BBB+	None	9.64			9.64
AU3FN0001392	SALLIE MAE	15/12/2011	Floating	BBB-	None	9.29	15.08		12.19
AU3FN0001665	BENDIGO	21/12/2011	Floating	BBB	Callable	8.89			8.89
AU000MEGL017	MERIDIAN	9/02/2012	Floating	BBB+	None	7.17			7.17
AU3FN0001822	MERRILL-CO	16/02/2012	Floating	A	None	7.08	7.12		7.10
AU3FN0000790	RBS SUB	17/02/2012	Floating	BBB	Callable	21.85	19.42		20.64
AU0000BENHE1	ADELAIDEBK	28/03/2012	Floating	BBB+	None	6.62	6.61	6.75	6.66
AU300DBNF014	DBNGP	25/04/2012	Floating	BBB-	Callable	8.29			8.29
AU3FN0002549	HBOS SUB	1/05/2012	Floating	BBB-	Callable	20.12	17.12		18.62
AU300MQ20326	MACQ SUB	31/05/2012	Floating	A-	None	9.46			9.46
AU3FN0010914	CATERPILAR	29/06/2012	Floating	A	None	6.44			6.44
AU000BCAF035	BROADCAST	9/07/2012	Floating	BBB	None	9.19		7.62	8.41
AU000SCA0040	SYDAIRPORT	11/10/2012	Floating	BBB	None	6.70	7.56		7.13
AU300CLPF028	CLPAUST	16/11/2012	Floating	BBB	None	7.70	7.51	7.67	7.62
AU000SHL0042	SNOWY (W)	25/02/2013	Floating	BBB+	None	8.46	7.58		8.02

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU000SHL0059	SNOWYHYDRO	25/02/2013	Floating	BBB+	None	8.46			8.46
AU000CPR0044	CPOWER (W)	28/02/2013	Floating	A-	None	6.31	7.78	8.55	7.55
AU300CCAL035	COCACOLA	8/03/2013	Floating	A-	None	6.21	6.06	5.92	6.06
AU300DBNF048	DBNGP	25/04/2013	Floating	BBB-	Callable	8.44			8.44
AU300DBNF030	DBNGP	26/04/2013	Floating	BBB-	Callable	8.44			8.44
AU300SPT0108	STOCKLAND	15/05/2013	Floating	A-	None	7.08		7.09	7.09
AU3FN0005914	BKQLD SUB	4/06/2013	Floating	BBB	Callable	9.03			9.03
AU300GPTM226	GPT	22/08/2013	Floating	A-	None	7.09	9.39	7.15	7.88
AU3FN0011524	BANKAMERIC	9/09/2013	Floating	A	None	7.06			7.06
AU3FN0001335	SYDAIRPORT	20/11/2013	Floating	BBB	None	6.85	7.84	7.81	7.50
AU300BR40044	BACL	11/12/2013	Floating	BBB	None	7.76			7.76
AU0000DBAHC4	DTSCHE SUB	23/04/2014	Floating	A	Callable	10.01			10.01
AU3FN0008488	TABCORP	1/05/2014	Floating	BBB+	None	7.26			7.26
AU0000TAHHA1	TAHHA	1/05/2014	Floating	BBB+	None	7.31			7.31
AU0000AQNHA5	AMP SUB	15/05/2014	Floating	A-	Callable	8.31			8.31
AU3FN0010500	ADLAIRPORT	15/06/2014	Floating	BBB	Callable	7.43			7.43
AU3FN0008835	DB RREEF	28/07/2014	Floating	BBB+	None	8.54			8.54
AU3FN0009098	WESFARMERS	11/09/2014	Floating	BBB+	None	7.03	7.29	6.99	7.10
AU300SUNQ027	SUNINS SUB	23/09/2014	Floating	A-	None	10.36			10.36
AU300UELM012	UNITE EN W	23/10/2014	Floating	BBB	None	8.12			8.12
AU300RSCT012	RBS SUB	27/10/2014	Floating	BBB	Callable	10.57			10.57
AU300SAFC025	SYDAIRPORT	20/11/2014	Floating	BBB	None	7.08	8.25		7.67

ISIN	Issuer	Maturity	Type	S&P	Attributes	Yield *UBS*	Yield *CBA*	Yield *BB*	Yield *Average*
AU300VERO021	PROMINA	7/09/2015	Floating	A-	None	13.43			13.43
AU300TFC0082	TRANSB (W)	10/11/2015	Floating	A-	None	8.18	8.36		8.27
AU300CLPF036	CLPAUST	16/11/2015	Floating	BBB	None	7.98	8.64		8.31
AU300SAFC033	SYDAIRPORT	20/11/2015	Floating	BBB	None	7.24	8.37		7.80
AU300APAM054	MLBAIRPORT	14/12/2015	Floating	A-	None	7.24	8.42	8.04	7.90
AU300GSGI076	GOLDMANS	12/04/2016	Floating	A	None	7.62	7.73		7.67
AU300BBIF026	BBIDBCTFIN	9/06/2016	Floating	BBB+	None	9.96			9.96
AU300BAAC105	BANKAMERIC	15/06/2016	Floating	A	None	7.66	8.01		7.84
AU300NWML027	NWMH SUB	16/06/2016	Floating	A	Callable	9.69			9.69
AU300BR40051	BRISAIR	1/07/2016	Floating	BBB	None	8.46		8.59	8.53
AU300NTFC034	ADLAIRPORT	20/09/2016	Floating	BBB	None	7.87			7.87
AU0000AXJHA9	AXA	26/10/2016	Floating	BBB	Callable	12.90			12.90
AU3FN0000931	TELSTRA	1/12/2016	Floating	A	None	6.90	6.86	6.84	6.87
AU3FN0001772	BANKAMERIC	14/02/2017	Floating	A-	None	8.65	8.64		8.65
AU300DBNF022	DBNGP	25/04/2017	Floating	BBB-	Callable	8.94			8.94
AU3FN0002531	SWISS RE	25/05/2017	Floating	A-	Callable	12.65			12.65
AU300TFC0090	TRANSB (W)	10/11/2017	Floating	A-	None	8.36	8.69		8.53
AU300BBIF034	BBIDBCTFIN	9/06/2021	Floating	BBB+	None	10.05			10.05
AU300BBIF042	BBIDBCTFIN	9/06/2026	Floating	BBB+	None	10.10			10.10

Appendix C. Terms of reference