Proposed Revisions
DBNGP Access Arrangement

*2016 – 2020 Regulatory Period*

Response to ERA Issues Paper

Submission 26

Date Submitted: 02 June 2015

DBP Transmission (DBP) is the owner and operator of the Dampier to Bunbury Natural Gas Pipeline (DBNGP), Western Australia's most important piece of energy infrastructure.

The DBNGP is WA's key gas transmission pipeline stretching almost 1600 kilometres and linking the gas fields located in the Carnarvon Basin off the Pilbara coast with population centres and industry in the south-west of the State
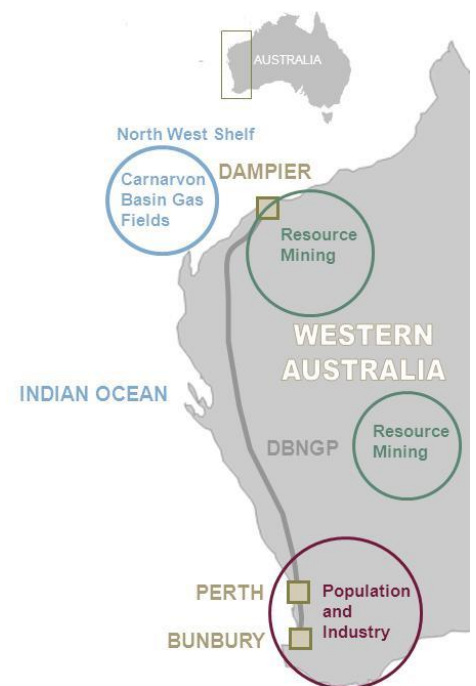
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1. INTRODUCTION

1.1 This submission details DBP's response to the recent Issues Paper released by the ERA in respect of the DBNGP revised access arrangement proposal submitted by DBP in December 2014 (**AA Proposal**). This submission contains two sections:

    (a) A section clarifying certain aspects of the AA Proposal in light of the comments made by the ERA in the Issues Paper (see Section 2 of this submission).

    (b) A section containing new information on certain matters raised in the Issues Paper which was not available at the time DBP submitted its AA Proposal. The new information is as a result of other regulatory decisions being made in other jurisdictions (see Section 3 of this submission).

1.2 DBP notes from discussions with the ERA secretariat that one of the reasons for the ERA extending the time until 2 June 2015 to make submissions on DBP's AA Proposal was so stakeholders could have the opportunity to consider the ERA's Final Decision for ATCO, as aspects of that Final Decision will feed into the ERA's assessment of the AA Proposal. However, the ATCO Final Decision has not yet been published as at the time of the making of this submission. Should the ERA decide not to further extend the time for consultation, DBP requests that the ERA confirm that it will exercise its discretion to consider a separate submission that DBP may make after 2 June 2015 and which addresses aspects of the ATCO Final Decision that are relevant to the AA Proposal on the basis that the submission:

    (a) Is submitted to the ERA within 30 days after the ERA releases its final decision on the ATCO AA; and

    (b) Only addresses the ERA's reasoning from the final decision in relation to the rate of return.

2. CLARIFICATION OF THE DBNGP AA PROPOSAL

2.1 While the Issues Paper is generally a factual, balanced overview of the contents of DBP's AA Proposal, there are a few matters in the Issues Paper which don't accurately summarise certain aspects of the AA Proposal. We highlight these below for the purposes of clarity in further stages of the ERA's decision-making process.

Use of SL-CAPM to determine the Rate of Return on Equity

2.2 In paragraph 69 of the Issues Paper, the ERA states that DBP determined its proposed rate of return on equity by modifying the SL CAPM to incorporate a 'bias-adjusted' beta estimate based on the Black CAPM.

2.3 This is not accurate.

2.4 As outlined in Submission 12, DBP's AA Proposal includes a rate of return on equity that is determined using an approach which:

(a) does not rely on the use of only one financial model;

(b) considers the use of models which not only have a theoretical grounding, but also is capable of being shown to be empirically relevant;

(c) assesses (through the development and application of a test - called the "model adequacy test" – to determine empirical relevance) whether the predictions of theoretically grounded models deliver outcomes which are comparable with actual subsequent returns on equity earned by benchmark businesses;

(d) considers ranges, rather than point estimates, in the application of each of the relevant models;

(e) examines the results from models used with a series of cross checks – one such cross check being the consistency between calculated debt and equity premia. This is done using the notion first suggested by Merton (1974) that debt and equity are options on the same underlying asset, and their relative values can be determined using options pricing methods; and

(f) for each of the above steps, makes use of as much information as is available on the return on equity from examining equity data.

2.5 DBP's methodology for determining the proposed return on equity is summarised below in paragraphs 2.8 to 2.9 of this submission.

The beta of 1.26

2.6 In paragraphs 69 and 96 of the Issues Paper, the ERA refers to implied values of the "bias adjusted beta" and "betastar" (the two are the same thing) of 1.26. Not only is it not the case that DBP has adopted a precise value for each element used in each financial model used to estimate the return on equity (as outlined in paragraphs 2.2 to 2.4 of this submission), this figure appears nowhere in DBP's AA Proposal, and it appears that the ERA has reverse-engineered the number by looking at the final result of our analysis in respect of the various elements of the return on equity model.

2.7 The issue is not whether the ERA has reverse engineered correctly. Rather the primary point to be made is that the representation by the ERA that DBP has used a single number for beta in the Issues Paper may cloud a key difference between the approach adopted by the ERA and that which DBP has used.

2.8 In estimating the return on equity, the ERA restricts its focus to a single model which, on the basis of principled argument alone, it has determined will best meet the ARORO, and then calculates

point estimate parameters for each element of that particular model. DBP's AA Proposal is crafted around the notion that this approach is unlikely to meet the ARORO. Instead, as outlined in paragraphs 2.2 to 2.4 of this submission, we focus on an empirical test which is applied to all models, and extract from the test results for all models, ranges of outcomes which can be shown, empirically, to be statistically unbiased and thus meet the ARORO. That range (as the ERA notes in paragraph 72 of the Issues Paper) is then passed forward to give a range of outcomes for the return on equity that can be shown to be statistically unbiased and thus meet the ARORO. Finally, the range is narrowed by using the range of outcomes which arise from our consistency test between debt and equity, so that we can ensure that the outcome is both unbiased and consistent with the calculated cost of debt (as noted in the Issues Paper paragraphs 94 to 95).

2.9   DBP's approach then is not a matter of simply calculating a point estimate value for each element of a single model – in the case of SL-CAPM, the beta, MRP and the risk-free rate. Indeed a key point of DBP's AA Proposal is that the AEMC required regulators to move away from this mechanistic approach and that regulators have largely ignored this aspect of the relevant recent rule change in both the development of rate of return guidelines and regulatory decisions made since the rule change in 2013. Whilst we acknowledge that the ERA has noted the more subtle points in our argument (see references above) elsewhere in its issues paper, it is very easy for stakeholders to focus on simple numbers, and ignore context.

2.10   We do not have an issue with the ERA, as a matter of presentation (we disagree that it is a good way to determine rates of return), reverse-engineering a beta from a final return on equity estimate but, at a bare minimum, the two paragraphs from the Issues Paper that are noted above should have included the caveats that the reverse engineering was something the ERA has itself done, and that DBP has not sought to determine a rate of return in this mechanistic fashion.

Differences between the ERA and DBP in respect of the cost of debt

2.11   In paragraphs 52 through 67 of the Issues Paper, the ERA covers DBP's approach to estimating the cost of debt. It opens its discussion in paragraph 52 by noting that "DBP does not accept the approach to estimating the return on debt set out in the…". Technically, this is correct, but we believe that the ERA has overstated the differences between ourselves and itself in respect of the cost of debt. Moreover, it is difficult for stakeholders to appreciate the differences because the section of the Issues Paper is not particularly well-structured.[1]

2.12   There are two components to the cost of debt; how it is determined at the outset of the access period, and how it is updated (if at all) during the access period.

2.13   In respect of annual updating, the ERA is correct to state that DBP has proposed an approach which is quite different to that which the ERA proposed in either the Guidelines or the ATCO Draft Decision. However, one of the key reasons DBP's different approach is at the instigation of the ERA itself. The ERA itself has signalled a move away from its own approaches in both the Guidelines and in the ATCO Draft Decision in the recent *Estimating the Return on Debt* discussion paper (the March Debt Paper)[2]. Moreover what appears to be the ERA's preferred approach at present (we do not yet have the ATCO Final Decision to clarify this point) is much closer to DBP's than was the case at the ATCO Draft Decision, and DBP is on the record in its submission to the debt paper as being supportive of these changes. The ERA has not, in the Issues Paper, reflected the changing ground of the debate on annual updates, and the Issues Paper gives an impression of greater difference than actually exists between DBP's proposal and its own position.[3]

2.14   In respect of the calculation of the cost of debt at the outset of the regulatory period, as outlined in our AA Proposal (see Table 21 of the proposed Access Arrangement Information) and as

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[1] For example, prior to paragraph 55, the heading is "Trailing average", but paragraph 56 and 57 discuss the formula we propose to calculate the cost of debt at the outset of the period (and subsequent updates).
[2] https://www.erawa.com.au/cproot/13374/2/Estimating%20the%20return%20on%20debt%20discussion%20paper.pdf
[3] By way of a further example, in paragraph 62 on capex weights, the ERA notes we proposed these for capex greater than 10 percent of the asset base in our AA Proposal, but ignores our agreement with the ERA for the removal of this floor in our submission to the March Debt Paper.

summarised in the following table, the differences between DBP's approach and that of the ERA's to the estimation of the cost of debt are:

Matter in Guideline	DBP position vis-à-vis Guidelines	AAI Para Reference
Formula to be used for estimating the return of debt at commencement of Access Arrangement Period	Minor departure	13.5(e)and 13.11(c)
Methodology for setting term of risk-free rate	Departure	13.8(b) & 13.11(a)
Addition of new issue premium	Addition	13.11(c)
Cross Checking the debt risk premium	Minor departure	13.11(b)13.19

2.15 In respect of the formula for estimating the return of debt at the commencement of the access arrangement period, we use essentially the same set of bonds as the ERA and exactly the same modelling techniques, namely the Gaussian Normal and various versions of Nelson-Siegel models.[4] The only difference in a modelling sense is that we adjust the Gaussian Normal results to reflect the fact that, depending upon the bonds available, the results do not necessarily give an effective tenor equal to the target tenor. We do this following the approach suggested by Lally (2014 p38-44) and accepted by the AER in its most recent round of decisions (see, for example, AER 2015a, pp198-202).[5]

2.16 Apart from the the use of the cross check based on the work of Merton (1974), which does not affect how the cost of debt is calculated in the first instance, the only other differences between our approach and that of the ERA in terms of calculating the cost of debt are:

(a) Consistent with our views in respect of equity, we continue to believe the ten-year risk-free rate to be the appropriate instrument upon which to base the cost of debt, as distinct from the five year risk-free rate.

(b) We believe it is necessary to include a premium to reflect the cost of debt which the BEE would face in issuing debt in primary markets, which exceeds the cost of debt calculated from data in secondary markets.[6]

2.17 Although the ten year swap rate is (generally) higher than the five-year swap rate, the ERA proposes to include the cost of the two swaps which would be required to hedge the risks of moving from ten year debt to a five-year risk-free rate. After the transition period (see paragraph 3.3) there would be no need to include such swaps when using DBP's proposed methodology, and the difference between the cost of the swaps and the swap rate differential is small and sometimes negative. Thus, the practical consequence of this difference is minor.

2.18 Allowing for a new issue premium is a more substantial difference, but represents an addition to the ERA's approach outlined in the Guidelines. The quantification of the size of this premium is a development which post-dates the Guidelines and thus represents new information not previously considered by the ERA, rather than a disagreement with the Guidelines as such.

The term of the risk-free rate

2.19 Paragraph 50 of the Issues Paper makes reference to arguments by SFG about the ERA's long run average of its five-year return on equity estimates being materially lower than the 11.8 percent historical average the ERA has calculated as a return on equity. The citation is to Submission 12,

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[4] *Since we draw our bond sample over a different averaging period, there are some small differences between the set of bonds used by the ERA in the ATCO Draft Decision, and in DBP's AA Proposal, but we use the ERA's selection criteria for bonds and thus would have the same set if drawing the bonds over the same averaging period as the ERA.*

[5] *The ERA is incorrect when it says in paragraph 67 that the "DBP considers that the Gaussian Normal estimate performs poorly….". In fact, as the quote the ERA provides, it is not something we have "considered" to be the case, but an empirical fact deduced by, among others, the ERA itself.*

[6] *See AA Proposal, Submission 12, Appendix H*

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but we believe the ERA instead means Appendix B of Submission 12, which is a report from SFG.[7] However, even if the ERA does in fact mean the SFG report, the conclusions drawn in paragraph 50 are incorrect. What SFG point out in Appendix B of Submission 12 is that the ERA's estimates of the cost of equity for ATCO in the next five-year period of 8.45 percent is significantly lower than the long-run average calculated by the ERA of 11.8 percent.

2.20 Further, as SFG makes clear in its discussion (commencing page 19 of Appendix B in Submission 12), it is responding to "term structure" arguments made by the ERA in the ATCO Draft Decision as it attempts to delineate between the short-term and long-term views of financiers. As SFG points out, for the ERA to provide long-run rates of return on equity which match what it considers they should be (10.9 percent; as distinct from the 11.8 percent the ERA calculates them as having been), if it proposes 8.45 percent in the next five years, it would need to be expecting a return on equity in the next or subsequent access period which is not only much higher than 10.9 percent, but also much higher than would have been allowed by the ERA even during periods of extreme stress such as the Global Financial Crisis.

2.21 SFG is not making a point about the term of the risk-free rate in this instance (using a ten-year term would only add above 50-60 bps in any event, and not change the arguments above), but is rather making a very salient point about the lack of a reality check to the ERA's proposed return on equity for ATCO, and the lack of congruence with other estimates, such as that made by Grant Samuel, which the ERA has claimed are consistent with its own. We would concur with SFG's point, but note that the ERA appears to have missed it.

Drivers of operating costs

2.22 Paragraph 17 (page 4) of the Issues Paper notes that System Use Gas and wages and salaries are the most significant increases in respect of operating expenditure for the forthcoming access period; whilst also noting that overall operating expenditure is less than forecast during the previous access arrangement period.

2.23 It is true that system use gas costs have increased substantially (as documented in our AA Proposal), but forecast costs for salaries and wages are actually lower than approved salaries and wages for the previous access arrangement period, in real terms. Thus, it is not true that salaries and wages are a source of significant increase in the forthcoming access arrangement.

2.24 More to the point, Figure 5 in the Issues Paper presents a misleading picture of operating costs in general and wages and salaries in particular, because it presents an average of the nominal values for the forecasts in the last access arrangement period (2011 to 2015), an average for actual expenditure using the last access period (2011 to 2013; the only years of actual expenditure available in December 2014 when DBP submitted its access arrangement proposal) and an average for forecasts of operating expenditure during the next access arrangement period (2016 to 2020). Purely due to the operation of inflation, one would expect an average of nominal figures from 2011 to 2013 to be significantly smaller than those formed by an average from 2016 to 2020. This is immediately clear when examining Figure 3 in DBP's AA Proposal, Submission 10, where the expenditure follows a clear trend, reflective of it being expressed in nominal terms.

2.25 It would have been far clearer for stakeholders if the averages presented by the ERA had been averages of real costs, or if the ERA had presented year-on-year figures so that stakeholders can see the clear trend which inflation produces.

Over-depreciation

2.26 Paragraph 17 (page 4) also states that DBP has proposed a new mechanism to correct for over-depreciation of assets. This is not true - as noted by the ERA later in the document, DBP proposes to use treatments already accepted by the AER (see paragraph 141 of the Issues Paper).

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[7] *DBP's discussion on term is on pages 14-18, and does not raise this specific issue.*

Stage 5A and 5B capital expenditure

2.27   Paragraph 17 (page 4) also states that DBP completed these two stages of its last expansion in 2011 and 2012 respectively. This is not true, DBP reached practical completion for the Stage 5A expansion project in 2008 and the Stage 5B expansion project in 2010.   Much of the proposed conforming capital expenditure for expansion had been incurred prior to 2011. As has been explained by DBP in its AA Proposal, there was some close-out expenditure related to both the Stage 5A and 5B expansion projects incurred during 2011, 2012 and 2013. This was only due to the accounting approach used in the 2011-15 regulatory period which meant that certain expenditure as at 31 December 2010 is recognised as actual conforming capital in 2011 (see paragraph 1.7 of DBP's AA Proposal, Submission 7).

Terminal value of the RAB

2.28   Paragraph 38 of the Issues Paper notes that:

> *DBP considers that the assumption that the terminal value of the asset at the end of the Access Arrangement period is not known with certainty at the outset of the Access Arrangement is key, but may not necessarily hold in the real world*

2.29   At first glance, this appears to be a misrepresentation of DBP's views, but we suspect it is more likely to be a typographical error. Unless the ERA means to suggest that it sometimes knows the terminal value of the asset (to the market; from the context of our AA Proposal), which is tantamount to it asserting perfect foreknowledge of allowed rates of return for several decades over the remainder of the asset life, then the last sentence of the quote above should of course read "will not hold in the real world". Stakeholders may be confused by the Issues Paper, and believe that it is sometimes possible to perfectly predict terminal asset values.

Subsequent costs

2.30   Paragraph 128 of the Issues Paper notes several of the major capital expenditure components, including "subsequent costs for compressors". DBP notes that subsequent costs do not refer solely to compressors and is an accounting term used, consistent with accounting standard AASB116, that captures the expenditure related to an overhaul of property, plant and equipment that effectively extends the life of an asset (see the relevant tables contained in the AA Proposal, Submission 9).

3. NEW INFORMATION

3.1 At the time DBP lodged its AA Proposal in December 2014, it reflected the latest available information on a wide variety of issues in regulation across Australia. However, since DBP lodged its AA Proposal, Transgrid, DirectLink, Endeavour Energy, Essential Energy, Transgrid and Jemena have lodged submissions in respect of their Draft Decisions or Determinations, and Jemena and UED-Multinet have lodged Access Arrangement proposals. Additionally, the AER has issued a series of Draft and Final Decisions in relation to several regulated energy businesses. Many of these submissions and decisions contained information which is pertinent to DBP's AA Proposal, but which was not available, and therefore not raised by us, in December. We appreciate that the ERA may well have familiarised itself with these various submissions, but it is useful to point out pertinent issues which have arisen in other processes, and we do so below.

The cost of raising debt and hedging

3.2 In our AA Proposal, DBP did not seek to challenge the ERA's allowance of 15 bps for debt-raising and hedging costs. However, since our filing, new information has come to light, specifically:

(a) The ERA appears to have changed its favoured approach in its March debt paper, and now supports two hedges for swapping risk-free rates, totalling 10 bps, rather than a single hedge of 2.5 bps under its Guidelines approach.

(b) Incenta (2015) has re-examined the 2004 report by Allens Consulting Group that forms the basis of the estimate of 12.5 bps for debt raising cost using more recent market data, and concluded that a similar estimate made today would be 20 bps.[8]

(c) UBS (2015) (for several of the NSW service providers) examined the costs of raising debt for periods longer than five years and noted that illiquidity in the Australian market means that firms will generally have to source debt offshore. This means that the cost of debt must include the costs associated with issuing debt overseas and translating it into A$.

(d) In its Issues Paper (paragraph 64), the ERA noted that the 15 bps DBP allowed in its AA Proposal includes hedging of the risk-free rate which would not be required. Subject to some caveats about the transition period discussed below, this is correct.

3.3 Given this new information, DBP has re-examined the issue of hedging and debt-raising costs anew. To assist us in obtaining results that will meet the ARORO, we have asked UBS to examine the hedging costs that a benchmark efficient entity would face in placing debt for ten years consisting of the set of bonds used by both ourselves and the ERA in establishing the cost of debt. This advice is contained in Appendix B, but the key points are as follows:

(a) The ERA frequently uses the terms "cost of debt" and "return on debt" interchangeably, but the two are quite distinct and have different meanings. The return on debt is what an investor would earn, and what one can deduce from third-party data sources such as Bloomberg. The cost of debt is what a firm issuing debt would pay to source the debt, and frequently involves costs which are not covered by the number in Bloomberg data. The Rules require regulators to look to the efficient financing costs of the benchmark efficient entity and not the efficient returns of those which invest in it.

(b) The ERA is incorrect when it ignores the conversion factor associated with foreign bonds when translating returns to an A$ equivalent. UBS notes that the approach is "unprecedented" amongst finance professionals and that, save for one footnote noting that it has done so, the ERA provides no justification as to why subtracting the conversion factor meets the ARORO. UBS notes that the RBA (following standard practice) includes the

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[8] Note that this figure is for a discount rate of 8.84 percent, which is similar to the WACC proposed by DBP; a lower WACC would lower the debt-raising cost, as Incenta point out.

conversion factor in the indices that are used by the AER,[9] so the net effect is that WA service providers are penalised to the tune of 13.5 to 17.4 bps compared to similar firms on the East Coast with no justification given. In its AA Proposal, DBP followed standard practice and included the conversion factor.[10]

(c) Both the ERA (in its Guidelines and the March debt paper) and DBP (in its AA Proposal) are incorrect when failing to account for the costs of issuing debt offshore and swapping in Australian Dollars. An Australian firm seeking to issue ten-year debt would generally need to place debt offshore, and the set of bonds which both the ERA and DBP use to calculate the cost of debt contain a majority of foreign bonds. Failure to capture the costs of cross currency swaps associated with overseas debt issuance means that the allowed rate of return will not meet the efficient financing costs of a firm with similar levels of risk as the service provider, and thus will not meet the ARORO.

(d) The ERA is correct in noting that the AER trailing average adopted by DBP would not require hedging of the risk free rate, but only after the ten-year transition period. For this access arrangement period under DBP's proposed approach, the benchmark efficient entity would need to write one hedge for one year for ten percent of its debt, one for two years for another ten percent and so on. UBS calculates the cost of these five hedges as being roughly the same as the two hedges the ERA approach (which apply in perpetuity rather than just during the transition period) would require. However, UBS considers that the ERA has over-estimated the hedging cost, which it estimates as being 8.5 bps.

(e) UBS was not tasked with reviewing debt raising costs, but it notes the Incenta (2015) report and the fact that it is based upon more recent information than the now 11-year-old Allens Consulting Group report. DBP is of the view that regulators ought to update market-derived information a little more frequently than once a decade.

3.4 The overall impact of the five points above is shown in Table 1. We note that these costs are for the transition period, which is relevant for the forthcoming access arrangement period so they include the costs of hedging the risk-free rate for DBP's proposed method, which would not be required once the transition period is complete. We note also that we have included the costs from the ERA's March debt paper as being the most recent reflection of its views, where these conflict with the Guidelines.[11] The column headed "correct value" refers to values from the UBS report, and we point out that both we and the ERA are incorrect.

Table 1: **Overall impact on hedging and debt-raising costs by adopting the UBS approach**

Cost element	DBP AA Proposal	ERA position	Correct value
Conversion factors	13.5 to 17.4 bps*	0	13.5 to 17.4 bps
Cost of foreign hedges	0	0	18 bps
Cost of risk-free rate hedges	2.5 bps	10 bps	8.5 bps
Debt-raising costs	12.5 bps	12.5 bps	20 bps
TOTAL	28.5 to 32.4 bps	22.5 bps	60 to 63.9 bps

Source: UBS: Appendix B of this submission
*Note – DBP did not explicitly include an allowance of 13.5 or 17.5 bps, but simply followed standard practice and included conversion factors.

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[9] *See Arsov, Brooks & Kosev (2013) Appendix A. Note that the authors include the cross currency swap, the interest rate swap and the conversion factor. The ERA includes the first two, but not the third, and gives no reason for this omission.*

[10] *Indeed, DBP was unaware that the ERA had made this arbitrary move until UBS pointed out the footnote in the ATCO Draft Decision (ERA, 2014, footnote 447, p198) which indicated that it had done so. This is why it is not raised explicitly in our AA Proposal. There is no mention in the Guidelines of removing the conversion factor, but the Guidelines propose that only Australian bonds be used. We would support the ERA's move to include foreign bonds, but not the incorrect and arbitrary removal of conversion factors.*

[11] *In some instances, particularly when estimating the scale of under-estimates of relevant hedges, UBS has used the Guidelines (for example, subtracting the 2.5 bps of hedging cost allowed in the Guidelines). There may therefore be some difference in the totals above compared to the Appendix which presents results differently, but the cost of each hedge is faithfully reproduced from the UBS report.*

3.5   The total cost assumed by DBP in its AA Proposal is 28.5 to 32.4 bps, once conversion factors are made explicit; in the AA Proposal, we identify a cost of 15 bps as we simply followed standard practice in including conversion factors. This is incorrect as it has the wrong value for the cost of risk-free rate hedges, ignores the costs of cross-currency swaps associated with issuing debt overseas and under-estimates the cost of debt-raising. The ERA's latest position (from the March Debt Paper), totalling 22.5 bps is incorrect because it ignores conversion factors and foreign exchange hedges, over-estimates the cost of risk-free rate swaps and under-estimates the cost of raising debt. The correct total, according to expert advice from UBS, is 60 to 63.9 basis points. If the return on debt data include conversion factors, then the true cost of debt, as distinct from the return on debt earned by investors, would be 46.5 basis points above the value determined from a yield curve model that uses Bloomberg or similar data as an input.

3.6   As a final point, we note that the above total does not include the 27 bps which represent the new issue premium that is detailed in DBP's AA Proposal, Submission 12. DBP did not ask UBS for an independent view on this premium, and we have no new evidence subsequent to the CEG report included with this submission.

3.7   DBP intends to update its AA Proposal following the ERA's draft decision to reflect the outcomes from the UBS report.

Evidence in respect of gamma

3.8   In its Guidelines, the ERA followed the Australian Competition Tribunal and used dividend drop-off studies to estimate the value of imputation credits distributed (theta) to give a value of between 0.35 and 0.55 which, when combined with a distribution rate of 0.7 gives a gamma of between 0.25 and 0.39. Whilst we disagreed with the rationale for the top end of the range for theta, we agreed with the ERA's approach of using dividend drop-off studies.

3.9   In the ATCO Draft Decision, the ERA chose to follow the AER's Guidelines, which veer away from the position of the Australian Competition Tribunal and the ERA's Guidelines, and base its estimate of gamma on a range of quantities, chiefly the share of domestic ownership of equity. This gave a gamma of 0.5, based on the same distribution rate, but a theta of 0.7. Since the ATCO Draft Decision, new information has come to light which casts doubt on the ATCO Draft Decision.

3.10   In the first instance, the AER has now recognised that the information on the domestic ownership of Australian shares it used in its own earlier analysis came from 2007, a year in which domestic ownership of Australian equity over the past decade and a half reached a peak. Rather than considering one somewhat unrepresentative point in time, the AER now considers the whole 15-year period. It noted that the range for listed equity shares is from 0.38 to 0.55, whilst the range for all shares is from 0.56 to 0.68. It notes further that the distribution rate for listed equity is 0.8, and for all equity is 0.7. This leads the AER to conclude that an estimate of gamma based on listed equity would range from 0.31 to 0.44 and the range if all equity is used would be from 0.4 to 0.47.

3.11   NERA (2015a) and SFG (2015) note that while the distribution rate may be a firm specific parameter, the value of a one-dollar credit distributed (theta) will be a market-wide parameter – that is, a single value will apply to all firms. Thus the AER's insistence of pairing estimates of theta constructed using data on listed firms with estimates of the distribution rate for listed firms is misguided.

3.12   The AER concludes that the overall range suggested by the domestic share of equity ownership is between 0.3 and 0.5. It notes that evidence from tax statistics suggest a theta of 0.43, which would imply a gamma of 0.3, but gives this quantity little weight, aside from leading it to conclude that the relevant gamma estimate is likely to lie at the lower end of the intersection between the ranges implied by listed and all equity. Market valuation studies such as those the ERA has itself undertaken in the past are given no effective weight, and the AER has explicitly excluded the "conceptual goalposts" approach from further consideration. Its final position is a gamma of 0.4. At a minimum, if the ERA still proposes to deviate from its Guidelines and the position of the Australian Competition Tribunal, and to follow the approach the AER has adopted, it would need to use a gamma of 0.4, not 0.5, as the latter figure was based on outdated data. However, we would

suggest that this is not sufficient, given further new information ignored by the AER, and significant flaws in the AER's own approach.

3.13   We look first at the flaws in the AER's approach. Firstly, the distribution rates for all firms and for what might be a benchmark efficient entity are not as different as the AER suggests they may be in its recent Final Decisions (see, for example AER 2015b, p64-8). The AER has previously stated that a benchmark efficient entity should not be viewed as a large listed company. As NERA (2015a) and SFG (2015) point out, the estimate of 0.8 for listed equity comes from an estimate made by Handley (2014) which covers all listed firms, both large and small. Lally (2014b) finds an estimate of the distribution rate for the top 20 (by market cap) ASX-listed firms to be 0.84. NERA use Lally's data together with data from the ATO to compute an estimate of the distribution rate for ASX-listed firms which are not in the top 20, and comes up with an estimate of around 0.7; the same as for all equity. Handley and NERA both find that the distribution rate for private companies is 0.5. Thus the evidence implies that the distribution rates for all firms and for what might be a benchmark efficient entity (which may be private or may be listed but not large) are likely to be approximately the same.

3.14   Secondly, in respect of utilisation rates (which we do not suggest are the same thing as theta; the *value* of imputation credits), this reached a peak in 2006-07 which, as Figure 1 suggests, has not been repeated subsequently. It is difficult to see what role a time period that is clearly an outlier, ought to play in considering the appropriate value of gamma for the coming five years.

3.15   Despite this, the AER uses data over the past 15 years to form an estimate of the utilisation rate, on the basis that the series is volatile and thus a longer time series is needed to estimate it accurately (AER, 2015b, p73). However, much of the volatility comes from including the abnormal period around 2007; if the last five years of data are used, the volatility of the listed equity series falls by a third, and that of all equity falls by half.[12] Moreover, the average over the past five years of all equity (0.6) and for listed equity (0.45) is almost identical to the most recent estimate of each, and thus there is no real conflict between historical and current information. Thus, if volatility is the AER's main reason for using an historical average, there are much better historical averages to use than the one it has chosen.

Figure 1:   Share of domestic ownership of equity

Source: Australian National Accounts: Finance and Wealth (ABS Cat No 5232.0) Tables 47& 48 (note that this is the same source, and same method as used by the AER in its recent decisions)

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[12] *Calculated as the standard deviation of the relevant time series divided by its mean.*

3.16   DBP does not believe that the ERA ought to continue to deviate from its own Guidelines by using the AER's approach to estimating gamma. However, if it does deviate from the Guidelines in respect of gamma, it should at least do so properly, and with relevant information. Instead of ranges based on somewhat irrelevant and misleading historical data, what one actually has using the AER's preferred approach is three estimates of gamma:

(a)   One based on the share of ownership of all equity would give a gamma of 0.42 (0.6 for theta and 0.7 for the distribution rate).

(b)   One based on the share of ownership of listed equity would give a gamma of 0.315 (0.45 for theta and 0.7 for the distribution rate; based on NERA's work).

(c)   One based on taxation statistics would give a gamma of 0.3 (0.43 for theta, according to the AER, and 0.7 for the distribution rate).

3.17   The relevant range formed by these three estimates is not 0.3 to 0.5, but 0.3 to 0.42; the larger range is only created by using ranges for theta which give equal weight to single instances of outliers far from the mean and multiple instances of data-points close to the mean, effectively giving each outlier a much greater weight compared to each point close to the mean.[13] Moreover, two of these estimates, including one which the AER's own advisor and the ERA have previously suggested forms an upper bound for gamma,[14] are towards the lower end of the range and are in fact almost the same. This would suggest that a prudent, objective regulator, having regard to the information which the AER suggests it believes is most relevant, would form an estimate of gamma in the lower half of the range between 0.3 and 0.42, not at the upper end of that range as the AER has done.

3.18   Correcting the AER's mistakes using its own data, however, is not sufficient, for it ignores relevant information from market studies which seek to estimate the value of gamma. DBP has not shifted from its viewpoint, a viewpoint that the ERA itself once shared, that gamma is best estimated through market valuation studies.

3.19   The AER, in its most recent decision, devotes a great deal of space to the views of its consultants about what Officer (1994) actually meant in respect of gamma, due to the fact that he at one point uses the term "value", and at another, the term "proportion". This has also been debated by service providers, and the debate is somewhat perplexing, given that Officer (1994, footnote 5) himself is quite clear about what he means:

> "for example, if the shareholder can fully utilize the imputation credits then ("value") γ=1, eg, a superfund or an Australian resident personal taxpayer. On the other hand, a tax exempt or an offshore taxpayer who cannot otherwise access the value in the tax credit will set γ=0. Where there is a market for tax credits, one could use the market price to estimate the value of γ for the marginal shareholder, ie the shareholder who implicitly sets the price of the shares and the price of γ and the company's cost of capital at the margin, but where there is only a covert market, estimates can only be made through dividend drop-off rates"

3.20   The Officer quote above is not new, per se, but it seems to have been forgotten in the ensuing debate. The AER's approach, which relies heavily on an estimate of the share of Australian equities held by Australian investors is essentially an averaging approach; if each domestic shareholder values a credit at one and each foreign shareholder at zero, then the average value placed on a credit will be the proportion of domestic shareholders. Officer in the quote provided above argues that, just as in any marketplace, it is the *marginal*, not the *average* stakeholder, who sets the price. Mistaking the average for the marginal investor is a fundamental flaw in the AER's approach. The value that the marginal investor places on a one-dollar credit will, if equity markets

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[13] We note that giving weight to outliers at the expense of values close to the mean (which we submit is wrong in any event) would run counter to the ERA's own approach of using so-called Robust regression in estimates of beta to limit the influence of outliers. It would be curious if the ERA adopted an approach which minimised the influence of outliers in respect of beta, and maximised the influence of outliers in respect of gamma.

[14] We note that the AER's adviser, Handley, has more recently reversed himself on this point, but his reasoning is not particularly convincing; see SFG (2015, p22-3) for a more detailed treatment.

are integrated, depend in large part on the values placed on credits by foreign investors who receive few – or even no credits. So, if equity markets are – aside from an inability of foreign investors to redeem credits – integrated, the value placed by a marginal investor on a one-dollar credit and the domestic ownership share are likely to differ substantially, even if every domestic investor, as the AER assumes, values the credit at $1.

3.21   In respect of market-derived estimates of gamma, dividend drop-off studies are not the only methodology which can be used. New information has been provided in a report by NERA (2015b) submitted recently to the Victorian Distribution Networks determinations. Rather than use dividend drop-off studies, NERA uses a different methodology. It estimates directly the model that Officer suggests one use and that the AER and ERA use – although NERA also uses versions of the Black CAPM and Fama-French model. NERA also describes the results of a study that examines whether equity prices reflect the discounted value of the imputation credits that the market expects to be distributed. These two methods of estimating the impact of credits on the cost of equity are intended to overcome a criticism of dividend drop-off studies that they are affected by "abnormal" trading around ex-dividend days. Both methods produce an estimate of gamma of zero – that is, below the estimates even of best-practice dividend drop-off studies.

3.22   The work undertaken by NERA is robust, and either updates or describes the results of work that has been published in peer-reviewed journals. However, DBP has not altered its viewpoint as to the appropriate value of gamma; we do not think it should be zero considering the balance of evidence now available. What we do believe, however, is that the evidence from the work by NERA reinforces the findings from the SFG report which underpins our (and the Australian Competition Tribunal's) estimate of gamma and highlights that it is certainly no higher than 0.25.

Evidence in respect of different models of the cost of debt

3.23   As we note in paragraph 2.14 above, we calculate the cost of debt using exactly the same Nelson-Siegel and Gaussian Normal approaches that the ERA uses, only differing in the use of a bespoke model in addition to the "black-box" R package. However, we have also extrapolated from the results for the Gaussian Normal model to take account of the fact that the effective tenor estimated by the model is not ten years. We have done so using the linear approach favoured by Lally (2014a) and used by the AER in its most recent round of decisions.

3.24   Whilst it is important to ensure that the effective and target tenors match when using a Gaussian Normal approach (something that is not an issue with the Nelson-Siegel yield curve approaches), Lally's approach is not the only one which can be used. In particular, one might use local linear smoothing (Gaussian normal models are local constant smoothing models) or the approach proposed by SAPN (2015, p340) which is a regression-based approach.

3.25   If one is to consider different estimators, it is worthwhile to consider the relative efficiency of and any bias associated with each estimator. ESQUANT (2015) for the recent UED proposal, has presented evidence on how this might be done and shows that the SAPN method is more precise than the Lally method, but that the Lally method, under certain circumstances, exhibit less bias. The report also highlights the importance of stratifying the sample of BBB-band bonds into their constituent components (BBB+, BBB and BBB-) in order to enhance the precision of estimates.

3.26   We would not necessarily advocate that the ERA take a different approach to that which they have used of averaging the results from the different models used. However, the work by ESQUANT suggests that it is necessary, generally, to correct for the bias in a Gaussian Normal model, that there are several ways to do so which might be used, and that the relative efficiency of each ought to be considered. For this reason, although much of the ESQUANT report deals with issues associated with the AER's choice of using a third-party index (we continue to believe the ERA was correct in eschewing this approach), aspects of the report could be usefully considered by the ERA in its own assessment of the cost of debt.

Consideration of bias in the SL-CAPM

3.27 In our AA Proposal, DBP presented a "model adequacy test" which suggests that the SL-CAPM is both statistically and economically biased downwards as a model of the required return on equity. A similar analysis was undertaken by NERA (2015c) and presented to the AER by various electricity utilities. NERA's work included both in-sample and out-of-sample tests of bias, whilst DBP's test was a purely out-of-sample test of bias.

3.28 The central empirical result that NERA provides is that models like the SL CAPM and the AER's CAPM provide poor estimates of the return required on equity. As is well-established in the empirical literature, the models tend to underestimate the returns required on low-beta equity portfolios and overestimate the returns required on high-beta equity portfolios, but in the Australian context, it is also the case that the models provide results that are biased downwards overall, across all portfolios taken together. In other words, the models produce estimates of required returns that are biased – especially for low-beta and high-beta equity portfolios. Thus estimates of the return required on equity that use the SL CAPM and the AER CAPM will not satisfy Rule 74 (2) of the National Gas Rules. Estimates of the return required on equity that use the SL CAPM or the AER CAPM (or the version of the model used by the ERA) do not represent the best forecasts possible in the circumstances.

3.29 The SL CAPM and the AER CAPM perform so badly, report NERA (2015c) that even a naïve model that states that the mean returns to all equities are identical performs better. For portfolios with a comparable level of risk to the Benchmark Efficient entity (as determined by the ERA and AER through beta), one cannot reject the hypothesis that the naïve model generates estimates of the return required on an equity portfolio that are unbiased. Similarly, for the same portfolios, one cannot reject the hypothesis that the Black CAPM generates estimates of the return required on an equity portfolio that are unbiased. Thus estimates of the return required on equity that use the naïve model or the Black CAPM will satisfy Rule 74 (2) of the National Gas Rules.

3.30 The AER has had opportunity to consider these results, and commented upon them in its final decisions for Ausgrid, Endeavour Energy, Essential Energy and Actew AGL. However, it has undertaken no detailed analysis. In fact, the AER has simply noted (AER 2015a, p237):

> "Given the level of technical detail and when we received this report, we have not been able to consider and respond to specific econometric issues in depth."

3.31 Despite making no significant effort to engage with the evidence before it, the AER notes repeatedly throughout its recent set of final decisions that it has seen "no compelling evidence" of bias in the SL-CAPM. We do not believe the AER has engaged with the evidence before it with anywhere near enough effort to draw the conclusions it has drawn in respect of bias, and would expect a more fulsome engagement from the ERA; certainly the AER decisions cannot be relied upon as evidence against the model adequacy test, as they provide none.

3.32 Although the AER does not engage with the evidence before it, it does make some comments which are worthy of further exploration. One key comment is that the returns to the portfolios formed by NERA are opposite to what would be expected by the SL-CAPM; that is, the low-beta portfolios earn more than the high-beta portfolios. It seems that this is the main reason for the AER simply dismissing the evidence out of hand. However, when evidence does not match prior expectations or theory, this either means that the evidence is wrong or the theory is wrong. Without undertaking any serious analysis, the AER has concluded the former, and ignored the possibility of the latter.

3.33 If it were the case that NERA's (2015c) results (and DBP's) were somehow anomalous, and that empirical research usually found that returns to portfolios with a given level of systematic risk do indeed follow the SL-CAPM, then there might be grounds for the AER making such sweeping conclusions about the quality of the evidence before it without examining it in detail. However, this is not the case.

3.34 The fact that the security market line is flatter than the SL-CAPM would predict has been known since the early 1970s (and is given recognition by the AER in its use of the theory behind the Black CAPM) and the seminal Fama and French (1992) paper which gave rise, one year later, to the eponymous model also notes that beta has no explanatory power at all (the security market line is essentially flat). Frazzini & Pedersen (2014) and Baker, Bradley & Wurgler (2011) provide an overview of the literature which focuses on the link between risk and returns, and the differences between actual returns and those forecast by the SL-CAPM. Baker, Bradley & Wurgler state about in the abstract to their paper that:

> "Contrary to basic finance principles, high-beta and high-volatility stocks have long underperformed low-beta and low-volatility stocks."

3.35 Cowan & Wilderman (2011), Baker, Bradley & Wurgler (2011), Ibbotson & Kim (2014) and Ang et al (2006) show a negative relationship between beta and or volatility and returns in the US, whilst Frazzini & Pedersen (2014) and Blitz & Van Vliet (2007) show a similar effect in markets around the world. Frazzini & Pedersen (2014) show how an investor can "bet against beta" to earn positive returns, and suggest this is how Warren Buffet forms his portfolios, and Russell Investments have developed an investment product specifically designed to allow investors to take advantage of the superior returns of low volatility, "defensive" stocks.[15]

3.36 This suggests that an empirical relationship which does not match theoretical priors is not an artefact of NERA's analysis, but is rather evidence of a more widespread phenomenon, and thus that the results presented by NERA cannot be so easily dismissed without serious consideration.

3.37 Aside from this issue of evidence versus theory, there are a number of other issues which the AER raises, and we address below.

3.38 The AER (2013, p12) and McKenzie and Partington (2014, p9) refer to the work of Ray, Savin & Tiwari (2009) who show that the finite-sample distribution of the Wald statistic for a test of the SL CAPM need not conform closely to its theoretical asymptotic distribution. As we explain in our AA Proposal, because of the evidence that Ray, Savin & Tiwari provide, we conduct bootstrap simulations to ensure that inference is correctly drawn. NERA (2015c) conduct a similar set of simulations. The simulation results reveal that the SL CAPM can be rejected at conventional levels of significance regardless of whether inference is based on the finite-sample or theoretical asymptotic distribution of the Wald statistic. Thus both DBP and NERA respond to the concerns that the AER and McKenzie and Partington raise. The AER and Partington (2015), however, have ignored this response entirely and point to the work of Ray, Savin and Tiwari as casting doubt on the evidence that NERA provides.

3.39 In recent work, Da, Guo and Jagannathan (2012) argue that growth options that firms possess may be largely responsible for the weak relation between return and beta. McKenzie and Partington (2014) claim that the findings of Da, Guo and Jagannathan justify the continued use of the CAPM irrespective as to one's interpretation of the empirical literature on asset pricing. As NERA (2015c) emphasise, however, what McKenzie and Partington do not explain is that Da, Guo and Jagannathan do not suggest that the SL CAPM be used in the same way that the AER has been using the model. The AER and Partington have ignored NERA's response.

3.40 Handley (2015) asserts that the tendency of the SL CAPM to underestimate the returns on low-beta equities may not reflect risk and that therefore Rule 87 of the National Gas Rules imply that the bias can be ignored. This is untrue. Rule 87 (3) of the National Gas Rules states that:

> "The allowed rate of return objective is that the rate of return for a service provider is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the service provider in respect of the provision of reference services (the allowed rate of return objective)."

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[15] See http://www.russell.com/documents/institutional-investors/research/defensive-equity-is-the-market-mispricing-risk.pdf.

3.41   The rule does not state, as Handley asserts, that the rate of return should *reflect* the risk of a benchmark efficient entity – that is, it does not state that the rate of return should constitute *compensation* for risk. The rule states only that the rate of return be *commensurate* with the costs of a benchmark efficient entity with a similar degree of risk. Thus, if an equity model fails to capture some of the costs associated with an efficient provider of the reference service, including the costs that service provider pays for equity, then it fails to meet the ARORO; the bias cannot be ignored.

3.42   NERA, in the attached report, also outlines a number of other problems with the analysis of the AER and its advisors.

Required rates of return in a low interest-rate world

3.43   The ERA and AER in their recent Guidelines, and in their draft and final decisions, have devoted many pages of text to discussion of different asset-pricing models, but the sum total of all of this work is almost no change at all; regulators will not acknowledge that there is any evidence which would cause them to change their approach of adding an estimate of beta multiplied by an estimate for the market risk premium, which the regulator deems to be roughly a constant through time, to whatever is the current estimate of the risk free rate. [16] This means that returns available to equity holders are essentially a constant mark-up over the risk-free rate through time, regardless of economic conditions.

3.44   Both regulators have considered the Wright version of the SL-CAPM, which posits a constant return to the market and hence a market risk premium which varies inversely with the risk-free rate. The ERA has gone a step further and tested statistically for this inverse relationship. Whilst we have disagreed with some of the ERA's econometric work in this respect in the past, we would not disagree with the basic point that it is unlikely that there would be a perfect inverse relationship between the risk free rate and the market risk premium.

3.45   However, we would point out that the lack of a perfect inverse relationship is not evidence of the accuracy of a simple mark-up model that adds essentially a constant (regardless of which asset pricing model is used; criticism of the SL-CAPM is a separate point) to the risk-free rate. Instead, we believe it far more likely that the relationship changes through time, even though finding the relevant structural breaks in a statistical analysis may prove to be impossible.

3.46   We do not present any new statistical evidence associated with potential structural breaks in the relationship between market returns and the risk-free rate, but we do present two pieces of evidence that suggests we are not currently in "normal" times that suggest the mark-up model used by the ERA is likely to produce inappropriate results.

3.47   The first piece of evidence comes from the Quarterly CFO Survey produced by Deloittes (2014,2015), and is summarised in Figure 2.

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[16] *We note the ERA (2014) has developed a novel approach to estimating the MRP, but this is riddled with errors (as we outline in our AA Proposal) and does not represent a step forwards. Moreover, it has not changed its overall approach, just one of the numbers it uses*

Figure 2: CFO hurdle rates
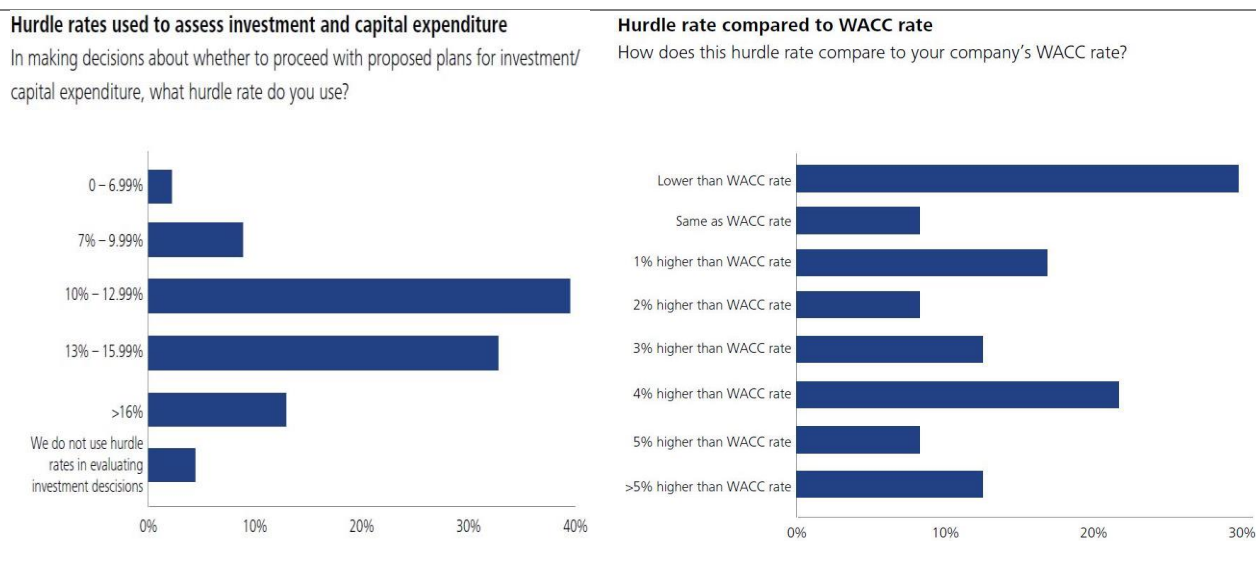
Source: Deloittes 2014 p18

3.48 Although CGS rates are lower now than they were in Q3 2014, they were still low then compared with historical averages. The ATCO Draft Decision is roughly contemporaneous with Deloittes (2014), and it used a risk-free rate of 2.95 percent, and a market risk premium of 5.5 percent, giving a total return on equity for a firm with an average beta of one of 8.45 percent. Only around ten percent of CFOs who actually make investment decisions use hurdle rates which are that low.[17] Moreover, most CFOs use a hurdle rates for new projects close to or lower than their corporate WACC. Thus it is not the case that new investment is assessed in a significantly different way to existing returns. Instead, it is suggestive that low interest rates are not leading to low expected returns for real investors.

3.49 Deloittes publishes its CFO Survey regularly, but this question was only included in the Q3 survey from last year, and thus we do not have a time series of results. However, in the most recent survey, Deloittes (2015, p19) asked CFOs how important a series of factors were in relation to the effect of an official interest rate cut on their investment decisions. Out of a score of ten, the average for the choice "lower internal hurdle rates through a lower WACC" was only 3.92; the lowest amongst the factors listed. Moreover, when asked what effect the recent interest rate drop would have on their investment plans, fewer than 20 percent rated the impact above 5 (out of 10) and almost 50 percent rated it at two or lower (ibid, p18). This is suggestive that real-world investors, particularly in the current environment, are not changing their return expectations or their investment plans as CGS rates are changed by the RBA in the way implied by the mechanistic mark-up models used by the ERA.

3.50 This is not something which would be news to the RBA, who are well aware of the divergence between official interest rates and hurdle rates; at a recent speech, the Governor of the RBA made the following comments, centred around the diagram from his speech:
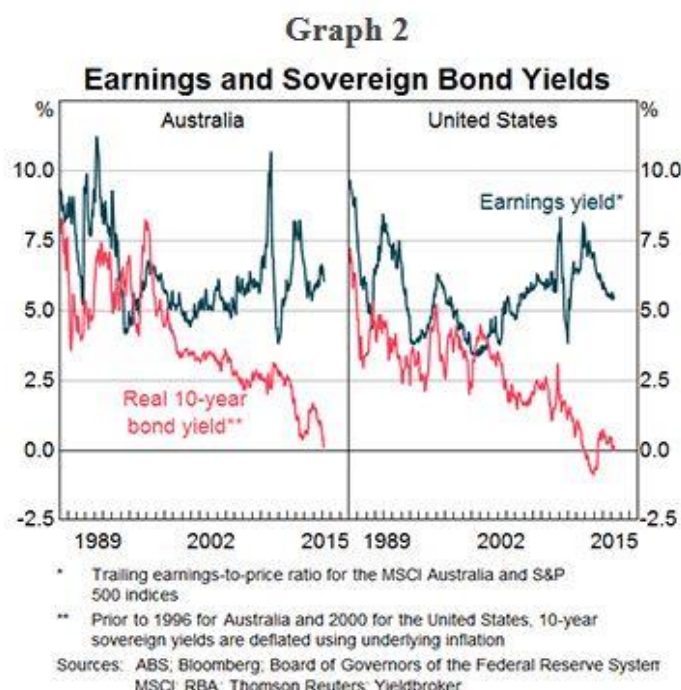
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[17] Note that it is not clear from the Deloittes survey whether respondents are referring to a return on equity or a total WACC (although the use of the term WACC suggests the latter). We are thus being highly conservative by comparing it with the ERA's estimates of the return on equity.

Figure 3: **RBA views on the divergence between hurdle rates and official interest rates**

A striking feature of the global economy, according to World Bank and OECD data, is the low rate of capital investment spending by businesses. In fact, the rate of investment to GDP seems to have had a downward trend for a long time.

One potential explanation is that there is a dearth of profitable investment opportunities. But another feature that catches one's eye is that, post-crisis, the earnings yield on listed companies seems to have remained where it has historically been for a long time, even as the return on safe assets has collapsed to be close to zero (Graph 2). This seems to imply that the equity risk premium observed *ex post* has risen even as the risk-free rate has fallen and by about an offsetting amount. Perhaps this is partly explained by more sense of risk attached to future earnings, and/or a lower expected *growth rate* of future earnings.

Graph 2
Earnings and Sovereign Bond Yields

* Trailing earnings-to-price ratio for the MSCI Australia and S&P 500 indices

** Prior to 1996 for Australia and 2000 for the United States, 10-year sovereign yields are deflated using underlying inflation

Sources: ABS; Bloomberg; Board of Governors of the Federal Reserve System; MSCI; RBA; Thomson Reuters; Yieldbroker

Click to view larger

Or it might be explained simply by stickiness in the sorts of 'hurdle rates' that decision makers expect investments to clear. I cannot speak about US corporates, but this would seem to be consistent with the observation that we tend to hear from Australian liaison contacts that the hurdle rates of return that boards of directors apply to investment propositions have not shifted, despite the exceptionally low returns available on low-risk assets.

The possibility that, *de facto*, the risk premium being required by those who make decisions about real capital investment has risen by the same amount that the riskless rates affected by central banks have fallen may help to explain why we observe a pick-up in financial risk-taking, but considerably less effect, so far, on 'real economy' risk-taking.

Source: http://www.rba.gov.au/speeches/2015/sp-gov-2015-04-21.html

3.51 The evidence above suggests that the mechanistic mark-up approach used by Australian regulators is likely to produce substantially damaging results for investment in regulated industries, as the rest of the economy works on expectations of returns significantly higher than regulators' models suggest as appropriate for the regulated energy sector. There is no simple "rule" ("increase the MRP by x percent when the risk-free rate is y percent below its average over the past 50 years", for example) which can be applied, but the evidence emerging from sources such as the RBA and Deloittes ought to be considered more carefully by the ERA as it makes its current rounds of decisions.

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[18] *This report was provided to the AER as part of UED's submission in April 2015, but the AER did not publish it on its website, instead including it on the list of documents stakeholders need to request from the AER. The ESQUANT report cited above is subject to the same restriction. We understand UED will submit both reports to the ERA as part of this Issues Paper process.*

APPENDIX B: UBS REPORT ON HEDGING COSTS

APPENDIX C: NERA REPORT ON THE AER'S ASSESSMENT OF EVIDENCE OF BIAS FOR ASSET PRICING MODELS