

20 April 2007

Mr Mike Buckley
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Dear Mike,

Bias in CGS Markets as a Proxy for Real Risk-Free Rate

In its review of Powerlink's revenue cap reset, the Australian Economic Regulator (AER) has called for submissions in relation to NERA Economic Consulting's report on bias in Treasury Indexed Bonds (TIBs) as a proxy for the real risk-free rate.

SP AusNet believes that the NERA paper and its findings have implications beyond the current Powerlink review, and for that reason seeks to comment in support of the report in the present forum. The issues raised by the research will not only impact the Powerlink review, but any future revenue or price reset undertaken by the AER and other economic regulators requiring regulatory decision-making in relation to the cost of financing for regulated infrastructure businesses.

NERA Report

NERA's report was prepared for the Energy Networks Association, and first made publicly available on 30 March 2007 when it was submitted to the AER's review of Powerlink's revenue reset, and jointly submitted to the Essential Services Commission by the Victorian gas distribution businesses in the context of the Gas Access Arrangements Review. SP AusNet will also be relying upon the reports findings in the AER's review of the Victorian electricity transmission network's revenue reset.

The principal conclusion of the NERA report is that there are serious issues regarding the appropriateness of using observed yields on Treasury Indexed Bonds as a proxy for the real risk-free rate. NERA establish not only the presence of bias but also provide robust quantification of its size, allowing corrective action to be taken by regulators. In summary, the report examines two separate conceptual issues:

1. Relative bias, the extent to which yields on indexed Commonwealth Government Securities (CGS) are biased relative to nominal CGS; and
2. Absolute bias, the extent to which yields on all CGS are biased as a proxy for the risk-free rate.

Relative bias

Specific factors impacting on indexed CGS over and above CGS markets generally has given rise to a suppression of yields on TIBs relative to yields on nominal CGS. NERA demonstrate that indexed CGS yields have become relatively more downward biased than nominal CGS yields, giving rise to a relative bias in yields. Citing statements by the Reserve Bank of Australia (RBA), NERA attribute the relative bias to increased institutional demand for inflation indexed government securities acting in combination with a limited supply of these debt instruments.

The result of the downward bias is that observed yields on TIBs will not constitute an adequate proxy of the real risk-free rate for use in the CAPM or in building up the real cost of debt. The extent of any relative bias will result in an under-estimate of the actual cost of capital facing the transmission and distribution businesses if raw yields on TIBs are used in the calculation of the WACC. In order to continue to rely on yields on TIBs to estimate the real risk-free rate, NERA have quantified the relative bias in order to enable an adjustment be made to observed yields to correct for the bias.

The methodology adopted by NERA to estimate the bias involves comparing the difference in spreads to CGS of both indexed and nominal corporate bonds. The extent to which indexed spreads are greater than the nominal spread provides quantification of relative bias in yields on TIBs. NERA outline the rationale for the approach as follows:

For corporations with both index linked and nominal bonds we examine the relative movement in the spreads to similar maturity CGS bonds. If both nominal and indexed CGS are equally biased (or are both unbiased) then the spread to corporate bonds issued by an identical corporation and with an identical maturity/duration should also be identical. That is, both nominal and indexed corporate bonds should have the same spread to nominal and indexed CGS.

However, if index linked CGS are more biased than nominal CGS (ie, the market will pay a higher premium for indexed CGS) then this will depress the yield on indexed bonds more than nominal bonds - causing the observed corporate spread to these bonds to rise above the observed spread to nominal bonds.

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Put simply, if falling supply and increased demand creates a relatively stronger bias for indexed than nominal CGS, then corporate spreads to indexed CGS should rise relative to corporate spreads to nominal CGS.¹

NERA proceed to examine the spreads to CGS on Electranet and Envestra's nominal and indexed corporate bonds. In summary, the yield data as at 21 March 2007 demonstrates that the real premiums on Electranet and Envestra's indexed bonds are 17 to 24 basis points higher than the nominal premiums on equivalent maturity nominal bonds. NERA note that:

... indexed corporate bonds have a clearly higher spread to CGS than nominal corporate bonds. Based on the analysis of Electranet's 2010 and 2015 indexed bonds and Envestra's 2011 and 2025 indexed bonds, a bias in the range of 17-24 basis points is observable.

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¹ NERA, *Bias in Indexed CGS Yields as a Proxy for the CAPM Risk-free Rate*, March 2007, pages 11-12.



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This confirms the RBA's analysis that indexed CGS yields are depressed by supply and demand conditions peculiar to that bond. The bias began appearing in late 2004 and currently is around 20bp.²

NERA, therefore concludes that an adjustment of 20 basis points should be added to observed yields on TIBs in order to correct for the bias when calculating the real cost of debt and equity.

We estimate, using several data sources and with considerable confidence, that the level of bias in yields for indexed CGS exceeds that for nominal CGS by around 20bp. We estimate that this relative bias appears to have developed since late 2004 (around the time that the RBA first started commenting on this).

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We believe that our estimate of the relative bias in indexed CGS is highly accurate and should be adopted by regulators. This 20bp adjustment should be added to both the cost of debt and the cost of equity.³

Accordingly, an upward 20 basis point adjustment to observed yields is the minimum required to make allowance for the bias in CGS as a proxy for the real risk-free rate.

Absolute Bias

The report by NERA also addresses the issue of absolute bias in yields on CGS. Absolute bias refers to the bias in both yields on indexed and nominal CGS as a proxy for the risk-free rate for use in the CAPM. The relative bias in TIBs represents an additional bias over and above the absolute bias prevailing in CGS markets generally. In order to adjust observed yields on indexed CGS for use as a proxy for the real risk-free rate, it is necessary to correct for both relative and absolute bias. In order to adjust observed yields on nominal CGS for use as a proxy for the nominal risk-free rate it is necessary to correct only for absolute bias.

NERA contends that the dramatic reduction in issuance of CGS into Australian debt markets over the past decade has further given rise to an absolute bias in CGS yields that must be also taken into consideration. While the nature of the research undertaken on this issue at the moment is preliminary, NERA will be presenting further analysis of the absolute bias and its quantification in the course of the reviews. At this stage NERA rely on data from credit default swap (CDS) premiums to calculate the true underlying risk-free rate from corporate spreads and the implied bias given nominal CGS yields.

The development of the CDS market has made it simpler to estimate the degree of bias in CGS yields as a proxy for the risk free rate. Prior to the development of the CDS market it was not possible to rely on market data to split the corporate spread to CGS into a) corporate default risk premium; and b) the uniqueness premium paid for CGS. However, this has been made easier since the development of the CDS market - with the uniqueness premium being equal to the corporate spread to CGS less the CDS price.⁴

NERA relies on yield data published by the RBA to show that AA and A rated corporate debt spreads to CGS are between 42 to 44 basis points higher than implied by CDS

² *Ibid*, page 21.

³ *Ibid*, page 46.

⁴ *Ibid*, page 43.



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premiums. In turn, this leads NERA to conclude nominal CGS yields as a proxy for the risk-free rate are biased downwards by between 42 to 44 basis points.

Performing the same analysis using the most recently available January 2007 RBA data suggests the magnitude of this bias is now around 42bp to 44bp. Since June 2003 the CDS rate on AA rated bonds has fallen 13bp (from 20bp to 7bp) while the spread to CGS has risen by 14bp. The combination of these two effects suggests that the CGS uniqueness premium has risen by 27bp (from 15bp to 42bp). Performing the same analysis using A rated bonds suggests that the uniqueness premium is now 44bp (ie, within 2bp of the result using AA rated bonds).⁵

SP AusNet note the nature of the analysis undertaken in the current report is preliminary and will be elaborated upon by NERA at length in a subsequent paper to be released shortly. SP AusNet believes the case for the presence of absolute bias has been established and is awaiting the further clarification by NERA concerning the quantification of the bias.

Regulatory Response

The last ten years have seen a significant decline in the supply of CGS in Australian debt markets as successive fiscal surpluses have been used to retire outstanding Commonwealth Government debt. Over this period, the supply of both nominal CGS and TIBs in debt markets has fallen considerably as a proportion of GDP. At the same time, there is evidence to suggest that institutional demand for CGS and indexed securities has increased markedly. In light of these developments, it is reasonable to consider their ramifications and gauge whether observed yields on TIBs still provide an adequate measure of the real risk-free rate.

SP AusNet believes that the significant structural changes in the market for CGS has compromised the ability of regulators to rely upon observed yields on TIBs as an adequate proxy for the real risk-free rate. NERA's report has examined developments in the market for CGS and concluded that raw yields no longer provide an unbiased estimate of the real risk-free rate. NERA further outline the size of the adjustments necessary to align observed yields on TIBs with a reasonable estimate of the real risk-free rate. SP AusNet believes the recommendations of the report should be relied upon by the AER to set the real risk-free rate to be used in calculating the WACC.

NERA have demonstrated the necessity to adjust observed yields on CGS to correct for their bias as a proxy for the real risk-free rate. SP AusNet notes that a similar issue has arisen in the UK in the market for index linked gilts (ILGs), and has prompted a response by the UK regulators supported by advice from leading academics and economic consultants. NERA summarise the adjustments made by UK regulators, ranging from 30 to 100 basis points, "with an average of around 50bp".⁶

The totality of NERA's estimates of relative and absolute bias require an adjustment to yields on indexed CGS of between 62 and 64 basis points to account for both 20 basis points relative bias and between 42 and 44 basis points absolute bias.⁷ SP AusNet believes it is appropriate to use these corrections to the observed yields on TIBs when estimating the real risk-free rate for the determination of the cost of capital in a regulatory review.

⁵ *Ibid*, page 44.

⁶ *Ibid*, page 25.

⁷ *Ibid*, page 8.



The AER has expressed concern that given the time remaining in the Powerlink review there may be insufficient time to thoroughly review the NERA analysis. SP AusNet believes that the weighted average cost of capital for regulated infrastructure businesses is an issue of critical importance for the energy industry, and underpins investor confidence in a sector of fundamental significance to the Australian economy. In that context SP AusNet believes it is imperative that the AER review the NERA analysis in the current review and remedy the use of biased raw yields as a proxy for the risk-free rate.

SP AusNet believes this approach, of making the adjustment described in this submission, is an appropriate means of estimating the real risk-free rate. Estimates produced on this basis deliver a more accurate picture of the true cost of capital faced by infrastructure businesses in Australia.

Yours sincerely

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