Report prepared for the

Australian Energy Regulator

Comments on the CEG Report:

"Establishing a proxy for the risk free rate"

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Final

12 November 2008

1. INTRODUCTION

Pursuant to the National Electricity Rules, the Australian Energy Regulator (AER) is currently undertaking a review of the weighted average cost of capital (WACC) parameters to be adopted in determinations for electricity transmission and distribution network service providers. In this regard, the AER has requested a critique of the report submitted by Competition Economists Group (CEG) entitled: "Establishing a proxy for the risk free rate"[1]. In particular, advice is sought as to whether the yield on Commonwealth Government Securities (CGS) is the most appropriate proxy for the risk free rate compared to the alternative proposed by CEG .

2. THE CEG REPORT

CEG raise concerns about the use of the Government bond rate in estimating the risk free rate for the purposes of the CAPM. In particular, CEG state:

- *"Rather, it is our view, consistent with the finance literature, that yields on CGS are below the benchmark risk free rate that should be used in the CAPM to price corporate assets. That is, yields on CGS are depressed relative to an unobservable 'zero beta' benchmark that is relevant in the specific and narrow set of circumstances where the CAPM is being used to price corporate assets"(para.34).*

- *"The finance literature recognizes the existence of a 'convenience yield' for Government bonds. The convenience yield represents that part of the spread between Government bond yields and yields on corporate assets that cannot be explained by the lower risk of Government bonds" (p.1)*

- *"Consistent with the unambiguous findings of the finance literature either the CDS insured bond or the swap rate is a superior estimate of the risk free rate used to price corporate debt … It is also a conservative assumption that the risk free rate used to price corporate debt is equal to the risk free rate for corporate equity (in reality the latter is likely be higher)" (para. 50).*

[1] Competition Economists Group (2008) and referred to here as the CEG Report.

2.1 Is the Observed Nominal Yield on CGS an Appropriate Proxy for the CAPM Risk Free Rate ?

The position adopted by CEG has its genesis in two related papers by NERA Economic Consulting (NERA),[2] which were submitted to the AER in relation to the AER's draft decision on Powerlink Queensland's revenue cap for the period 1 July 2007 to 30 June 2012.

Both CEG and NERA argue that observed yields on CGS underestimate the nominal risk free rate for the purposes of the CAPM. It is argued that the source of the bias is a shortage of supply of government bonds relative to demand combined with the claim that government bonds possess certain "unique" features relative to corporate bonds, which distort their reliable use as a proxy for the risk free rate. NERA supports its claims with: (i) statements from the RBA; (ii) reference to the academic literature;[3] and (iii) its own analysis. In particular, NERA argues the component of credit spreads and swap spreads that is not explained by default risk reflects a uniqueness premium (or convenience yield) associated with government bonds and accordingly, the 'true' risk free interest rate is greater than the yield on the government bond. In summary:

> *"The overwhelming conclusion of academic studies is that only a small amount of the spread of corporate rates to government bond rates is explained by default risk with the remainder reflecting a price premium investors are willing to pay for the unique characteristic of government bonds." [emphasis added here].*[4]

Despite the purported strength of its conclusions, there are a number of difficulties with the CEG/NERA position:

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[2] NERA Economic Consulting (2007a), (2007b) and collectively referred to here as the "NERA Reports".

[3] NERA refers to three areas of the academic literature which deals with: (i) credit spreads implied from corporate and government bond yields; (ii) swap spreads implied from swap rates and government bond yields; and (iii) credit default swap spreads.

[4] Competition Economists Group (2008, para.38) and NERA Economic Consulting (2007a p.33).

- Contrary to NERA and CEG's claims, there is currently no consensus concerning the determinants of the non default risk component of credits spreads and swap spreads. Whilst Grinblatt (2001), Feldhutter and Lando (2007) and Krishnamurthy and Vissing-Jorgensen (2007) stress features peculiar to government bonds, other explanations that have been suggested in the literature include differential taxes, differential liquidity and features peculiar to the corporate bond market and or to the swap market.[5] In fact, some of these explanations also appear in the papers referenced by NERA.[6] Further, Colin-Dufresne, Goldstein and Martin (2001) in fact make no mention of a uniqueness premium associated with government bonds.

  Importantly, this literature highlights the relative nature of the liquidity advantage argument of government bonds over corporate bonds (or swaps) – for example, if liquidity is a priced factor then part of the credit spread may be interpreted as either (i) a price premium (lower expected return) that investors pay for holding (relatively) liquid government bonds – consistent with CEG/NERA's view or alternatively, (ii) a price discount (higher expected return) that investors receive for holding (relatively) illiquid corporate bonds (or swaps).[7]

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[5] Longstaff (2004) finds evidence of 'flight to liquidity' premia in U.S. Treasury bond prices. Longstaff, Mithal and Neis (2005) use the information in credit default swap spreads to find that the majority of the credit spread in U.S. corporate bonds is due to credit risk and further that the non default risk component is strongly related to measures of bond specific illiquidity and bond market liquidity which "indicate there are important individual corporate bond and marketwide liquidity dimensions in spreads" (p.2215). Elton, Gruber, Agrawal and Mann (2001) provide evidence that in the U.S., the credit spread includes substantial components due to differential taxation and compensation for systematic risk. Liu, Longstaff and Mandell (2006) examine swap spreads by jointly modelling the Treasury, repo and swap term structures and find evidence of liquidity and default components but little evidence of a tax component.

[6] Colin-Dufresne, Goldstein and Martin (2001) could not identify the unexplained component of credit spreads in their study but note: "So, potentially, an aggregate factor driving liquidity in the bond market could explain the common factor we are detecting. Our measures of liquidity … may simply be inadequate at capturing this factor" [emphasis added here] (p.2205). Duffie and Singleton (1997) also could not explain a substantial fraction in swap spreads, but note: "Further explanation of these and other supply effects in the swap market, as well as asymmetric tax treatments, seems worthwhile" [emphasis added here] (p.1319).

[7] Liu, Longstaff and Mandell (2006) stress the relative illiquidity of the swap market in explaining swap spreads and find: "the liquidity risk inherent in swaps is compensated for by the market with a significant risk premium … the majority of the [premium] built into the swap curve for horizons beyond a few years is due to liquidity premia" [emphasis added here] (p.2357).

- The relevance of the empirical evidence (from the academic literature and NERA's own analysis) to the CAPM is largely a CEG and NERA proposition. For example, CEG and NERA draw on the following statement by Blanco, Brennan and Marsh (2005 p.2261):

> *"it is well known that government bonds are no longer an ideal proxy for the unobservable risk free rate".*[8]

However, Blanco, Brennan and Marsh (2005 p.2261) mention neither the CAPM nor asset pricing models in their paper.

A view suggested here is that, in determining an appropriate proxy for the risk free rate, the purpose to which the rate is to be used is an important consideration that should be taken into account. In this regard, a risk free rate implied from a "fixed-income derivative market" is clearly relevant for derivative pricing purposes but not necessarily relevant for corporate cost of capital purposes.[9]

- By definition, the beta of the risk free asset is zero.[10] However, CEG and NERA provide no evidence concerning either the beta of Government bonds or the beta of proposed alternative proxies for the risk free rate.

- CEG and NERA provide no evidence that Government bonds in Australia are unique in a way that is consistent with the uniqueness of U.S. government bonds, as is discussed in the literature.

Accordingly, at this stage, there is insufficient evidence to justify CEG's claim that the observed Government bond yield is an inappropriate proxy for the CAPM risk free rate.

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[8] NERA Economic Consulting (2007 p.36) and Competition Economists Group (2008, para.38).

[9] For example, according to Hull, Predescu and White (2004 p.2795) "Bond traders tend to regard the Treasury zero curve as the risk free zero curve and measure a corporate bond yield as the spread of the corporate bond yield over the yield on a similar government bond. By, contrast, derivative traders working for large financial institutions tend to use the swap zero curve … as the risk free zero curve in their pricing models because they consider [swap] rates to correspond closely to their opportunity cost of capital". Similarly, Grinblatt (2001 p.113) states "many sophisticated banking houses use the … yield on the fixed side of the swap, to generate risk free rates for their derivatives models" [emphasis added here].

[10] In the Sharpe CAPM, the risk free rate and the expected return on the zero beta portfolio are one and the same. It is only if one assumes there are restrictions on borrowing or lending at the risk free rate that the distinction between the two becomes important. See Black (1972) for further details.

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