



## **Establishing a proxy for the risk free rate**

**A report for the APIA, ENA and Grid Australia**

**17 September 2008**



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## Key conclusions

### Key Conclusions

The finance literature recognises 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.

The existence of a convenience yield is attributed in the finance literature to the special non-risk characteristics of national Government bonds (such as high liquidity, high levels of transparency, simplicity and certainty\* of returns).

In Australia, the convenience yield on nominal Commonwealth Government Securities (CGS) are currently at historically high levels and have been on a rising trend since 2003. The heightened convenience yield on nominal CGS is analogous to the heightened convenience yield on indexed CGS – the existence of which has been accepted by the AER.

The current historically high convenience yields on nominal CGS make them a poor proxy for the true risk free rate that should be used in the CAPM to price non Government assets (on which a convenience yield does not exist).

Superior proxies for the risk free rate are yields on State Government debt, fixed for floating swaps and the yields on CDS insured bonds – all of which have negligible risk of default. State Government debt is the least best of these three as State Government debt will itself have a significant convenience yield. The use of CDS insured bonds is potentially problematic as the methodology would have to be tailored to the particular CDS insured bonds being traded (which may not always have the appropriate maturity).

It is therefore proposed that the AER adopt the fixed for floating swap rate as the proxy for the risk free rate. However, to the extent that the market risk premium is based on the historical difference between CGS and equity returns it will already capture the historical average convenience yield on CGS. To correct for this an amount of 39 basis points should be subtracted from the swap rate to reflect the average level of the convenience yield.

Adopting this approach in July 2008 would result a risk free rate 60bp above the 10 year CGS yield.

\*It must be noted that certainty of returns gives Government bonds an attribute above and beyond zero risk. In the CAPM, zero risk simply implies zero beta – not certainty of returns.



## 1. Introduction and summary

### 1.1. Terms of reference

1. CEG has been asked by the APIA, ENA and Grid Australia to address question 4.1 in the Australian Energy Regulator's (AER) WACC issues paper ("the issues paper"). That question is repeated below:

*"Are there any viable alternatives to Commonwealth Government Securities (excluding using Credit Default Swaps (CDS)) as an appropriate proxy for the nominal risk-free asset in the context of a domestic Australian CAPM"?*

### 1.2. Structure of report

2. The remainder of this report has the following structure.
  - Section 2 provides a summary of the issues paper discussion and responses;
  - Section 3 describes why, as a matter of theory, the appropriate risk free rate is context specific (depending on the attributes of the risky asset being valued);
  - Section 4 describes the implications for the regulators and addresses current market evidence and the issues paper's seeming interpretation of correspondence from the RBA; and
  - Section 5 provides our recommendation for adoption of an alternative risk free rate.





## 2. Summary of the issues paper discussion and responses

3. The issues paper refers to a recent debate and two NERA papers (March and June 2007)<sup>1</sup>, authored by Professor Grundy and Dr Hird, suggesting that an “absolute bias” existed in nominal CGS yields. In this context the key statements of the issues paper are that:
  - a. nominal CGS yields are “generally considered to be the best proxy for the nominal risk free rate in Australia”;
  - b. that this general acceptance is due to the fact “these bonds: are essentially default risk free (government guaranteed returns), are highly liquid assets, and have yields that are transparent and published”;
  - c. the “RBA and Australian Treasury did not consider there to be an absolute bias in nominal CGS yields, and considered that CGS remain the best proxy for the nominal risk free asset”; and
  - d. “recent experience in the US associated with the ‘sub prime crisis’ has demonstrated that CDS issuers are not themselves free from the risk of default” and “significant concerns arise over using this alternative methodology to determine a proxy for the risk free rate”.
4. Notwithstanding the issues paper’s views expressed above, the issues paper still asked if “any viable alternatives to Commonwealth Government Securities (excluding using Credit Default Swaps) as an appropriate proxy for the nominal risk-free asset in the context of a domestic Australian CAPM”?
5. In our view, arguing for the retention of CGS as the proxy for the risk free rate used in the NER on the grounds (“a” to “d”) above is problematic. Before proceeding to summarise why this is our view, it is important to distinguish between assets whose returns have zero beta (are free of CAPM systemic risk) and assets whose returns are certain (such as CGS). It is the former that is implied by the term ‘risk free’ when used in the context of the CAPM. CGS may well have zero beta, however, they may equally have other attributes that make them unsuitable as a proxy for the risk free rate used in the CAPM.
6. On each of the above four points we make the following observations

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<sup>1</sup> NERA, Bias in Indexed CGS Yields as a Proxy for the CAPM Risk Free Rate, March 2007. And NERA Absolute Bias in (Nominal) Commonwealth Government Securities, June 2007.



- a. In our view, nominal CGS are not generally considered the best proxy for the risk free rate when determining required returns on corporate assets. As discussed in the literature review (section 4) of the March 2007 NERA report the opposite would be better description of the state of finance theory. It is a well accepted empirical fact that spreads between government bonds and other assets are explained by more than just differences in risks;
- b. In a further October 2007 CEG report<sup>2</sup> by Professor Grundy and Dr Hird (not cited by the issues paper) it is argued that the empirical fact referred to above is likely to be precisely because corporate debt and equity are not highly liquid and transparent that using CGS is problematic. That is, the liquidity and transparency of the CGS market is partly why it is not a good proxy for the CAPM risk free rate to be used when valuing equity.
- c. We agree with the main points made in the RBA and Treasury letters and these points are entirely consistent with our position. In fact, recent public statements by the RBA make clearly enunciate precisely the empirical facts referred to in “a” above;
- d. We note that the finance literature referred to by us has recognised the existence of default risk on CDS and this was factored into our analysis. The point is not that residual risk is zero but that it is small and cannot explain the difference in yields between CDS insured corporate bonds and CGS.

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<sup>2</sup> CEG, “Choosing a proxy for the nominal risk free rate” October 2007. A report submitted in relation to the ESCV’s 2008 to 2012 gas distribution regulatory determination process. Available at: [http://www.multinetgas.com.au/regulatoryissues/downloads/RegulatoryEnvironment/essentialServicesCommission/appendices/CECG\\_Proxy%20for%20Nominal%20Risk%20Free%20Rate.pdf](http://www.multinetgas.com.au/regulatoryissues/downloads/RegulatoryEnvironment/essentialServicesCommission/appendices/CECG_Proxy%20for%20Nominal%20Risk%20Free%20Rate.pdf)





### 3. What is the ideal proxy for the risk free rate

7. The 'correct' risk free rate is context specific. In a world with zero transaction costs, perfect information and identical liquidity for all assets then the CAPM suggests that all differences in expected yields (returns) will reflect differences in risks.
8. However, in the real world all of these assumptions are violated and this can and does lead to instruments that have near identical risks having different expected yields. This can most easily be seen by examining the yields on very low risk assets. Commonwealth Government Securities (CGS) are one such very low risk instrument but so are: a) the fixed rate component of AAA-rated fixed-for-floating swaps; b) corporate bonds that are insured against default through the use of credit default swaps (CDS) and c) debt issued by other very highly rated entities – such as Australian State Governments or the Australian denominated debt of foreign Government entities.
9. While all of these instruments are very low risk, they have materially different yields – with the difference most pronounced between CGS and the other assets. Moreover, it is an unambiguous finding of the finance literature that the differences in yields between government bonds and other low risk instruments (such as swaps and CDS insured bonds) cannot be explained by differences in risk (the literature is summarised below).
10. Consider the yields described in the table below taken from CEG's October 2007 report.

**Table 1: Yields and Spreads on 1 August 2007**

1-Aug-07	Spread to CGS
10 year CGS	0.00
10 year Qld government bond	0.53
5 year CDS insured corporate bond	0.78
10 year swap	0.88

Source: CEG analysis.

11. All of the above instruments are potential proxies for the correct risk free rate. CEG's October 2007 report explains in detail why each of these assets is exposed to a miniscule probability of default and, therefore, the yield on these



includes only a miniscule compensation for the risk of default. (See paragraphs 26 to 40 of our October 2007 report for both an explanation of why this is the case and empirical estimates that only 10bp of the yield on 10 year swaps is due to default risk.<sup>3</sup>)

12. The great majority of the differences in yields must be explained by investors' willingness to pay for other 'non-risk' characteristics of the low risk instruments. The question then becomes which of these is the risk free rate that should be used when attempting to price the equity and debt of regulated businesses?

#### **Selecting the Correct CAPM Risk Free Rate**

The correct risk free rate to use when estimating the required return on asset "X" is the return investors expect for investing in an asset with zero systematic risk but otherwise the same non-risk characteristics as asset "X".

For example, see Blanco *et al* (published in the tier one Journal of Finance)<sup>4</sup> who explicitly select swap rates as superior to Government bonds as a proxy for the risk free rate and who state:

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

13. Put simply, the CAPM describes the pricing of systematic risk. The reward for bearing a particular level of systematic risk is the difference between expected return on that asset and the expected return on another asset that is otherwise identical but has zero systematic risk. If one is attempting to estimate the required return on asset "X" one must start with a risk free return that otherwise has the same non-risk characteristics as asset X. If you start from some other risk free rate you will inevitably estimate the wrong required return.

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<sup>3</sup> In summary, none of the principle in a swap agreement is subject to default risk because no principle changes hands. Moreover, only any net difference between the fixed and floating rate at the time of default is subject to any default risk. That is, the only possible loss that can occur as a result of default is if default occurs at a time when the expected value of the fixed interest payments are different to the expected value of the floating interest payments. By definition, this difference will be very close to zero at the time the swap is entered into (ie, the parties will only enter into the swap if they believe that the swap rate reflects the expected level of the floating rate over the period of the swap).

<sup>4</sup> Blanco, Brennan, and Marsh, *An Empirical Analysis of the Dynamic Relation between Investment-Grade Bonds and Credit Default Swaps* The Journal Of Finance Vol. LX, no. 5 October 2005, p2261.



14. In practical terms, when estimating the risk free rate for equity one is attempting to estimate the expected return that investors would require if that equity had zero systematic risk (but nonetheless had all the other characteristics of equity). Similarly, the correct risk free rate for corporate debt is equal to the expected return that investors would require if that debt had zero systematic risk (but nonetheless had all the other characteristics of corporate debt).
15. If an investor would not require the same return on equity with zero systematic risk as they would on a Government bond (where returns if held to maturity are certain (not just zero beta), the resale market is highly liquid, and there are few if any information asymmetry problems between buyers and sellers) then the Government bond yield is the wrong place to start when pricing equity.
16. It is well accepted in the finance literature (as referenced in the NERA and CEG reports) that the non-systemic risk attributes of Government bonds cause them to have substantially lower yields than corporate assets. This non-risk difference in yields is referred to as the 'convenience yield' for Government bonds.
17. Consistent with their findings, Bank of England researchers have found that:

*“By investigating swap spreads across currencies and maturities, we find evidence that, in both the United Kingdom and the United States, **government bond yields have been depressed below risk-free rates**. Although this bias has corresponded with reductions in net issuance, it is difficult to identify a robust statistical relationship between issuance and the swap spread.”<sup>5</sup>*

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<sup>5</sup> Neil Cooper and Cedric Scholtes, (Bank of England), Government bond market valuations in an era of dwindling supply, A paper published by the Bank for International Settlements. (2001)



## 4. Implications for setting the cost of equity

18. Using CGS as a proxy for the CAPM risk free rate will underestimate the correct risk free rate. However, this need not lead to an error in estimation of the cost of equity<sup>6</sup> so long as the equity risk premium is similarly overestimated (such that the underestimate of the risk free rate is 'cancelled out' by the overestimation of the equity premium).
19. If the historical market risk premium is measured relative to the CGS yield and the equity beta is set at 1.0 then the two will indeed cancel out - provided the current CGS yield underestimates the true risk free rate by the same amount as the historical CGS yield did.<sup>7</sup> However, if the convenience yield on CGS is at a historical high (as is currently the case) then using CGS as a proxy for the risk free rate will underestimate the true cost of equity.
20. This fact can be explained mathematically. The NER sets the estimated cost of equity equal to:

$$\text{Estimated cost of equity} = \text{Yield on CGS} + \beta_e * \text{MRP} \quad (1)$$

21. However, the yield on CGS is equal to the true risk free rate less the current convenience yield while the MRP (based on historical estimates) is equal to the true MRP plus the historical average convenience yield.
22. That is, the NER cost of equity can be written as:

$$= R_f + \beta_e * \text{True MRP} + \beta_e * (\text{Historical average convenience yield} - \text{Current convenience yield}) \quad (2)$$

23. So, if the MRP already captures the average historical convenience yield then the cost of equity will only be in error by the amount:

$$= \beta_e * [\text{Historical average convenience yield} - \text{Current convenience yield}]$$

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<sup>6</sup> The proxy for the risk free rate does not affect the cost of debt estimation under the NER. This is because the NER sets the compensation for risk equal to the observed yield on corporate debt less the assumed risk free rate. Consequently, it does not matter if the NER underestimates the cost of debt – any such underestimate will automatically be associated with an overestimate of the risk premium.

<sup>7</sup> That is, if the current 'convenience yield' for CGS matches the historical 'convenience yield' the fact that current CGS yields underestimate the true risk free rate will be offset by the fact that the historical MRP (measured relative to the historical CGS yield) overestimates the true MRP (measured relative to the true risk free rate).

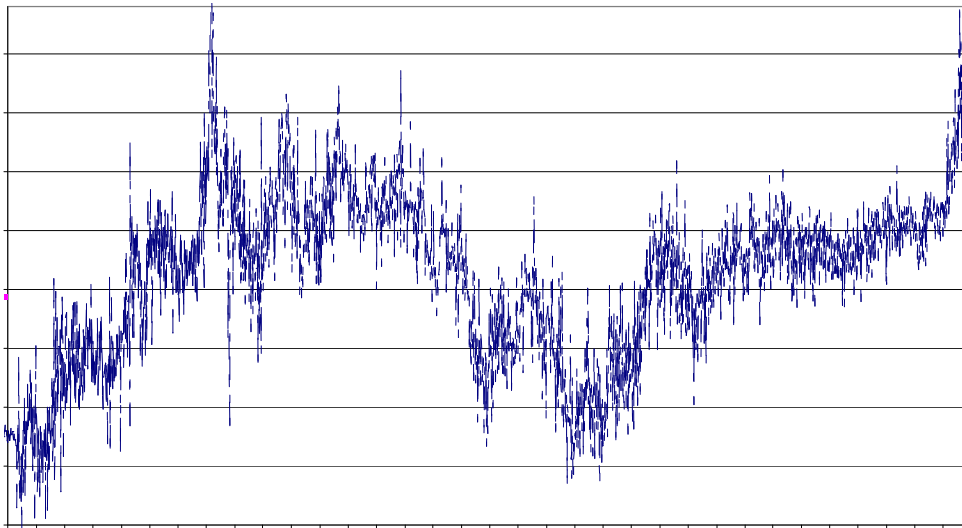


24. If  $\beta_e$  is set equal to 1.0 (as it currently is in the NER) then this will only lead to errors if the historical convenience yield is different to the current convenience yield. This is in fact currently the case.

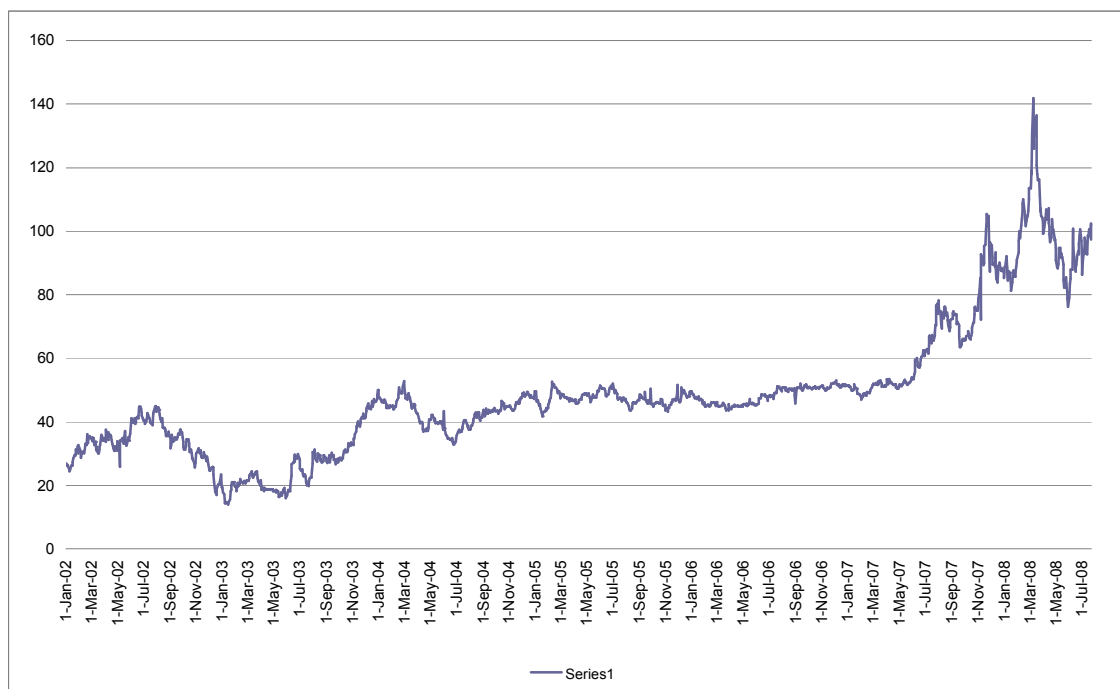
#### 4.1. The current convenience yield is historically high

25. Figure 1 below is taken from CEG's October 2007 report and illustrates the movements in the spread between 10 year CGS yields and 10 year swaps over the longest period that data is available.

**Figure 1: Spread between 10 year CGS and swaps  
1996 to 2007**



**Figure 2: Spread between 10 year CGS and swaps  
Jan 2002 to July 2008**



Source: CBA Spectrum

27. An important implication of the above figures is that the spread between CGS and swaps is currently at historically high levels. Figure 1 demonstrates that, on the 13<sup>th</sup> of September the swap spread to CGS was almost double the historical average represented by the flat pink line (76bp versus 39bp). Figure 2 shows that this had widened to be as high as 140bp and was around 100bp in late mid July 2008. The true historical average is likely to be something materially less than 39bp given that spreads to swaps were under 20bp in 1996 before which data is not available. This phenomenon has been commented on by the RBA.

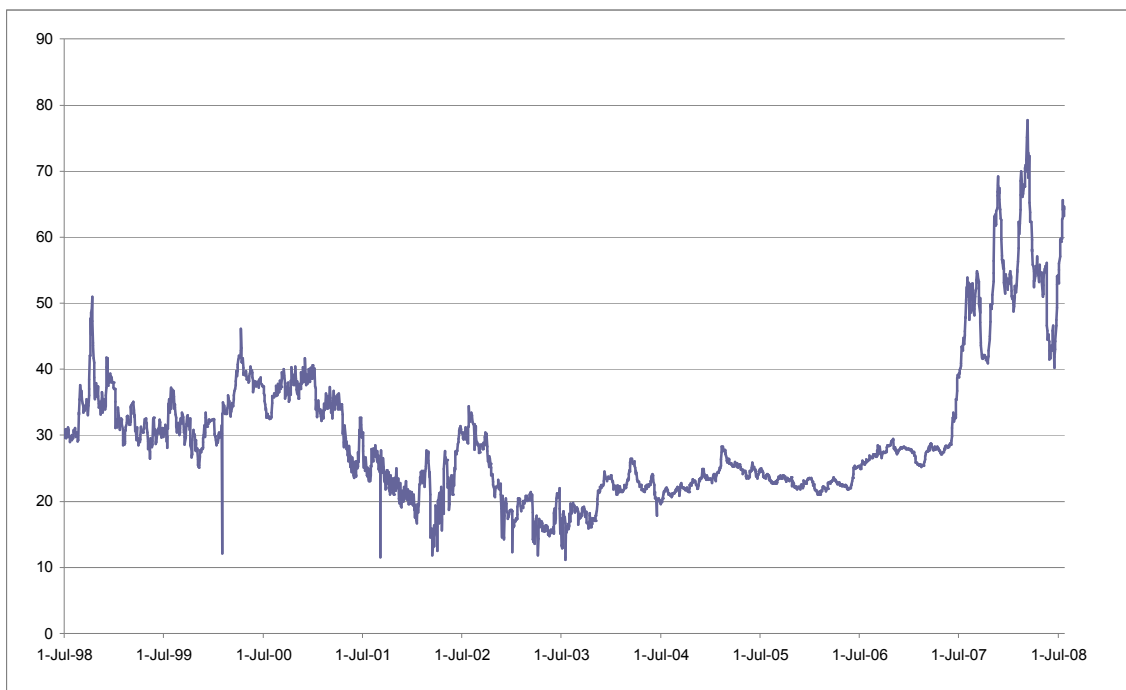
*“The fall in CGS yields was not matched by movements in other long-term yields, such as swap yields. The spread between yields on 10-year swaps and CGS widened significantly in July – it is now around 70 basis points, having been steady at around 50 basis points over the past few years (Graph 52). This is the widest spread over the past decade. A widening of this spread is normally associated with periods of heightened financial uncertainty, when investor demand for the security of risk-free assets increases.*

*“As with CGS yields, the widening in swap spreads tracked that in the US. Yields on state government securities (semis) have moved with the swap rate rather than with CGS yields. The semis’ spread to CGS yields has also*

widened by around 20 basis points. **With most states' credit ratings at AAA, however, credit risk considerations do not appear to be a factor.**" (RBA, August 2008 Statement on Monetary Policy, Page 48)

28. In the above quote the RBA refers to an increase in "*investor demand for the security of risk-free assets*" in times of heightened financial uncertainty. It should be noted here that the RBA uses the term 'risk free' in its common usage – namely that returns are certain. This should not be confused with the specific technical meaning of the term under the CAPM (zero systematic risk). The RBA's observation is best interpreted as describing investors' desire for *certainty* rather than zero systematic risk in times of financial upheaval. This is apparent in the statement that "*credit risk considerations do not appear to be a factor*" in explaining the widening spread between CGS and State Government debt.
29. Once more, a similar recent trend in spreads to CGS is demonstrated by examining the spread to CGS for State Government debt (although again over a different time period due to data restrictions). The figure below compares CBA Spectrum's estimate of the historical average spread between yields for QLD/NSW/VIC Government 10 year debt and 10 year CGS yields.

**Figure 3: Spread between 10 year CGS and QLD/NSW/VIC Govt Debt**



Source: CBA Spectrum

30. Figure 3 makes clear that current spreads between State Government debt and CGS yields are at historically high levels – more than double the average of the last ten years. We do not believe that there would be any support amongst finance experts for the proposition that this reflects a doubling in the risk of default by State Governments over this period. Rather, in our opinion, it is explained by an increase in the convenience yield investors are prepared to pay for CGS.
31. This phenomenon was commented on as recently as 28<sup>th</sup> July 2008 by Guy Debelle, RBA Assistant Governor (Financial Markets), in a speech entitled *Recent Debt Market Developments* to the Address to the Debt Markets 2008 Summit in Sydney.<sup>8</sup> In that speech Mr Debelle states:

*“Following the onset of the recent credit turmoil and the general reappraisal of risk by market participants, spreads on all bonds relative to CGS have increased. Despite their high credit quality, semis were no exception to this (Graph 1). For example, the 10-year spread between semis and CGS has averaged 55 basis points over the past year, around double the margin typical before mid 2007. **This increase is hard to explain because the credit risk of semi-government bonds is very low and is unlikely to have increased over this period.** One possible explanation is that investors, particularly offshore, have preferred to only hold the sovereign name in times of diminished risk appetite. Another is that there has been a liquidity premium in the CGS market.”*

#### 4.2. The issues paper’s interpretation of the RBA and Treasury letters

32. The ACCC sought the advice of the RBA and Treasury on whether nominal CGS markets were distorted and, as a consequence, the yields on nominal CGS could not be used as proxy for the risk free rate. RBA Assistant Governor (Financial Markets), Mr Debelle defends the efficiency of the CGS market and argues, quite correctly, that:
- a. the CGS market is not distorted and, consistent with Government policy, has been kept highly liquid;
  - b. the then spread between CGS and US Government debt was not unusual;
  - c. consequently, the yield curve for CGS provides a ‘risk free’ benchmark curve from which market participants are able to price riskier assets; and

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<sup>8</sup> Available at [http://www.rba.gov.au/Speeches/2008/sp\\_ag\\_280708.html](http://www.rba.gov.au/Speeches/2008/sp_ag_280708.html)



- d. CDS insured corporate bonds do have some default risk and, consequently, will always trade at a yield higher than the risk free rate.
33. We agree with all of these contentions. It is not our view that yields on nominal CGS are 'artificially low' *per se* or that they reflect the outcomes of a "distorted" market. Consistent with the views in the RBA letter, it is our view that the market for CGS in Australia is a well functioning market. We also regard the market for US Treasuries as a well functioning market. We do not believe that anything in our papers or the academic literature suggests that these markets are not functioning effectively. Quite the contrary, they are both deep and liquid markets where buyers and sellers can, with relatively low transaction costs, find mutually agreeable prices.
34. 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.
35. We respect the RBA's general expertise in economic policy development especially in relation to monetary policy. We also respect the RBA's specific expertise in understanding the operations of the CGS market and in developing advice to the Government on the number of outstanding CGS required to maintain a liquid and well functioning CGS market. As already described, we do not disagree with the statements in the RBA letter.
36. However, the issue that we are addressing is very narrow, namely, how one should go about estimating the *cost of equity* using CAPM. Specifically, we are interested in determining the return required by the market for investment in equity that has an uncertain return but where that return has zero covariance with the market return (zero beta).
37. Empirical evidence from credit markets is relevant to answering this question. However, the interpretation of this evidence must be done within the context of valuing risky corporate assets using the CAPM. This requires expertise in the valuation of risky corporate assets not expertise in an understanding of the operation of the CGS market or monetary policy. To the best of our knowledge, this is not an issue that the RBA would claim any special experience. For example, we are unaware of any RBA research, or any reason for the RBA to undertake research, on estimation of the market's required return on zero beta equity and how this relates to the prevailing CGS bond yield.
38. In our view, this issue must be addressed by reference to the findings of the finance literature or by reference from experts in the valuation of risky corporate



assets. In this regard we repeat the findings of Blanco *et al* in the Journal of Finance that:

*“...it is well known that government bonds are no longer an ideal proxy for the unobservable risk free rate.”<sup>9</sup>*

39. It is this conclusion and similar conclusions also referenced in our earlier papers, that must be addressed.
40. We also agree that alternative proxies for the CAPM risk free rate (such as the swap rate and the CDS insured corporate bond rate) do have higher risk than the Government bond rate. However, the finance literature has carefully examined this issue and the unambiguous conclusion is that these differences in risk can explain only a small fraction of the spreads to government bond rates. For example, on page 35 of the March 2007 NERA report we state:

*“Duffie and Singleton (1997) show how to price the credit risk inherent in the fixed rate component and conclude that the spread between the swap rate and the Treasury rate has a significant non-default component. Liu, Longstaff and Mandell (2006) and Feldhütter and Lando (2006) have subsequently reached the same conclusion. Feldhütter and Lando (2006) conclude that “A convenience yield from holding Treasuries .... is by far the largest component of spreads” between swap rates and Treasury rates. These papers conclude that the reference risk-free rate used in capital markets when pricing swaps is only around 10 basis points below the rate on similar maturity AAA bonds; i.e., the CAPM zero beta rate exceeds the rate on CGS securities.”*

#### **4.3. Non-risk characteristics recognised by regulators when choosing the risk free rate**

41. Our conclusion that non-risk characteristics can affect the choice of the risk free rate proxy is not novel. The AER has agreed that there is a need to do this in relation to the real risk free rate.
42. Many regulators have implicitly admitted the need to do this in relation to the nominal risk free rate. For example, on page 381 of the 2007 gas distribution draft decision, the ESCV noted that ACG had advised it that relatively low liquidity of short dated indexed CGS may make the yields on these instruments inappropriate as a proxy for the risk free rate.

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<sup>9</sup> Blanco, Brennan, and Marsh, *An Empirical Analysis of the Dynamic Relation between Investment-Grade Bonds and Credit Default Swaps* The Journal Of Finance Vol. LX, no. 5 October 2005, p2261.



*“Secondly, there is also a risk that the [CGS] bond yields may include a premium for the lack of liquidity of these instruments, given that they are of too short a term to be of great interest to the parties who demand the instruments (i.e. as they are not a particularly useful asset to offset long term inflation-related liabilities, such as indexed annuities).”*

43. This statement precisely acknowledges the issues that surround the choice of the risk free rate. In the real world, differences in yields are explained by both differences in risk and differences in non systematic risk factors – such as liquidity. Consistent with the position of ACG, we believe that accounting for these non-risk characteristics is critical when selecting the appropriate risk free rate.
44. However, if we accept (as the ACG and ESCV do) that differences in non-risk characteristics between one CGS and another CGS are relevant then we must also accept that differences in non-risk characteristics between CGS and corporate debt/equity are also relevant.
45. A problem with the ACG advice to the ESCV and the issues paper is that it automatically assumes that the more liquid are CGS the better they are as a proxy for the risk free rate. In our view, this is not a generally correct conclusion. If we were constrained to choose between more and less liquid CGS as the proxy for the risk free rate (ignoring all other potentially relevant non-risk factors) then we would choose the CGS whose liquidity most closely matches that of the equity/debt we are attempting to price.
46. To see why imagine a simple scenario where we are trying to determine the required return on equity with zero beta. Also assume that the equity is riskless in a CAPM context but it nonetheless has uncertain returns (ie, has zero beta but not certain returns). Also assume that the equity is less liquid than Government debt and information on the performance of the equity is more likely to be asymmetrically held (adding to the costs of trading in it).
47. The equity will be less desirable to an investor than the CGS and will have to offer a higher expected return – even though both may have zero beta. The reason for this is that the CGS has non-risk (non beta) characteristics that make it more attractive than the equity, ie, that give the CGS a ‘convenience yield’. As a consequence, it would be an error to adopt the CGS as the appropriate risk free rate. Doing so would ascribe to the riskless (zero beta) equity a return that is below the return actually required by investors.
48. Such issues do not arise in the theoretical version of the CAPM first described by Sharpe in 1964. The reason is that Sharpe assumed perfect information and zero transaction costs in his theoretical model. These assumptions are clearly violated in the real world with the consequence that Government bonds (which do



closely approximate this theoretical standard) are not good proxies for the returns on other zero beta assets that do not closely approximate this standard (such as corporate debt and equity).



## 5. Selection of the most appropriate proxy for the risk free rate

49. There are at least three alternatives to CGS as the proxy for the risk free rate. These are State Government debt, CDS insured bonds and swap rates. All of these are better proxies for the true risk free rate (zero beta rate) on corporate assets. However, State Government debt is the proxy with the non-risk attributes that are least like corporate assets.
50. 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. (We note that the issues paper rules out CDS insured bonds – although the reasons for doing so are not well explained.) 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 to be higher).
51. In terms of the practicality of use in the NER, CDS insured bonds are potentially problematic as the methodology would have to be tailored to the particular CDS insured bonds being traded (which may not always have the appropriate maturity). By contrast, 10 year swaps are commonly traded and have a long history of trading. For this reason, it is proposed that the 10 year swap rate is the best proxy for the risk free rate and that the risk free rate in the NER should move up and down with the 10 year swap rate.
52. However, adopting the swap rate as the risk free rate would remove all of the convenience yield on Government bonds – being the historical average convenience yield plus the above average component of the current convenience yield. To the extent that the historical average convenience yield was already captured in a higher historical MRP estimate, adopting the swap rate without adjustment would effectively 'double count' that historical convenience premium.
53. It is therefore proposed that NER set the risk free rate equal to the 10 year swap rate less the historical average difference between 10 year CGS yields and 10 year swaps. As described above, this difference has been estimated at 39 basis points.
54. The convenience yield for CGS (as measured by the spread between CGS and swap rates at 10 year maturity in mid July 2008) was around 100bp. Subtracting the historical average of around 39bp would, other things equal, result in the estimated cost of equity being 61bp higher than if the CGS yield were used as the risk free rate.