



## Australian Government

### The Treasury

7 August, 2007

File: ER2007/04076

Mr Joe Dimasi  
Executive General Manager  
Australian Competition and Consumer Commission  
Level 35  
360 Elizabeth St  
Melbourne Vic 3000

Dear Mr <sup>Joe</sup> Dimasi

#### **THE TREASURY BOND YIELD AS A PROXY FOR THE CAPM RISK-FREE RATE**

Thank you for your letter dated 28 June 2007 and the opportunity to comment on the reports produced by NERA Economic Consulting on the use of Treasury Bond yields in estimating the Capital Asset Pricing Model (CAPM) risk-free rate.

We agree with the substance of the NERA arguments with regards to the likelihood for biases to exist in yields on Treasury Indexed Bonds. The Australian Government's suspension of issuance of these inflation-linked bonds, as well as increased demand for this asset class, is likely to cause market-implied inflation estimates to exceed consensus forecasts of inflation over the medium term. We therefore recommend that the ACCC uses the mid-point of the RBA's target band for inflation (that is, 2.5 per cent per annum) as the best estimate of inflation. Since the independence of the Reserve Bank Board in conducting monetary policy was formalised in March 1996, annual inflation has averaged 2.5 per cent.

However, we disagree with NERA's conclusions with respect to biases existing in the *nominal* Commonwealth Government Securities (CGS) market. Following the Government's review of the CGS market in 2003, it was decided to continue issuing sufficient nominal bonds to support a well functioning market. In contrast to the index bond market, the nominal CGS market continues to display the attributes of a well functioning market. Accordingly, we see no compelling reason to change the ACCC's current methodology for estimating the nominal risk-free rate.

Furthermore, we believe the methodology employed by NERA that uses information from the Credit Default Swap (CDS) market is flawed. In short, the analysis errs by treating banks that issue CDS contracts as if they had the same credit risk as CGS, with the consequence that the bias calculated by the analysis actually describes the credit and liquidity risk of CDS issuers.

The attached note discusses our thinking in greater detail.

If you would like to discuss the technical details of our analysis, feel free to contact Michael Bath on 02 6263 3204.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Jim Murphy'. The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Jim Murphy  
Executive Director  
Markets Group

## ***Comments on NERA Reports on Biases in CGS Yields as a Proxy for the CAPM Risk-free Rate***

*Nominal yields: Lower risk free rates or flatter yield curves?*

The NERA Consultants' report argues that the reduced level of debt in the Commonwealth Government Securities (CGS) market is introducing biases into estimates of the CAPM Risk-free rate.

The volume of nominal CGS debt has fallen over the last ten years as a result of asset sales and budget surpluses, particularly when the volume is considered as a percentage of GDP. However, there are other *macroeconomic* and *demand side* factors currently affecting bond yields that can explain the flatter yield curves documented recently both in Australia and globally.

Increased *macroeconomic* stability, as a result of more credible macroeconomic policies and wide ranging economic reforms, has lowered the risk premium associated with holding bonds and in turn lowered the interest rate investors require, in particular for longer-term bonds.

The prominent *demand side* factors include an increase in demand, globally, from pension funds seeking to match long dated liabilities, as a result of changes in accounting standards and, in some jurisdictions, legislation regarding the matching of assets and liabilities. Furthermore, the reserves of Asian central banks in particular have increased significantly in recent years and are biased towards sovereign debt, particularly of dollar bloc countries.

The outcome of the Government's review of the CGS market in 2003 was the decision to continue issuance of sufficient nominal bonds to support a well functioning market. This is achieved by the regular issuance of new bonds as existing lines mature with the aim of supporting the Treasury bond futures market. In contrast to the index bond market, the nominal CGS market continues to display the attributes of a well functioning market.

Our considered view is that the market for CGS is functioning efficiently and that the measures taken by the Government to this end are working.

The Australian Office of Financial Management (AOFM) and the Treasury have noted the reduction in the term premium in nominal yield curves in recent years, not just in Australia but across the US, the UK and Eurozone. This means that yield curves have become flatter as investors have required less of an inducement (term-risk premium) to lock-up their funds at a fixed rate for 10 years versus undertaking a series of shorter term or cash-like investments.

This, however, is consistent with the impacts of increased macroeconomic stability and increased demand for long-term bonds.

On balance, the AOFM and the Treasury believe that there has been some reduction in *risk-adjusted* term premia globally. This has resulted in adjustments to the sovereign debt portfolio benchmark used by the AOFM in 2005 and again in 2007. However, we still believe that there is a *positive* term premium. In other words, the 10 year bond rate will generally exceed the expected average level of overnight cash rates over the next 10 years, although the extent of this excess has reduced in the last three to five years.

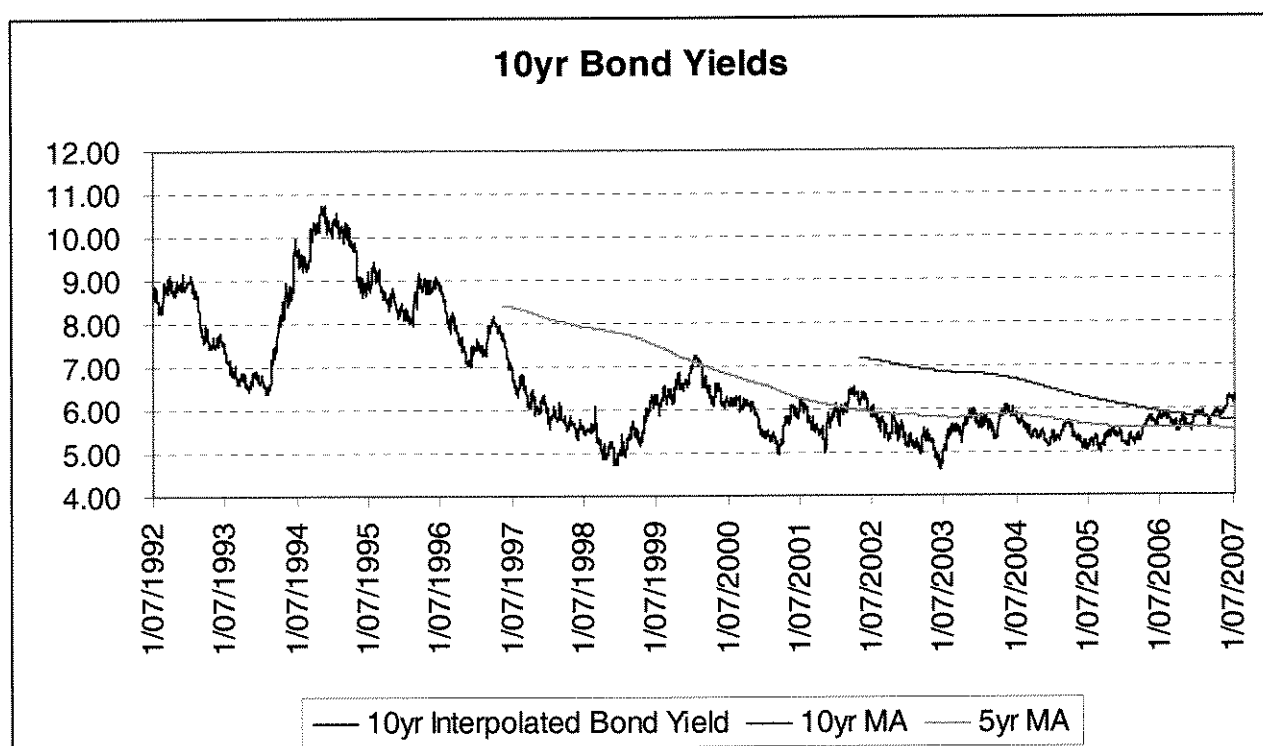
While the NERA report was able to quote academic literature that suggests that the 10 year bond rate *underestimates* the risk free rate used in CAPM, we also note that the literature is focused on US markets, rather than Australian markets. It could also be possible that there are subtleties within the model and its underlying assumptions that produce this anomaly.

## ATTACHMENT

It is also possible that the apparent discrepancy could be a function of the investment horizon. Over a 10 year horizon, the 10 year bond rate is, *by definition*, the appropriate risk free rate, so any bias is likely to rest within the model using the rate as an input. Over a 1 day horizon, the overnight cash rate is the appropriate risk free rate and the 10 year bond rate will overstate the risk free rate provided there is a positively sloped yield curve.

### *Estimating the nominal risk free rate*

While long term interest rates have been low particularly in the last three years, we note that market yields have increased in recent times and 10 year bond yields stood at around 6.25% per annum as of 30 June 2007. As can be seen in the following chart, this is the highest they have been for several years.



Source: RBA data (Interpolation undertaken by Treasury)

The above chart also illustrates that the 5 and 10 year moving averages of the 10 year bond rate are on a downward trajectory due to relatively high observations in the mid 1990s (and again around 2000) dropping out of the calculation. We note that this moving average has fallen significantly over the last three years in particular.

We understand that the ACCC's current approach is to periodically (approximately every 5 years) take a snapshot of the 10 year bond rate, where the snapshot may in fact be an average rate over a relatively short horizon, say up to six weeks. If this is the case, then a snapshot taken on 30 June 2007 would result in an estimated bond rate of around 6.15% per annum, which is in the upper 18% of daily observations over the last decade. Therefore, the "snapshot" methodology would not yield as low an estimate as is currently associated with a longer term moving average seen in the chart.

As the decline in long-term interest rates can be explained by increased economic stability and demand in the market, we do not believe that this decline reflects a bias in the market. As such we do not see the need for an adjustment to nominal yields as described in the NERA report.

## ATTACHMENT

### *Feedback on NERA Methodology*

Feedback was also sought on the use of information from the Credit Default Swap (CDS) market. We think the methodology involving data from the CDS market used in the report is likely to overstate the size of any bias. Specifically, NERA's approach can be summarised as comparing the CDS margin with the margin between equivalent corporate debt and *Treasury Bonds* with a similar term to maturity. We think that the CDS margins are not directly comparable with the spread between corporate debt and Treasury Bonds as:

(i) CDS contracts are like an insurance contract, issued not by the Australian Government, but by banks and investment houses, which have a higher credit risk than the Australian Government. Much of the calculated margin (the so-called "bias") therefore appears to be capturing the credit and liquidity risk of the bank sector, whose cost of funds would be better proxied using *swap rates* than bond yields.

(ii) There has been a dramatic increase in the use of CDS as yield enhancement tools through banks pooling them into Collateralised Debt Obligations (CDOs) which have been marketed aggressively to global institutional investors seeking yield enhancement. It is possible that the search costs for the "investors" in CDS are thus lower than for investors in physical corporate debt, explaining some of the narrowing in CDS margins through time. Furthermore, the absence of a significant "credit event" in recent years may be contributing to this effect as investors continue to chase yield more aggressively<sup>1</sup>.

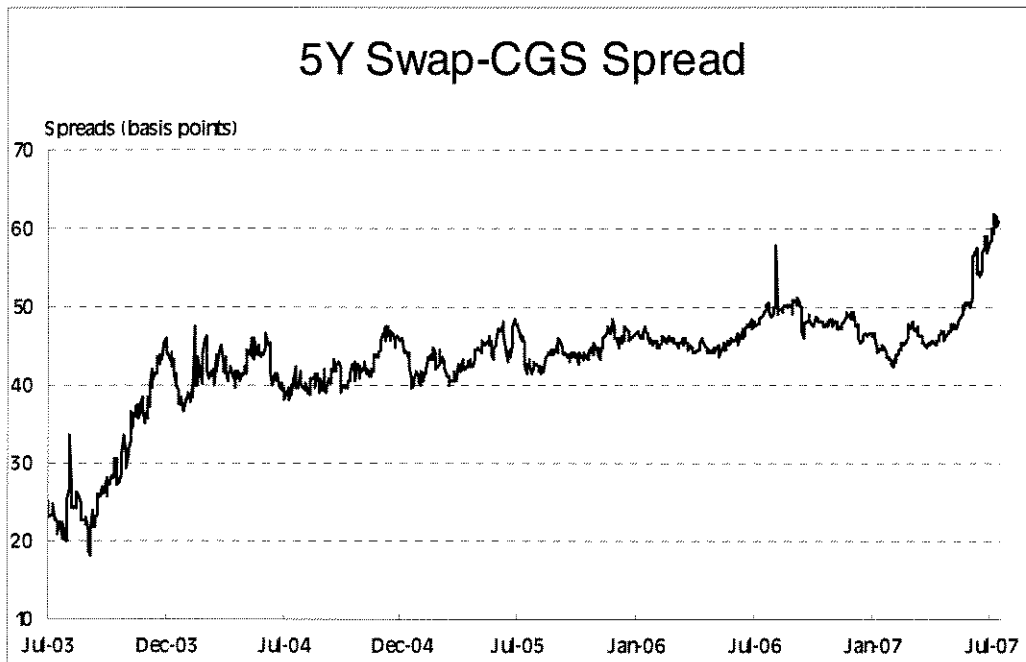
(iii) It is possible that there are other market factors that are not currently apparent but which are being captured by the analysis, through the use of a "catch-all" residual as the proxy for the estimated bias.

The use of the spread between corporate bond yields and Treasury Bond yields rather than the spread between corporate bond yields and swap rates as a comparator for CDS spreads is the crucial shortcoming of the analysis. Specifically, NERA's methodology is erroneously capturing the widening in the spread between swap rates and Treasury Bonds that has occurred over the last four years. The following chart illustrates this widening in swap spreads.

---

<sup>1</sup> This may change as the current US sub-prime mortgage market issues are played out.

ATTACHMENT



Source: AOFM

As the margin between 5 year swap and CGS rate has widened from 25 to 48 basis points between July 2003 and February 2007 (and further since then), it follows that what NERA is describing as an increase in the “bias” is primarily being driven by a widening in swap spreads.

If the NERA analysis had more correctly considered the margin between corporate bond rates and swap rates, it would have instead reported a minor “negative” bias i.e.: CDS rates *above* physical debt margins in 2003. Furthermore, the NERA analysis would have noted a partial unwinding of this negative bias over the period.

Table 2.1 of the June 2007 report (page 6) would presumably look more like this:

Change in Nominal CGS Bias Since 2003

A rated bonds	Spread to CGS	Spread to Swap (*)	CDS	Diff'ce	AA rated bonds	Spread to CGS	Spread to Swap (*)	CDS	Diff'ce
Jun 2003	61	36 (61-25)	46	-10	Jun 2003	35	10 (35-25)	20	-10
Feb 2007	65	17 (65-48)	18	-1	Feb 2007	50	2 (50-48)	6	-4

\* Based on Swap-Bond spreads.

Therefore, we suggest that the methodology used in the NERA report is capturing several causes of changes in the CDS margin and corporate bond – CGS margin and erroneously ascribing them all to an increase in the “bias” being estimated.

Overall, then, we are not convinced of the need to make an adjustment to the nominal bond yield in order to provide an estimate of the risk free rate.

## ATTACHMENT

### *Inflation-linked debt conclusions*

The points made about the bias in inflation-linked bonds are probably quite reasonable, although the methodology of the March 07 report, which analysed the credit spreads of just *two* corporate entities, is questionable. However, we agree that as Treasury Indexed Bonds (TIBs) mature without replacement, their usefulness for estimating long term real risk free rates will diminish. Consequently, their use for estimating the market-implied inflation forecast will lead to inflation estimates with an upward bias.

We suggest that working with nominal yields and, where a real return is required, making an inflation adjustment based on the mid point of the RBA's 2 to 3 per cent target range, is entirely reasonable. Since the independence of the Reserve Bank Board in conducting monetary policy was formalised in March 1996, annual inflation has averaged 2.5 per cent.

### *Recommendations*

1. We see no reason to change the ACCC's current methodology for estimating the nominal risk free rate. Furthermore, we offer an explanation as to why the methodology used within the NERA report is biased.
2. The Australian Government's suspension of inflation-linked bonds, as well as increased demand for this asset class, is likely to systematically cause market-implied inflation estimates to exceed consensus forecasts of inflation over the medium term. We therefore recommend that the ACCC uses the mid-point of the RBA's target band for inflation (i.e.: 2.5% per annum) as the best estimate of inflation.