

Rate of return and cashflows in a low interest rate environment



SUBMISSION TO THE DRAFT WORKING PAPER – 2 JULY 2021

Queensland Treasury Corporation (QTC) welcomes the opportunity to provide comments on the Australian Energy Regulator's (AER) Draft Working Paper on the rate of return and cashflows in a low interest rate environment.

We understand that many of the issues raised in the Draft Working Paper will be considered in more detail in the AER's return on equity working paper that is scheduled for release in July 2021. As such, this submission provides some high level comments on some of the issues raised in the Draft Working Paper. A more detailed explanation of our views will be provided as part of the AER's consultation on the return on equity working paper.

Relationship between CGS yields and the expected return on equity

- QTC agrees with the AER's decision to reconsider the relationship between Commonwealth Government Security (CGS) yields and the expected return on equity¹. We believe this will be most productive if the AER takes a balanced approach by considering a range of inputs such as:
 - real-world practices of investors and valuation professionals
 - academic research
 - commentary and observations from central banks
 - time series properties of implied estimates from the dividend discount model, and
 - consultant reports.
- The 2022 Rate of Return Instrument (RoRI) should include an approach for making the best estimate of the return on equity required by real-world investors operating in competitive, real-world capital markets. As such, the valuation approaches that are used in practice are *no less important* than research findings in academic journals.
- Members of the Investor Reference Group (IRG) have presented at multiple AER online stakeholder forums on the factors that real-world investors and valuation professionals consider when determining required rates of return and discount rates, including the relationship between the risk-free rate and the expected return on equity².
- In QTC's view, it would be useful for the AER to confirm how it intends to incorporate this information into the return on equity approach as it remakes the 2022 RoRI.

Systematic risk exposure of sovereign bonds

- QTC considers the systematic risk exposure of CGS and other sovereign bonds to be an important issue in the AER's reconsideration of the relationship between CGS yields and the expected return on equity.
- In our view, there are sound theoretical and empirical reasons for why the decline in CGS and other sovereign bond yields over the last 20 years has not been matched point-for-point by a reduction in the expected return on equity. In particular, there is evidence that sovereign bonds have been a 'hedge' against equity risk during this period. This makes sovereign bonds more valuable to investors, which increases the price and lowers the yield. However, any reduction in yield due to the value of these hedging properties does not reduce the expected return on equity.
- The value attributed to these hedging properties also means that sovereign yields have generally been lower than the expected return on an asset with no systematic risk (ie, a zero-beta asset).

¹ AER (May 2021), *Rate of return and cashflows in a low interest rate environment*, p. 26

² QTC (September 2020), *Some high level observations on the market cost of equity*.

Damodaran (2021)

- The Draft Working Paper cites a 2012 paper by Professor Aswath Damodaran that finds a positive relationship between U.S Treasury bond yields and forward-looking estimates of the market risk premium (MRP). This report was updated in March 2021 and contains new findings that are relevant to the return on equity approach:³

'In earlier versions of the paper, this regression has yielded a mildly positive relationship between the implied ERP and the T.Bond rate, but the combination of low rates and high equity risk premiums since 2008 seems to have eliminated even that mild connection between the two, a result consistent with the regime change recorded by Campbell, Pflueger and Viceira...'

- The regime change recorded by Campbell, Pflueger and Viceira (CPV) relates to a change in the correlation between inflation and the output gap from negative to positive in 2001⁴:

'We detect a break in 2001Q2, with a negative inflation-output gap correlation before and a positive correlation after. Because nominal bond returns are inversely related to inflation and stock returns are positively related to the output gap, one might expect that the comovement between bonds and stocks should change in the opposite direction around this break date.'

...

*'If the correlation between inflation and the output gap is negative, as it was during our first period, this means that nominal long-term bond prices decline in periods of high marginal utility and bonds are risky. **If this correlation is positive, as in the second period, nominal long-term bond prices decline in periods of low marginal utility, so bonds are hedging assets.'***

- The highlighted sentence in the above quote could have been equivalently and more intuitively written as:

'If this correlation is positive, as in the second period, nominal long-term bond prices ~~decline~~ rise in periods of ~~low~~ high marginal utility, so bonds are hedging assets.'

- The main conclusion in CPV is that the systematic risk of nominal fixed-rate bonds changed from positive to negative around 2001 due to a change in the correlation between inflation and the output gap:
 - When the correlation was negative pre-2001, nominal fixed-rate bonds performed *poorly* when the output gap was low (ie, *high inflation*, poor equity performance/high marginal utility), so bonds had positive systematic risk.
 - When the correlation was positive post-2001, nominal fixed-rate bonds performed *strongly* when the output gap was low (ie, *low inflation*, poor equity performance/high marginal utility), so bonds have negative systematic risk.
- The change in systematic risk from positive to negative is consistent with the fall bond yields post-2001. By definition, the expected return on equity is not affected by the changing systematic risks of other assets. This is consistent with the expected return on equity being more stable than the risk-free rate.

Central bank observations

- The hedging properties of sovereign bonds has been observed by the Reserve Bank of Australia (RBA) and the US Federal Reserve. For example, in a June 2021 speech, Brad Jones – Head of Economic Analysis at the RBA stated:⁵

*'New banking regulations and central bank asset purchases clearly contributed to the bid for safe assets over this period, but safe asset demand also reflected **investor willingness to pay a premium for the insurance-like properties of liquid and highly-rated fixed income securities.***

³ Aswath Damodaran (March 2021), *Equity Risk Premiums (ERP): Determinants, Estimation, and Implications – The 2021 Edition Updated: March 23, 2021*, p. 107.

⁴ Campbell, Pflueger and Viceira (May 2019), *Macroeconomic Drivers of Bond and Equity Risks*, p. 2–3.

⁵ RBA speech (June 2021), *Uncertainty and Risk Aversion – Before and After the Pandemic*, p. 5–6.

*'... the perceived **recession-hedging properties of sovereign bonds in an environment of low inflation**. This perception became ingrained from the late 1990s onwards as stock and bond returns became negatively correlated, most notably during the equity market crashes of 2000–02 and 2007–08 when US Treasuries fully offset the decline in equities... **Assets that payoff in recessions are highly valuable for their consumption smoothing properties, and so can attract demand even at low or negative yields.**'*

- Similar observations were made in a November 2019 speech by Richard Clarida, Vice Chair – Board of Governors of the Federal Reserve System:⁶

*'In the 1970s and 1980s, the sign of the correlation was positive, which implies that bond and stock returns tended to rise and fall together. In this period, bonds provided a diversification benefit when added to an equity portfolio (the bond return beta to stocks averaged 0.2) but not a hedge against equity risk. **Since the late 1990s, the empirical correlation between bond and stock returns has typically been negative (the bond return beta to stocks has averaged negative 0.2).***

*This means that since the late 1990s, bond returns tend to be high and positive when stock returns are low and negative so that **nominal bonds have been a valuable outright hedge against equity risk. As such, we would expect the equilibrium yield on bonds to be lower than otherwise, as investors should bid up their price to reflect their value as a hedge against equity risk (relative to their value when the bond beta to stocks was positive).***

- Any increase in price (ie, reduction in yield) that is due to the ability of sovereign bonds to hedge equity risk does not reduce the expected return on equity. Expressed differently, the hedging properties of sovereign bonds is a factor that reduces the yield on sovereign bonds but not the expected return on equity.
- QTC considers these findings should be given further consideration in the AER's review of the relationship between CGS yields and the expected return on equity.

Financeability

- QTC considers that credit and financial metrics based on post-tax revenue model (PTRM) cash flows and benchmark parameters can provide useful information on the reasonableness of the allowed return on equity at the time of a regulatory determination.
- QTC does not agree with the position in the Draft Working Paper that negative net profit after tax (NPAT) in the PTRM is not a problem, or with the implication that NPAT is not important because it is an accounting concept and not a reflection of free cash flows⁷.
- Post-tax nominal cash flows to equity in the PTRM are made up of:
 - Inflation on the opening RAB x benchmark gearing *minus*
 - (1 - benchmark gearing) x nominal capex *plus*
 - (1 - benchmark gearing) x nominal straight line depreciation *plus*
 - NPAT
- The first three cash flows represent the following:
 - The first cash flow is the proceeds from borrowing against the indexation of the debt-funded portion of the RAB. This cash flow and the real cost of debt allowance in the revenues equals the expected nominal cost of debt.
 - The second cash flow is the amount paid to fund the equity-funded portion of capital expenditure.
 - The third cash flow is a partial return of the original equity investment.
- The benchmark firm cannot be assumed raise additional capital to fund a negative NPAT outcome because there is no corresponding increase in the RAB if NPAT is negative⁸. Therefore, the only sources of cash within the PTRM to fund negative NPAT are those listed in the previous point. However:

⁶ Richard H. Clarida (November 2019), *Monetary Policy, Price Stability, and Equilibrium Bond Yields: Success and Consequences*, p. 2.

⁷ AER Draft Working Paper, p. 44.

⁸ The only factors that cause the RAB to change in the PTRM are regulatory depreciation and capital expenditure.

- The proceeds from borrowing against the indexation of the debt-funded portion of the RAB are fully required to service the nominal cost of debt.
- The proceeds for the equity-funded portion of capital expenditure are fully required to undertake the level of capital expenditure that is deemed to be efficient by the AER.
- Using part of the return of equity to fund the negative NPAT will result in the equity investors not being kept whole for their investment in network infrastructure (ie, an under-recovery of efficient costs). Furthermore, this is a permanent loss that will not average out even if average NPAT is positive over the life of the assets.
- The above points demonstrate that negative NPAT in the PTRM is a problem even if the post-tax nominal cash flow to equity is positive. As such, it is QTC's view that the potential for negative NPAT in the PTRM should be reconsidered by the AER as it remakes the 2022 RoRI.
- At a minimum, it would be helpful if the AER could explain where the cash is expected to come from within the PTRM (ie, for the benchmark firm with constant gearing, not an actual service provider) to fund negative NPAT outcomes in the PTRM.