Independent Panel Review of ERA Rate of Return Guidelines (2018)

Further questions for ERA

4 September 2018

Economic Regulation Authority Secretariat Response to the Independent Panel's Questions

1. *We seek some further clarification in relation to our question 3 submitted on the 21 August given the point made about diversification and the ERA response that specific escalators are considered when assessing operating costs and new capital expenditure.*

   (a) Could you please confirm that, in principle, forecasts of operating costs and forecasts of capital expenditure that are used to estimate allowed costs over the regulatory period should contain nominal escalators that differ from the CPI i.e. the best nominal forecasts are used in applying the NPV=0 condition to set allowed revenues?

   In determining forecast revenue under a building block approach, the best available nominal forecasts are used for operating and capital expenditure.

   (b) Can you also please confirm whether the escalators differ from the CPI for this purpose in practice?

   The escalators for types of operating and capital expenditure can be different from the CPI.

2. *In relation to our question 6 submitted on the 21 August, the ERA responded with information on the trailing average debt risk premium. We would like to see the full cost of debt trailing average i.e. including the risk free rate component and how it compares to the on-the-day approach to setting the cost of debt.*

Under the Draft Guidelines:

Cost of debt = risk free rate + debt risk premium + debt hedging and issuing costs

The ERA uses the prevailing risk free rate and does not apply a trailing average to the risk free rate. The ERA considers that the prevailing risk free rate best estimates the risk free rate for an upcoming regulatory period.

As at 29 March 2018, cost of debt using the hybrid trailing average debt risk premium is equal to:

4.917% = 2.590% + 2.327% + 0.214%

As at 29 March 2018, the on-the-day approach to cost of debt.

On-the-day cost of debt = on-the day debt risk premium + on-the-day risk free rate

3.568% = 1.241% + 2.327% + 0.214%

3. *How is compensation for extreme events during the regulatory period, that may affect the rate of return, treated in the regulatory arrangements?*

The ERA considers that the extreme events are those with low probability of occurrence but they may have potential for significant damage.

Within the current regulatory framework, regulators are required to consider how to compensate for the risk exposure of service providers in supplying regulated services. Appropriate risk compensation is an important part of the rate of return regulatory framework and is integral to achieving the legislative objectives. Since investors can eliminate non-systematic risk by holding a well-diversified portfolio, then it is unlikely that investors will require compensation for these risks. It is widely accepted that only systematic risks should be compensated through the allowed rate of return.

For catastrophic and other risk, the ERA, and also the AER, considers that these risks should not be compensated through the rate of return via the equity beta parameter for the following reasons (i) catastrophic risk cannot be considered

systematic risk, as the risk is unrelated to the market and only a portion of the market is affected; (ii) the risks can be mitigated by the option to purchase insurance, with insurance costs flowing through to customers through the opex allowance; and (iii) catastrophic risks can be mitigated via the potential to pass the costs to relevant users and shipwreck clauses. Terms and conditions in access contracts are also used by the service provider to allocate risks to the party that is best placed to manage those risks.

Regulated entities are able to enter into financial arrangements at any point to hedge exposures to movements in financial markets. This includes exposure to the risk free rate. The ERA's rate of return recognises hedging arrangements through allowing for debt hedging costs.

The ERA's hybrid trailing average approach to the debt risk premium also mitigates the exposure of businesses to movements in the cost of debt in any one year.

To minimise the exposure to extreme events or higher rates, regulated entities also have the ability to delay or reduce the amount of financing in any one year.

4. *At paragraph 358 of the Explanatory Statement could you please explain why the characteristics are appropriate, particularly fixed and floating, bullet and callable/puttable redemptions?*

As presented at paragraph 358, there are several characteristics for the bonds to be included in the benchmark sample.

Characteristics such as fixed and floating, bullet and callable/puttable redemptions are adopted to ensure that as many bonds as possible are included in the sample as long as (i) the credit rating of each bond matches that of the benchmark efficient entity, as rated by Standard & Poor's; (ii) time to maturity must be two years or longer; and (iii) issued bonds must have the country of risk specified as Australia, and must be denominated in either AUD, USD, Euros, and GBP.

All compliant bonds are included, except those issued by the financial sector (as these firms have a different capital structure).

Bonds with these characteristics account for a substantial majority of bonds. Therefore, these types of bonds reflect possible types of bonds available to regulated entities and are likely to be sufficiently representative of actual debt issuing practices.

Perpetual, inflation linked and called instruments are excluded. This is because these instruments appear infrequently in sampling and require additional complexity in calculating yields that are comparable to those of the other instruments. The additional benefit of including such instruments does not justify the additional complexity of including them.

5. *At paragraph 359 of the Explanatory Statement could you please explain why the averaging period is confidential?*

The averaging period for an energy network is nominated in advance of that date. The averaging period is confidential so as not to adversely affect an energy network's ability to obtain finance.

6. *How large is the sample of bonds that is used in estimating the debt risk premium?*

In the ERA's Final Decision for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020 in June 2016, the sample of bonds as at 10 June 2016 included 101 bonds in the BBB band credit rating (including BBB-; BBB; and BBB+). These bonds were used for the purpose of developing the debt risk premium estimate.

For Western Power's Draft Decision for March 2018, the BBB+ credit rating was used and there were 47 bonds in the sample.

7. *Are there any statistical diagnostic tests available from the estimation of the debt risk premium?*

There is a test of the robustness of modelling results by measuring excessive divergence between 3 yield curve estimates. Non-robust is defined as the standard deviation between each of the three yield estimates using each method (Gaussian Kernel, Nelson- Siegel and Nelson- Siegel -Svensson reported on a semi-annual basis) being equal to or greater than 105 basis points.

The final estimates of the debt risk premium from the ERA's bond yield approach is also cross checked with estimates available from others such as the RBA, Bloomberg, and Thomson Reuters.

The approach is considered valid by the Australian Competition Tribunal. As discussed further in Question 8, the process of estimating the debt risk premium is replicable by interested stakeholders as long as they have access to data from Bloomberg.

8. *Can you please provide reference to the information and models that stakeholders would have access to in order for them to be able to estimate the debt risk premium?*

Stakeholders need access to Bloomberg data.

The technical process to estimate the debt risk premium is set out in detail in ERA's Final Decision to the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020, Appendix 4 Rate of Return, 30 June 2016 from pages 204 to 232.
https://www.erawa.com.au/cproot/14319/2/Final%20Decision%20-%20Appendix%204%20WACC.PDF

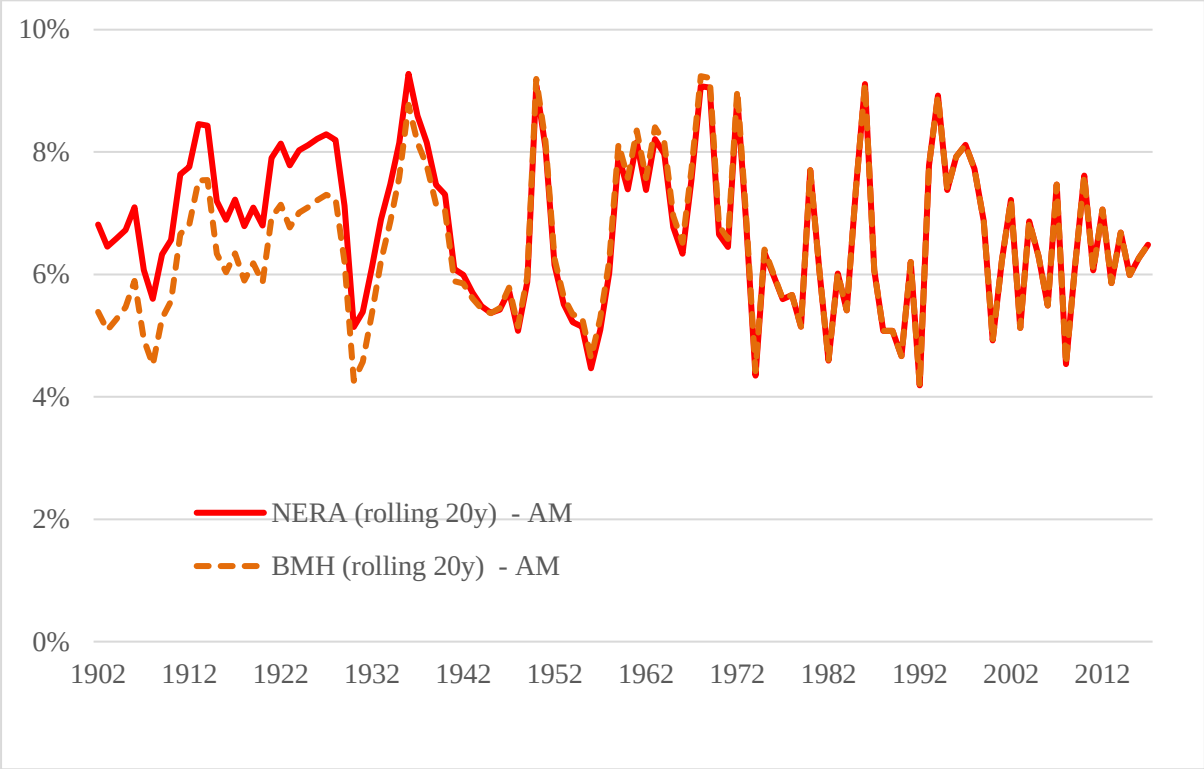
Calculations can be run with Excel or other statistical software.

9. *Can you please provide a 20 year rolling annualised average of the market risk premium for both arithmetic and geometric means for the whole data series that*

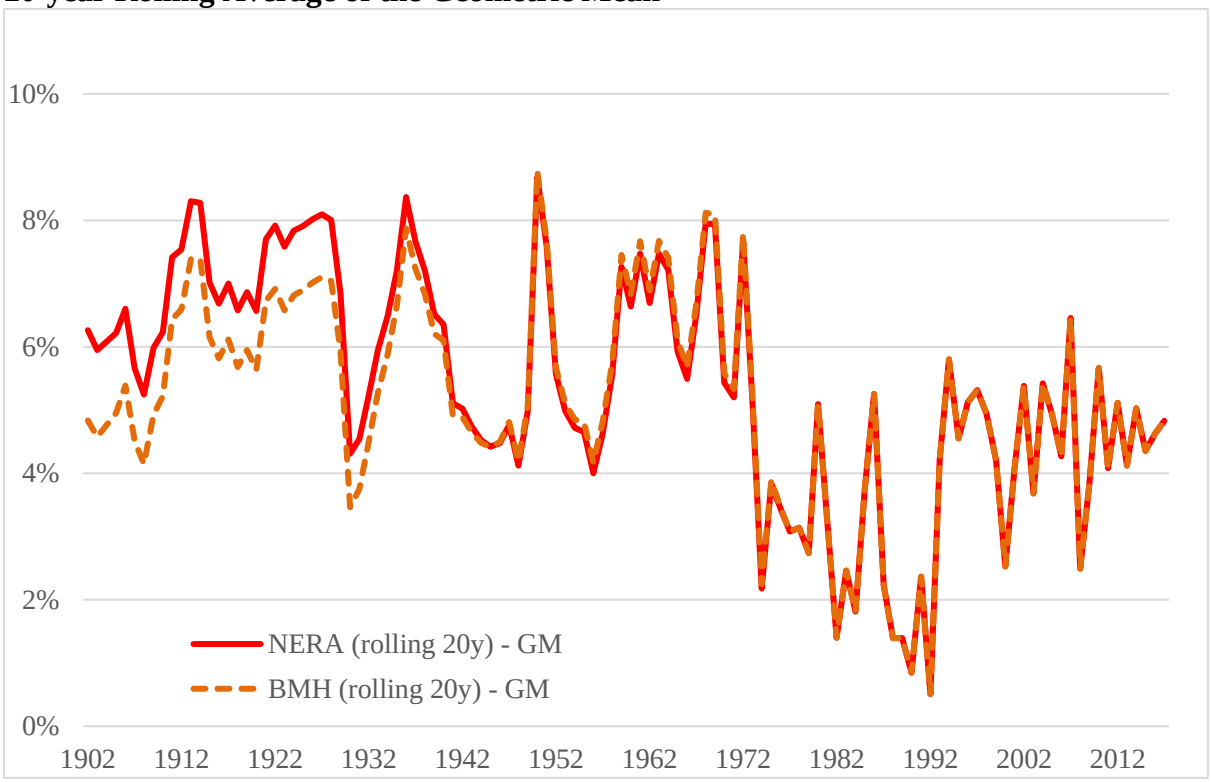
you have access to (similar to Figure 1 on p. 9 of the Partington and Satchell report to the AER of 25 May 2018 which covers the period form 1920 to 2011)?

In order to estimate the market risk premium, the ERA has utilised historical data on the Australian equity risk premium for the period from 1883 to 2017. The estimated market risk premium using 20 year rolling averages is presented in the following graphs.

20-year Rolling Average of the Arithmetic Mean



20-year Rolling Average of the Geometric Mean



10. *Could you please provide a time series of the estimate of the inflation rate using the proposed approach and the approach of other regulators (RBA approach) over the last two years?*

We do not have a time series for this request. At the time of each decision relevant bonds are selected and inflation calculated.

11. *What evidence is there that the implied bond approach produces more accurate estimates of inflation over the next 5 years, as noted in paragraph 787 of the Explanatory Statement?*

Inflation in a regulatory context

Under the National Gas Rules, the ERA determines the reference tariffs to apply to a pipeline for reference services. These reference tariffs are determined based on a calculation of a revenue amount for each year of the five year regulatory period. The revenue amount is made up of a number of components (building blocks) including operating and maintenance expenditure, a rate of return on the capital supplied by investors and a return of capital to investors to account for

depreciation of assets. The ERA ensures that the NPV of the revenue and forecast tariff revenue over the five year regulatory period are equal.

During the five year regulatory period, the tariffs are varied to update for the actual inflation. The actual tariff revenue recovered from customers through the period will reflect actual movements in inflation. Therefore as we progress through the regulatory period we effectively displace the estimate of expected inflation that was built into reference tariffs with the actual inflation outcome in each year. There is also an annual adjustment for the debt risk premium and there may also be cost pass-throughs in the tariff adjustment.

Treasury bond inflation approach

The ERA currently uses the Treasury bond inflation approach in order to estimate the inflation rate expected to prevail over the course of a regulatory control period (usually 5 years). This is used for the purposes of initial revenue forecasts, as discussed above.

The ERA prefers the Treasury bond inflation approach because this approach utilises both nominal and real risk-free rates which are directly observed from the market. As a consequence, these estimates will reflect the market's expectation of the expected inflation rate.

The rationale for utilising market based approaches is that market prices reflect the aggregation of diverse market participants' expectations. The forecasts of many different market participants is considered to contain more information and be more relevant than any one particular forecast model or method.

This contrasts with the alternative method to forecast inflation through the use of the RBA inflation forecast and target band method. Under this alternative approach the expected inflation rate is estimated by utilising the RBA CPI forecast from its most recent Statement on Monetary Policy for each period available. For part of the 5 year period where an explicit forecast is not available, the midpoint of the RBA's inflation target is utilised for the remaining periods.

The expected inflation rate over the regulatory period is estimated using the geometric mean of each of these expected inflation rates.

The ERA notes that the RBA's Statement of Monetary Policy is only updated infrequently throughout the year and therefore at any point in time may not reflect changing inflation expectations. The RBA's inflation forecast is therefore not as dynamic as a market based measure.

In addition, given the weight placed on the mid-point of the RBA's target inflation, the inflation forecast remains relatively constant overtime and will not reflect changing inflation expectations. There is evidence that the RBA inflation forecast and target band method has not responded to the changing inflation environment and leads to an overestimate of expected inflation.[1] The midpoint of the RBA's inflation band is therefore not as dynamic as a market based measure.

Given the lag in the RBA inflation forecast method, it can result in a negative real risk free rate when the Fisher equation is used.[2] An expected negative real risk free rate is likely to have adverse regulatory implications, since investors would be unwilling to lend funds with an expected negative real rate of return, when withholding investment offers a zero per cent rate of return.

On the basis of this evidence, the ERA is of the view that the expected inflation rate is best estimated using the Treasury bond approach.

[1] CEG, *Best Estimate of Expected Inflation*, September 2016, p. 33

[2] See, for instance: ERA, *Final decision on proposed revisions to the access arrangement for Western Power*, 2012 p. 328