Two questions posed by the AER

1. **Should the AER use a 10-year term for estimating the return on equity or a term that matches the length of the regulatory period in our 2022 rate of return instrument?**
   - The AER should set the term of the allowed return on equity equal to the term actually required by equity investors. This would seem to be 10 years, not 5 years.
   - Doing so would satisfy the NPV = 0 criterion.

2. **If we were to adopt a 5-year term what other adjustments would need to be made? For example, would we need to estimate beta, risk free rate or MRP on a different basis??**
   - If the AER adopts a 5-year term for the risk-free rate, the MRP should also be estimated using a 5-year term.
   - The CAPM is a single period model, and there is only one risk-free rate in the model.

$$E[r_e] = r_f + \beta(\underbrace{E[r_m] - r_f}_{\text{MRP}})$$

The NPV = 0 criterion is the correct framework for selecting the appropriate term for the return on equity allowance

- The quote opposite is the definition of the NPV = 0 criterion adopted by the AER.
- I agree with this definition.
- This definition says that the NPV = 0 condition will be satisfied when the regulator sets the allowed rate of return equal to the rate of return *investors require* in order to commit capital to the regulated business.

The zero NPV investment criterion has two important properties. First, a zero NPV investment means that the ex-ante expectation is that over the life of the investment the expected cash flow from the investment meets all the operating expenditure and corporate taxes, repays the capital invested and there is just enough cash flow left over to cover investors' required return on the capital invested. Second, by definition a zero NPV investment is expected to generate no economic rents. Thus, ex-ante no economic rents are expected to be extracted as a consequence of market power. The incentive for investment is just right, encouraging neither.

Partington, G., Satchell, S., *Report to the AER: Discussion of the allowed cost of debt*, 5 May 2016, p. 14.

Simplified 1-period version of Dr Lally's mathematical example

- Regulator sets revenue allowance (numerator) comprising a return on and of capital.
- No capex, opex or tax.
- Business exists for a single 1-year regulatory period, so RAB is recovered fully at the end of the period.
- Market value of this firm at the start of the regulatory period is given by the formula below:

$$PV = \frac{RAB \times Allowed\ rate\ of\ return + Regulatory\ Depreciation}{1 + Discount\ rate}$$

$$= \frac{RAB\ (1 + Allowed\ rate\ of\ return)}{1 + Discount\ rate}$$

Since $Regulatory\ Depreciation = RAB$ in the case of a single regulatory period that is 1-year long

- NPV = 0 criterion is satisfied when $PV = RAB$.
- **Key insight from Dr Lally's example:** This will occur if and only if $Allowed\ rate\ of\ return = Discount\ rate$.
- The key difference in view is over the appropriate term for the discount rate.

Two different perspectives

Dr Lally's view:

- The AER should determine what discount rate term investors *ought* to use to discount the firm's cash flows, and then set the term of the allowed return on equity equal to that.

- **Rationale:** Regulators need only care about cash flows over the forthcoming regulatory period.
- Regulated allowances are reset every 5 years, so a 5-year discount rate ought to be used value those cash flows.

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Alternative view:

- The AER should determine what discount rate term investors *actually* use, and then set the term of the allowed return on equity equal to that.
- Same approach the AER uses to set return on debt allowance.
- **Rationale:** Investors in the real world:
  - (like the AER) use the CAPM, which is a single period model.
  - Are concerned about cash flows to equity over the long-term (not just the next 5 years), so use a long-term (10-year) discount rate to value long-term expected cash flows.
- So AER should set a 10-year return on equity allowance.
- This will satisfy the NPV = 0 condition.

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- Regulated allowances are reset every 5 years, so a 5-year discount rate ought to be used value those cash flows.
- **Implications:** If investors require a 10-year return but the AER sets a 5-year allowance, then:
- The AER would be saying that investors are valuing their investments incorrectly.
- From investors' perspective, the AER would effectively be targeting an NPV < 0 rather than NPV = 0 outcome.

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Three questions that would be useful for the AER to consider when determining the appropriate term for the allowed return on equity

1. Should the AER choose a term equal to:
    a. the term equity investors *actually* require; or
    b. the term it considers investors *ought* to require?
2. If the AER considers it should set the term of the return on equity allowance equal to what investors ought to require, why does the AER do something different when selecting an appropriate term for the return on debt allowance?
3. How is it possible to satisfy the NPV = 0 condition (as defined by the AER) if the term of the return on equity allowance is set equal to something other than what investors actually require?