APGA Submission to the AER

Rate of return final omnibus paper and information paper

11/3/2022

Table of Contents

1. Executive summary 3
2. Term of the risk-free rate 6
3. Role of foreign equity betas 12
4. Other matters 17

Appendix A: Response to questions 21

1. Executive summary

We are in a key phase in the development of the 2022 Rate of Return Instrument (RORI) where the Australian Energy Regulator (AER) is seeking input from experts and stakeholders on key questions it has identified to date.

These questions are detailed in its Information Paper[1] released in December 2021 and were discussed in a series of 4 concurrent evidence sessions held in February 2022. The Information Paper also build on the AER's final omnibus paper the overall rate of return, equity and debt (Final Omnibus Paper). [2]

We were encouraged by the AER board members actively engaging with the experts during those sessions. Although we do not agree with everything that the experts said, there appeared to be some areas of consensus that we encourage the AER to reflect upon.

Our submission responds to the Information Paper and Final Omnibus Paper, while also focusing on points raised during the concurrent evidence sessions. We have included a report from Competition Economists Group (CEG) on equity beta that supports our submission. [3]

We also strongly support Energy Networks Australia's submissions on the Final Omnibus Paper and Information Paper.[4]

1.1. Why this review is important to us

The Final Omnibus Paper provides important insight into the AER's current thinking on how it intends to approach the 2022 RORI.

Building on that paper, the concurrent evidence sessions are an extremely important part of the AER's consultation process. Not only do they give the AER staff and board a valuable opportunity to engage with a wide range of issues that are top of mind, but they also allow stakeholders to observe how the AER is approaching its task – helping to improve transparency.

The key questions raised by the AER and considered by the experts are central to what the 2022 RORI will eventually look like. Answer these questions incorrectly, and there is a real risk that that instrument could undermine the long-term interests of gas consumers.

We have previously outlined that the 2022 RORI review is important because:

- it will play a critical role in shaping how regulated gas pipelines can support Australia's transition to decarbonised energy supply and deliver the outcomes that our customers want, and
- our gas pipelines are facing unprecedented times – we will play our part in supporting a secure, reliable, and affordable energy system in a low-carbon energy future.

The concurrent evidence sessions provide an important counterpoint to the temptation to simply retaining existing approaches and thinking. Our submission provides our perspectives on these

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1 AER, *Rate of Return: Information paper and call for submissions*, December 2021.
2 AER, *Rate of Return: Overall rate of return, equity and debt omnibus: Final working paper*, December 2021.
3 CEG, *Use of foreign asset beta comparators*, March 2022.
4 ENA, *Rate of Return Instrument Review: Response to AER's Final Omnibus and Information papers*, 11 March 2022.

questions and experts' responses to them. It also responds to the Final Omnibus Paper and Information Paper.

1.2. What our key points are

We agree with many of the points made by the experts, not of course that not all experts agreed on all points. Our submission, therefore, focuses on the points we want to draw out or respond to. Our hope is that this submission will provide useful input to the AER's draft 2022 RORI.

Our key points are:

- **Term of the risk-free rate** | The advice from Dr Lally to adopt a 5-year term is divorced from reality. The assumptions underpinning Dr Lally's advice clearly do not hold in the real world and are inconsistent with the AER's current framework and regulatory models.

  Investors *do* care about cash flows after 5-years; they do not assume them away simply because revenues are reset. In practice, investors seek to value those cash flows using longer term WACCs. They consider longer term cash flows when staggering their debt raising activities, currently assumed to involve 10-year debt.

  Thinking long-term is also consistent with the National Gas Objective, which focuses the application of regulation on the *long-term* interests of consumers (e.g., as to the reliability, sustainability, and affordability of reference services), which is generally understood to consider a horizon longer than 5 years. The AER often considers longer term cash flows when making its decisions, such as those about depreciation.

  Like almost all other regulators (except a few advised by Dr Lally), the AER should continue to recognise this by retaining a 10-year term for the risk-free rate.

- **Foreign equity betas** | The AER has not previously had regard to foreign equity betas when determining the equity beta parameter. We think the AER should revise its position, especially as the pool of available Australian comparable firms tends towards zero.

  Almost all experts agreed that foreign equity betas provide useful information. A key benefit is that including them can help improve the precision of beta estimates. Another benefit is that the larger sample size makes it easier to estimate a gas beta separately from an electricity beta – which is something that we have advocated for previously. [5]

  Importantly, having regard to foreign betas does not mean that the AER needs to determine a specific weight. Just as with other parameters, there are different ways that information can be factored into decisions. We suggest how this could be done by comparing confidence intervals in section 3.2, with support from the CEG report included as Attachment 1.

1.3. Our recommendations

Box 1 below includes recommendations on how the AER should determine the risk-free rate, equity beta, market risk premium, and return on debt parameters as part of the 2022 RORI process. We look forward to further engaging with the AER and other stakeholders about our recommendations.

[5] APGA, *APGA Submission to the AER: Rate of return omnibus papers*, 3 September 2021, pp.22–23.

Box 1: Key recommendations

1. Retain a 10-year term for the risk-free rate for equity.
2. Consider foreign equity betas when determining the equity beta parameter, perhaps by comparing the confidence interval around them to the confidence interval around domestic equity betas.
3. Combine different methods when estimating the market risk premium – such as average historical excess returns and dividend growth model estimates – rather than relying on information from historical averages alone.
4. Consider whether it is appropriate to adopt an approach for determining the MRP that updates to reflect the fact that it changes over time.
5. Retain the AER's current approach to determining the return on debt allowance, and do not adopt the weighted trailing average approach.

1.4. Structure of our submission

Our submission is structured as follows:

- Section 2 explains why the AER should retain the 10-year term for the risk-free rate
- Section 3 outlines why the AER should use foreign equity betas to inform the equity beta parameter
- Section 4 briefly provides our views on the market risk premium, return on debt, and cross checks for the rate of return, and
- Appendix A responds to the AER's key questions for stakeholders and experts.

2. Term of the risk-free rate

The term of the risk-free rate should remain at 10 years. In our view, it is inappropriate to adopt a 5 year term based on the advice from Dr Martin Lally.

We elaborate below.

2.1. What the law says

The National Gas Law (NGL) is clear that the 2022 Rate of Return Instrument should both promote the National Gas Objective (NGO) and seek to achieve the Revenue and Pricing Principles (RPPs). We do not repeat these here.

The AER considered these requirements when preparing its paper, *Assessing the long term interests of consumers*, earlier in the consultation process. [6] As well as seeking to operationalise the NGO, the paper explains how the AER interprets the RPPs.

One particularly relevant interpretation relates to the role of the NPV=0 condition when ensuring that service providers have a reasonable opportunity to recover their efficient costs:[7]

> *We consider that a reasonable opportunity to recover efficient costs of providing regulated services is achieved when the rate of return satisfies the 'NPV=0' condition. The NPV=0 condition means that the ex-ante expectation is that over the life of an 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. (emphasis added)*

And similarly: [8]

> *We have regard to the regulatory asset base when determining a rate of return through consideration of the NPV=0 condition. This means that the rate of return should contribute to an ex-ante expectation that over the life of an investment the expected cash flow from the investment repays the capital invested. (emphasis added)*

Quite clearly then, the AER has established that what matters when promoting the NGO and seeking to achieve the RRPs is setting an expectation as to the cash flows over the life of an investment. There is no obvious restriction within the NGL to only considering cash flows over the forthcoming regulatory period.

We agree with the AER's characterisation in this regard. A key question that follows, therefore, is whether a 5-year term or a 10-year term for the risk-free rate better contributes to an ex-ante expectation that over the life of an investment the expected cash flow from the investment repays the capital invested.

As discussed in section 2.3 below, the AER cannot promote the NGO by only considering cash flows over a 5-year regulatory period. There remains uncertainty over what subsequent cash

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6 AER, *Assessing the long term interests of consumers*, May 2021.
7 AER, *Assessing the long term interests of consumers*, May 2021, p.15.
8 AER, *Assessing the long term interests of consumers*, May 2021, p.16.

flows will be, which is why investors need to think about them. They cannot just assume that the AER will take that uncertainty away – and the AER cannot commit to do so in any event.

2.2. Differences of opinion

With this backdrop, the AER is faced with a difference of opinion as to what the NPV=0 condition (principle or criterion) means when adopting a term for the risk-free rate. A difference that was helpfully summarised by the Chair of the AER at the second concurrent evidence session: [9]

> *I think everybody agrees on the NPV neutrality principle and I think everybody agrees that that requires discounting over the term of the cash flows. I think there is then a difference of view as to what the term of the cash flows means.*
>
> *I think [Dr Martin Lally] is suggesting that the resetting nature of the regulatory periods means that NPV neutrality is achieved if you use a five-year rate because you reset every five years and therefore you will achieve NPV neutrality across the whole life.*
>
> *I think [Dinesh Kumareswaran] is arguing that investors have a multi-period view of cash flows, so a longer view of cash flows, and therefore a 10-year rate would be appropriate because it is a proxy for a multi-year, long term asset, and so therefore you are almost seeing a very long term if the cash flows.*

In essence, what Dr Lally is suggesting is that because revenues are reset every 5 years, only cash flows over the 5-year period are relevant when seeking to satisfy the NPV=0 condition. Cash flows that are expected to occur after this date (e.g., revenues and expenditure in subsequent regulatory periods) can be ignored or otherwise assumed to effectively be realised within the 5-year regulatory period. And given this, it is appropriate to set the term of the return on equity (and the risk-free rate) to match the length of the regulatory period (e.g., 5 years).

In contrast, Mr Kumareswaran is arguing that it is inappropriate to ignore cash flows that are expected to occur after the 5-year regulatory period or to otherwise assume that they are realised within that period. Investors consider cash flows after the end of the regulatory period when making investment decisions. The regulatory framework does not return all capital investment at the end of the regulatory period and investors recognise this.[10] In practice investors use a longer term for the risk-free rate (e.g., 10 years) when valuing cash flows over multiple periods, even if these are cash flows from regulated networks that have resetting revenue allowances.

2.3. So, where to from here

Clearly, the AER cannot accept both opinions – they are mutually exclusive after all. If it must choose one, then it must surely accept the opinion that best promotes the NGO and the RRPs.

In our view, the AER should be guided by the opinion that best reflects the real world and actual investor behaviour. Not a simplifying assumption in a stylised model that does not reflect how the regulatory framework applied by the AER operates in practice. To this end, we strongly support

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[9] Savage, *Concurrent evidence session 2, transcript*, 10 February 2022, pp.40–41.

[10] Moreover, the NGL and NGR do not provide any kind of guaranteed cost recovery. Uncertainty over the future of gas in Australia means that investors should – and do – think about cost recovery risk when making investment decisions.

the opinion of Mr Kumareswaran – which was also support by Dr Hird, Professor Partington, and Mr Hancock during the concurrent evidence session. We just do not see how the theory (and mathematical formulae) underpinning Dr Lally's opinion can possibly reflect the real world or best promote the NGO. That theory would only make sense if the regulatory framework were changed so that the assumptions in Dr Lally's model were true, but such changes are unlikely to promote the NGO in any event.[11]

In short, our reasons for this are:

- **There is no terminal cash flow at the end of the regulatory period** – investors do not get their capital investment back at the end of that period (i.e., a sixth cash flow), nor do they get a kind of promissory note that is akin to a cash flow at that time. Nor should regulators such as the AER assume otherwise. The RAB at the end of the period illustrated in the AER's Post-tax Revenue Model does not affect how regulated tariffs are set over that period.

  Although assuming that investors do get their capital investment back each period may make the math easier, it is clearly unrealistic. Unfortunately, there was limited discussion of this point at the concurrent evidence session; but given how important the assumed sixth cash flow is to the maths it is critical that the AER considers it further. *If* this assumption is found not to hold, then Dr Lally's recommendation for a 5-year term is not supported.

  In our view, the assumption just does not hold. But if it did hold, then the regulatory framework would be quite different to the one we operate under today. Giving effect to that assumption would be highly complex and require changes to the NGL and NGR. It need not involve cash transfers from gas consumers (or others); but it would need to involve giving investors something that is sufficiently concrete that it could either be re-invested or traded at the RAB value with certainty so that it was like a cash flow.

  Clearly, no such thing is given to investors at the end of each regulatory period at present. Nor is there any evidence that we are aware of that suggests investors act as if there is. And it just does not seem logical to assume that they do simply because Dr Lally reflected that in his model or the PTRM projects the RAB to the end of the regulatory period.

  Before the AER can accept such an assumption it needs to be confident that it accurately reflects the regulatory regime it wants to promote. Asking what the framework would need to look like for such an assumption to hold helps illustrate just how unrealistic it is.

- **There is no certainty that investors will get their capital investment back after the regulatory period –** this is especially true for regulated gas networks, which have fewer guarantees of asset recovery under the NGL and NGR than exist for regulated electricity networks under the NEL and NER. Putting such differences to one side for the moment, what really matters is that the NGL does not allow – or require – the AER to make a promise of future cost recovery that it cannot keep.

[11] For instance, setting regulated tariffs so that *all* costs were recovered every 5-year regulatory period would lead to significant increases from their current levels and mean that customers today were paying the full costs of investment that benefit customers in the future.

As the AER points out:[12]

> *Provided that customers can switch from gas with little or no transaction cost, end-user gas prices (which includes gas access prices amongst other things) would be constrained by customers' willingness to pay for gas and/or the prices offered by competitive gas substitutes such as electricity. If the constraints on gas prices become sufficiently strong such that gas becomes relatively uncompetitive, then with falling demand, regulated revenues for regulated businesses may not support full cost recovery of the RAB. In this scenario, the network business will under-recover the amounts it has invested over the life of its assets, including a normal rate of return on those capital investments.*

The quote makes clear that the AER is considering cash flows that regulated gas networks may or may not receive decades from now, and the risk associated with them (e.g., from competition). The AER is not constraining itself to just the 5-year regulatory period – a prudent thing to do in our view.

Given this, it appears inconsistent for the AER to:

- on the one hand, consider longer term cash flows when thinking about whether to accelerate depreciation to address asset stranding risk, while
- on the other hand, ignore such cash flows when setting the allowed rate of return by relying on a simplifying assumption that investors recover their full investment every regulatory period.

If anything, the AER's consideration of longer-term risks facing gas networks highlights just how unrealistic that assumption is.

- **Investors consider cash flows well beyond the 5-year regulatory period** – there is no evidence that says investors only care about cash flows until the end of the regulatory period or assume that cash flows after that period will be sufficient to cover their capital investment.

  In fact, the evidence is quite the opposite. Consistent with the AER's consideration of longer-term risks facing gas networks (noted above), investors in long-lived infrastructure most certainly do consider cash flows beyond the next regulatory period when making investment decisions. They need to be confident that those future cash flows will be sufficient to recover their initial investments. They also need to understand the risk that those cash flows will not be sufficient. Failing to do so could lead to significant financial losses.

  APGA members, for instance, typically consider investment horizons of around 20 years or longer. We are not aware of investors in long-lived regulated infrastructure that do not consider cash flows projected for years after the 5-year regulatory period.

- **A longer term is consistent with AER's PTRM** – that model allows for equity raising costs for projected equity raised to fund *new* (i.e., incremental) capital expenditure. It does not included equity raising to cover the entire equity portion of the regulatory asset base (RAB). If it were assumed that equity investors refinanced the that portion at the end of every regulatory period – as is implied by Dr Lally's assumption of RABs being returned at the end of

[12] AER, *Regulating Gas Pipelines Under Uncertainty: Information Paper*, November 2021, p.26.

every 5 years and then presumably re-invested for the next five years – then the PTRM would need to compensate for that equity raising. But it does not.

- **Regulation does not change investors' investment horizons** – economic regulation does not change the role of equity holders, nor is it intended to.

  If equity investors were only required to think about the 5-year regulatory period, then they could ignore impacts of investment and operational decisions after that period. As the discussions above and below highlight, even the AER considers longer-term price impacts and cash flows when deciding whether to accelerate depreciation when faced with heightened asset stranding risk. Similarly, incentive mechanisms such as the EBSS and CESS are premised on investors being concerned about the impact of carryovers on their cash flows after the 5-year regulatory period.

  In reality, equity holders remain holders of a claim to the residual profits through time, without a fixed maturity date on that claim. If this had changed, then models that assume this basic idea, like the CAPM, would no longer be valid.

  As the AER has explained, economic regulation should seek to mimic competitive markets.[13] It is not intended to change the role that equity plays when financing long-lived infrastructure depending on whether that infrastructure is regulated or not. A key feature of such regulation is to incentivise efficient investment in assets that are repaid over a long period of time. It is hard to see how that could occur if it were designed so that equity investors only needed to focus on the 5-year regulatory period.

- **Regulatory cash flows are used to discount cash flows that extend beyond the regulatory period** – a key finance principle is that cash flows should be discounted using a discount rate that appropriately reflects the timing of those cash flows. None of the experts at the second concurrent evidence session disagreed with this.

  We raise this because the allowed rate of return determined using the RORI is used for more than just determining the return on capital each year. It is also used to discount cash flows that extend well beyond the 5-year regulatory period.

  For instance,

  - the AER's *Connection charge guidelines for electricity retail customers* requires electricity distribution networks to project revenue for periods noticeably longer than 5 years when calculating capital contributions required by residential and business customers (up to 30 years in some cases) and then discount those revenues using the WACC set out in the most recent AER revenue determination[14]
  - in recent decisions,[15] the AER has made clear that electricity distribution networks should project incremental expenditure and demand over at least the next 10 years when estimating the long-run marginal cost used to set regulated tariffs – a process that requires

[13] AER, *Regulating gas pipelines under uncertainty*, November 2021, p.28.
[14] See AER, *Connection charge guidelines for electricity retail customers*, June 2012, clauses 5.3.2 and 5.3.3
[15] See, for instance, AER, *Draft decision: AusNet Services, CitiPower, Jemena, Powercor, and United Energy Distribution Determination 2021 to 2026: Attachment 19 – Tariff Structure Statement*, September 2020, p.41.

those projections to be discounted back to present value using a discount rate (commonly the allowed rate of return).

In our view, it is inconsistent for the AER to set an allowed rate of return based on a term for the risk-free rate of 5-years, but then require that rate to be used to discount cash flows that extend well beyond 5 years.

For these reasons, we encourage the AER to reflect upon the approaches adopted by almost all other regulators around the world that operate regimes that have resetting regulatory periods.

Except for two that have been advised by Dr Lally, all others adopt a term for the risk-free rate that seeks to approximate the longer-term horizons considered by investors in long-lived assets – typically with a 10-year term.[16] If the AER were to adopt a 5-year term, then it would effectively be saying that those regulators have got it wrong and that it got it wrong itself in past decisions where it adopt a 10-year term.[17] And we just do not think there is a case for saying that. There is no new evidence to suggest otherwise.

[16] See Brattle Group, *A Review of International Approaches to Regulated Rates of Return*, June 2020, p. 39.

[17] In the case of the New Zealand Commerce Commission, its use of a 5-year term is paired with an alternative cost of equity model – namely, the Brennan-Lally CAPM – and an adjustment to the 67th percentile to reflect the asymmetric risk of setting the allowed rate of return too low.

3. Role of foreign equity betas

In our view, there is a strong case for the AER to consider international data when estimating equity beta.

The challenges with the Australian data are well-documented (e.g., very few listed firms and the pool is getting smaller), so we will not elaborate on them further. [18] Rather, we reflect upon the valuable discussion held at the first concurrent evidence session about the role of foreign betas.

3.1. Expert views

For the most part, the experts at the session recognised that equity betas estimated for foreign regulated energy networks with similar characteristics to those regulated by the AER could provide valuable information to the AER when determining an equity beta parameter. We agree with this.

Various experts pointed out that:

- combining foreign betas with domestic betas could help improve statistical precision of the beta estimate, especially where there is limited Australian data available[19]
- there is no compelling evidence that says that Australian regulated energy networks have materially lower or higher risk than equivalent networks overseas[20] – and so the presumption should be that they have similar risks unless there was good reason to think otherwise
- if there were a concern about different countries having a different market structure, then foreign betas could be re-estimated against market indexes adjusted to have industry weights that reflect those in Australia[21]
- such a concern might equally apply to changes to the Australian market itself, with the industry weights in Australia today looking quite different from those a decade ago,[22] and
- if the AER were to consider foreign betas, then it would need to assess how much useful information they provided when exercising its judgement when reflecting them into its decision on equity beta.[23]

Promoted by a question from the Chair of the AER, the experts all appeared to agree that placing some weight on foreign betas did not mean that an international CAPM should be used – which helpfully puts that concern to rest. Dr Lally, for instance, explained:[24]

> *There's been a number of mentions in the AER's reports about the idea that if you use foreign beta estimates then necessarily you must be adopting an international CAPM. And I don't think that's right at all.*
>
> *Clearly, the Australian regulator is using a domestic CAPM. The betas are defined against the Australian market index. And if that set is sufficiently small, you might want to use*

[18] APGA, *APGA Submission to the AER: Rate of return omnibus papers*, 3 September 2021, p.31.
[19] Kumareswaran, *Concurrent evidence session 1, transcript*, 10 February 2022, p. 53.
[20] Hird, *Concurrent evidence session 1, transcript*, 10 February 2022, pp.61–63.
[21] Lally, *Concurrent evidence session 1, transcript*, 10 February 2022, pp.65–66.
[22] Kumareswaran, *Concurrent evidence session 1, transcript*, 10 February 2022, pp.49–50,53.
[23] Kumareswaran, *Concurrent evidence session 1, transcript*, 10 February 2022, pp.58–59.
[24] Lally, *Concurrent evidence session 1, transcript*, 10 February 2022, p.84.

foreign beta estimates, but those foreign beta estimates, for example from the United States, would be defined against the US index. In both cases, you're using beta estimates defined against their local market index. That is not an international CAPM. An international CAPM would involve, amongst other things, using betas defined against an international market index.

We agree with the experts that a domestic version of the CAPM (i.e., the Sharpe-Lintner CAPM) remains appropriate even if foreign betas estimates are used to inform the equity beta.

3.2. So, where to from here

To us there remains two key questions that the AER needs to consider when deciding what role, if any, foreign betas should play when determining the equity beta:

- **First**, how should foreign equity betas be estimated?
- **Second**, how should foreign equity betas be used, if at all, to inform the equity beta adopted in the 2022 RORI?

We address these questions below. In doing so, we make clear that it is certainly feasible for the AER to consider foreign betas and that it would be sensible to rely on them in some way.

They provide valuable information as to the systematic risk of regulated energy networks in Australia. The larger sample will also give the AER the data needed to estimate separate betas for electricity and gas assets, or at least test whether there is reason to do so.

Question one: how to estimate foreign betas?

Given the objective is to estimate the equity beta to apply to Australian regulated energy networks, we consider it important that:

- only equity betas of foreign energy networks that have sufficiently similar characteristics to those of Australian networks are considered, and
- if there is a reason to believe that there are material differences in the risks faced by international businesses compared to Australian counterparts then test this hypothesis, undertake analysis to understand these differences and if appropriate adjusting the weights placed on international sample.

We also agree with experts that it would be sensible to align the estimation periods used for betas to those used for domestic betas. This will help avoid introducing inconsistency into the estimation process.

At the concurrent evidence session on equity beta, Mr Kumareswaran outlined one way to identify foreign comparators: [25]

What I would suggest is that we start with a global industry classification, and start with a large universe of potential comparators. Then we get rid of the comparators that have poor data or have insufficient data to contribute to the estimation process.

[25] See, for instance: Kumareswaran, *Concurrent evidence session 1, transcript*, 10 February 2022, pp.67–68.

They may be very illiquid stocks that are not suitable to include in the estimation process, so take those out.

Then I would go through and… check for what we consider to be the important characteristics for a suitable comparator for an Australian business. So if the AER thinks that it is important that we only look at regulated businesses, well, go through the list of comparators and take out the ones that have a large share of unregulated activities.

And you would have to apply some threshold, some sort of filter, some sort of mechanistic rule to do that, and that will require some judgement. There is no magic answer to that. So set a threshold but be transparent about what the threshold is and then filter out the comparators. And then what you'll end up with is a set of comparators that are perhaps a few dozen. Then you go through those and you do a sense check for whether those look reasonable or not.

To help us navigate all this, we engaged CEG to estimate foreign equity betas for comparable energy networks. CEG's report is included as Attachment 1.

CEG found that:

- it is not possible to conclude, statistically, that the true (unobservable) mean asset beta for the foreign energy utilities considered by CEG is different from the true (unobservable) mean asset beta for regulated Australian energy utilities
- although there are reasons why the two mean betas could be meaningfully different, the data did not support them, and
- given this, it would be reasonable to consider both Australian and foreign beta estimates when determining the equity beta.

Based on this analysis – and a lack of evidence to the contrary that we are aware of – we strongly encourage the AER to incorporate foreign beta estimates into its decision making.

Question two: how to use foreign beta estimates?

The AER should consider foreign betas when determining the equity beta. There is clearly no harm in doing so even if it chooses to disregard or not use them directly when determining the equity beta in the end.

Reasons for considering foreign betas include:

- they can help triangulate an appropriate beta value given that limited Australian data is available
- doing so is consistent with regulatory practice elsewhere (e.g., the New Zealand Commerce Commission, and the Economic Regulatory Authority in WA)
- there are no obvious reasons for ignoring such information and leaving the issue for next RORI review, and
- they can allow the AER to estimate separate betas for regulated gas and electricity networks.

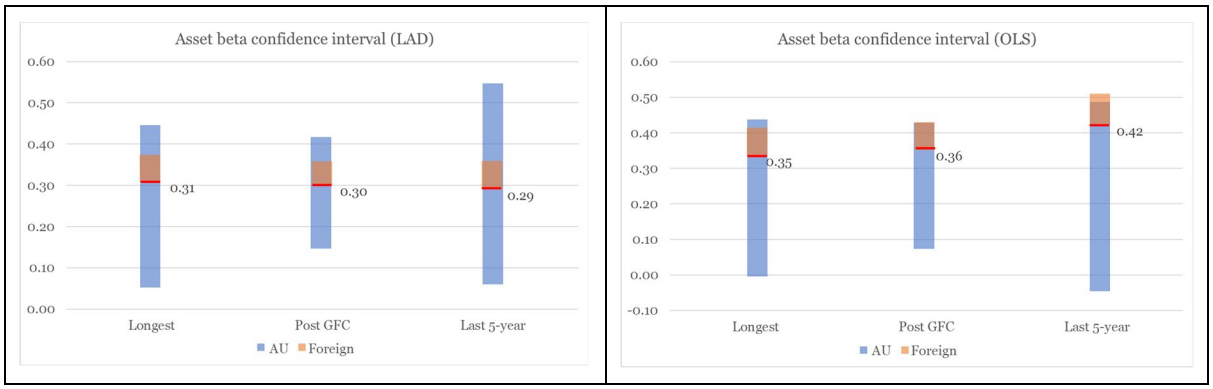
One concern raised in the concurrent evidence sessions was how to determine the 'weight' to apply to foreign betas. Selecting a specific weight would undoubtably involve judgement and may prove problematic.

In our view, it would be preferrable, therefore, to instead ask the question: how, if at all, should foreign equity betas be used when determining the equity beta for the 2022 RORI? Such a framing will allow the AER to think more broadly about alternative ways to incorporating foreign betas into its decision making.

A simple approach to considering foreign betas would be to line them up against equivalent domestic betas visually on a chart and use this to inform the AER's judgement. This is not unlike how the AER has approached the market risk premium in the past. Confidence intervals could be included to help show how much confidence can be placed in the various estimates.

By way of example, CEG prepared the following chart – which compares the foreign betas it has estimated to those for domestic betas. It shows that for the time periods and estimation methods considered, the confidence intervals overlap, with the intervals for the foreign firms significantly narrower than those for the Australian firms.

Figure 4.1: Overlapping confidence intervals for Australian and foreign asset betas



Source: CEG analysis. Replication of Figure 1-1.

The AER could use a chart like this to visually inform an equity beta that falls within the range where confidence intervals overlap. A value closer to the domestic equity beta implies less weight on foreign betas and vice versa.

Based on its analysis, CEG concluded that:[26]

> *The bottom end of all these ranges is very close to 0.30. In our view, this 0.30 estimate strikes a reasonable balance between the competing explanations for differences between Australian and foreign sample mean asset beta estimates.*

An asset beta of 0.30 translates to an equity beta of 0.67 or 0.75, with gearing of 55% and 60% respectively.[27]

[26] CEG, *Use of foreign asset beta comparators*, March 2022, p.4.
[27] Calculated as 0.67 = 0.3 x [1+55%/45%] and 0.75 = 0.3 x [1+60%/40%].

Importantly, the above analysis looks at *both* gas and electricity betas. If we instead looked at just gas beta, then CEG's earlier report suggests that an asset beta for gas transport businesses should fall in the range of 0.47 to 0.61.[28]

Based on this, we recommend that the AER adopt an equity beta of at least 0.7 for gas networks. This is consistent with our earlier submission.[29]

[28] CEG, *Asset beta for gas transport businesses*, September 2021, p.1.
[29] APGA, *APGA Submission to the AER: Rate of return omnibus papers*, 3 September 2021, p.22.

4. Other matters

As well as the term of the risk-free rate and the role of foreign equity betas, the Information Paper and the concurrent evidence sessions raised other important matters.

We cover two of them here:

- market risk premium, and
- cross checks.

4.1. Market risk premium

For many years the AER has maintained a relatively constant market risk premium. There have obviously been calls to change it and the information that the AER has traditionally relied upon.

The third concurrent evidence session contained highly insightful commentary. For instance, various experts noted that:

- there are good reasons why the market risk premium does – and is expected to – move over time, including that both the price and level of risk changes through time (e.g., because of changes in wealth, market volatility, etc)[30]
- there is some evidence that that the market risk premium is negatively correlated with the risk-free rate[31]
- there is also evidence that there have been structural breaks in historical excess return data (e.g., due to changes in tax systems) [32]
- estimators of the market risk premium are unreliable, making it hard to estimate:[33]
    - dividend growth models suffer from a range of issues, such as biased analyst forecasts of dividends and earnings (which are often used as inputs)
    - historical averages give a false degree of comfort as to the true market risk premium, especially given its wide confidence intervals and unrealistic variation among countries (e.g., 3% for Spain and 9.7% for Austria over the period back to 1900) [34]
    - surveys can provide valuable information, but they do suffer from issues (e.g., concern about the survey design, and the representativeness of survey respondents)[35]

[30] See, for instance, Partington, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.7–8; Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.17–18.
[31] See, Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, p.18; Kumareswaran, *Concurrent evidence session 3, transcript*, 17 February 2022, p.26.
[32] See, Partington, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.56–57.
[33] See, Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.17&20.
[34] See, Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.64–65.
[35] See, Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.106–107; Partington, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.107–108; Boyle, *Concurrent evidence session 3, transcript*, 17 February 2022, p.108; Kumareswaran, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.110–111.

- so if you want a good estimate of the market risk premium, you should combine different pieces of evidence – there is no good reason for relying only on historical averages. [36]

These are like points that APGA has made in the past.[37]

For this submission, we want to emphasise one key point: the AER should not rely on just historical averages when estimating the MRP. A point recognised by the experts during the concurrent evidence session, such as this quote from Dr Lally:[38]

> *What I think the AER should do is to take account of a wide range of different estimators, some of which are sensitive to short term changes in the market risk premium. So, for example, the DGM would be in principle, and surveys would tend to do that as well.*

Or this analogy raised later in the session: [39]

> *It reminds me of Churchill's famous comment about democracy, that it was the worst form of government ever invented apart from all the others that have been tried. So just because a method's awful doesn't mean you throw it away. You have to look at the alternatives.*

An analogy that is rather fitting.

Historical averages cannot be relied on alone

There appeared to be general consensus that the AER cannot simply place all weight on historical averages when determining the market risk premium.

As Dr Lally highlights in the quote below, it would be folly to simply assume that historical averages are a good predictor of the future or accurately reflect differences in the true (unobservable) market risk premium:[40]

> *If you go to the 15 West-European equity markets they would, we would expect, have pretty similar MRPs. And likely Australia would be somewhere around the same ballpark. But the historical average numbers going back to 1900 – so that's 120 years of data, not just 40 years of data – from Dimson, Marsh and Staunton, the results range from 3 per cent for Spain to 9.7 per cent for Austria. It's just not plausible that Austria has an MRP three times Spain. So what that data is showing you is that most likely Spain was way too low and most likely Austria's number of 9.7 was way too high.*

The experts also spent some time discussing differences between unconditional means – that is, historical averages that do not vary over time as conditions change – and conditional means – that do.

Although the AER should be seeking to estimate a conditional mean that reflects the expected conditions over the relevant regulatory period, the experts recognised the difficult with this in practice. Most accepted, therefore, that historical averages provide some useful information.

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[36] See, for instance, Kumareswaran, *Concurrent evidence session 3, transcript*, 17 February 2022, p.28; Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.65–66; and Boyle, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.72–73.

[37] APGA, *APGA Submission to the AER: Draft working papers on return on equity models and international approaches to the rate of return*, 9 October 2020, pp.9–13.

[38] Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, p.35.

[39] Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, pp.63–64.

[40] See, Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, p.65.

Combining estimates from more than one method will lead to a better estimate

Given limitations, all the experts recognise benefit in combining estimates from different methods. Dr Lally expressed his view as follows: [41]

> *All methods are imperfect. So choose a set of methods that you think are, for all their imperfections, worth putting weight on, and then equally weight those methods.*

Clearly other approaches could be used to combine the estimates apart from using equal weights, such as medians or weighted averages. The key point is that the AER should not rely on just one method – useful information should be combined in some way.

We support the ENA submission on how this could be done, and do not elaborate on it further.[42] When looking at the ENA's proposal, it is important to recognise – as the experts in the third concurrent evidence session did[43] – that the MRP changes through time. Fixing the MRP will, therefore, almost certainly be wrong. The ENA's proposed adjustment mechanism is one way of addressing this concern.

4.2. Cross checks

We previously outlined how the AER could use cross-checks to inform its approach to estimating the return on equity. [44] We are encouraged by the AER considering this further.

In the Final Omnibus Paper, the AER raised two implementation issues:

- **Overlap concern.** What if there is no overlap with the chosen cross checks?
- **Equal weight concern.** APGA's proposal assumes an equal role to each cross check. We have previously rejected similar methods (multi-model approach for return on equity) because the merit of each piece of evidence for estimating the rate of return differed.

We think both issues can be addressed relatively easily.

On the **first**, it seems unlikely that there would be no overlap between any cross checks given their wide confidence intervals. However, if only some of the cross checks overlap, then the AER could look at the area of maximum (rather than full) overlap.

Alternatively, if there were no or very limited overlap, then the AER may conclude that the cross-checks provided limited information in that instance and continue with its preferred estimation approaches and assumptions. Such an instance would effectively make it hard to fail the cross checks.

On the **second**, it is true that each cross check has an equal weight with each other, but this does not mean that they have equal weight with the primary estimate. The foundation model would still have primacy as the cross checks are only capable of choosing a point within the confidence interval associated with the application of that model.

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41 See, Lally, *Concurrent evidence session 3, transcript*, 17 February 2022, p.66.
42 ENA, *Rate of Return Instrument Review: Response to AER's Final Omnibus and Information papers*, 11 March 2022, chapter 8.
43 See the summary provided by the AER Chair: Savage, *Concurrent evidence session 3, transcript*, 17 February 2022, p.40.
44 APGA, *APGA Submission to the AER: Rate of return omnibus papers*, 3 September 2021, pp.14–17.

In this way, the cross checks are only a check on the judgement that the AER has used to choose a point within the range that its data and application of its foundation model suggest is reasonable.

In short, we still see an important role for cross-checks on the AER's decision making. We look forward to engaging with the AER further on this.

Appendix A: Response to questions

This appendix sets out our responses to the requests for feedback included in the Information Paper. Our responses are not exhaustive, and we expect to engage on many of these topics throughout the 2022 RORI review process.

Table A.1: 2022 RORI Information paper – key questions for stakeholders and experts

Issue	Question for stakeholders and experts	APGA response
Term of the rate of return	1. Should the same principle/s (such as NPV=0) be used to assess the term for the return on equity and the term for expected inflation? If so, how do the principles we applied in our 2020 Inflation Review translate to the term of the return on equity?	• The NPV=0 principle should help inform WACC as it did inflation. • However, the AER should use the correct principle, and not conflate one theory and its assumptions with the more general principle. • The ENA submission has more detail on this point.
	2. Should the term for equity match to the length of the regulatory period or the underlying asset lives?	• Our discussion in Section 2 indicates a long period, possibly the underlying asset lives. The term should not match the regulatory period.
	3. Should the EICSI (and resulting WATMI) be used to inform the term for the return on debt? And if so, how?	• The usefulness of either the EICSI or the WATMI is unclear at this stage. Their track record is just too short, with the sample underpinning them too small. • Given this, neither should be given a determinative role unless there is clear evidence that shows that they provide useful information. • As per the expert sessions, we think that change should only come with clear, lasting trends in the data. The AER should avoid adjusting the term in response to temporal changes to the observed term of debt unless there is clear evidence that this will persist.[45]
	4. If we do change the term for the return on debt how should this be implemented?	• Not applicable. There is no evidence the term should be changed

[45] This is particularly important given that the AER's assumed term of debt reflected in the 2022 RORI will potentially affect return on debt allowances out to 2031 (e.g., if reflected in 5-year revenue determines made in 2026).

Issue	Question for stakeholders and experts	APGA response
Market risk premium	5. Is the DGM likely to be a better estimator of a forward looking MRP than the historical excess returns approach and is it suited for application in our regulatory task?	• The DGM is well-suited to determining a forward-looking MRP estimate that is conditional on prevailing market conditions (e.g., as reflected in inputs such as prevailing dividend yields, bond yields, and dividend growth rates). • It is also consistent with the observations of experts that MRP moves over time.
	6. Is the use of both the historical excess returns and the DGM approaches likely to provide a better estimate of a forward looking MRP?	• Compared to just using the historical estimates, yes, absolutely. • This was a clear message from the expert sessions – and has been a consistent recommendation of AER expert reports from Brattle and CEPA. • Importantly, the DGM and historical excess returns measure different things. The DGM provides conditional value, while historical excess returns provide an unconditional mean. • Given this, there is no basis for limiting consideration of DGM estimates to the range obtained from historical excess returns. • This is even more so where that range reflects the difference between geometric and arithmetic means. As we and others have noted previously, the geometric mean is inconsistent with the way that the AER determines the allowed rate of return and should not be used to determine the MRP.
	7. Can the use of Energy Networks Australia's proposed calibrated DGM and /or multiple DGMs address the concerns we have had in the past about using DGMs to estimate the MRP? If so, what is an appropriate method to weight the outputs from the different models?	• Yes, it can. • See the ENA submission for details on how to use this model effectively. • We see little benefit in using many DGM models, but rather think that the AER should use the best one. At present, that appears to be the ENA model because it was developed specifically to address the AER concerns with other versions of the DGM.
	8. Is there a reliable way to estimate changes in the market risk premium through time?	• We support the ENA approach of adjusting the MRP for movements in the risk-free rate based on the weights of sources used to

Issue	Question for stakeholders and experts	APGA response
		inform the MRP and the bets available estimate of the relationship between the MRP and risk-free rate.
	9. Is the practice by some market practitioners of modifying the risk-free rate and using that estimate with a long term MRP suitable for our regulatory task?	• The core principle appears logical in that the type of risk–free rate should match the type of MRP. • A conditional or current risk-free rate should be paired with a conditional or current MRP. Similarly, a long run average risk-free rate should be paired with an historical average MRP. • Although the AER has previously ruled out using a long run risk-free rate, the principle should inform the type of MRP it uses.
	10. Which of the three proposed options listed in our final rate of return omnibus working paper would lead to the better estimate of the MRP for our regulatory task?	• The third option of using the DGM and HER together. The second option is logically flawed (see ENA response) and the first option misses out forward-looking information. Note that we also favour reflecting changes in the MRP as market conditions change following the ENA approach alluded to above.
Equity beta	11. Do you agree with our preliminary position to maintain our current approach to estimating the equity beta in the 2022 Instrument?	• No, the AER should use data from foreign firms as the Australian sample size is too small (see discussion in Section 3).
	12. What are the pros and cons of using beta estimates of the longest period available and 10-year period? How much weight should we place on the most recent 5-year data given market volatilities in recent periods?	• As per the expert sessions, the AER should use one time period, which gives the best statistical results. There is no logic to mixing and matching time periods. • Testing the optimal length using a structural break test would be ideal. But, absent that, the ENA proposal of using 10 years appears an appropriate compromise.
	13. Are there any transparent, robust, and practical approaches which would enable us to adjust data from international energy firms and domestic infrastructure firms to account for any differences between those firms and the benchmark efficient firm in Australia?	• Yes – see discussion in Section 3.
	14. Is there any empirical evidence on the extent to which the regulated electricity and gas networks may have materially different	• This is a problem the AER does not need to have. It only combines electricity and gas

Issue	Question for stakeholders and experts	APGA response
	systematic risks? Is there any robust evidence on the magnitude of stranding risks for the regulated gas networks, and in particular, the scope that part of stranding risk is systematic?	firms because the domestic sample set is too small. • If the AER uses international data, then it can simply estimate a gas beta using domestic and foreign gas comparators and an electricity beta using domestic and foreign electricity betas.
Use of the industry debt benchmark	15. Do you agree with our preliminary position to further consider whether to make an adjustment for the residual outperformance of the EICSI compared to our benchmarks?	• No – the expert sessions made it quite clear that the results are not robust enough to show a sustained, statistically significant under or over performance.
	16. Do the results of our analysis justify an adjustment to remove any residual outperformance that is material and persistent? And how do we define 'material and persistent'?	• No – see above.
	17. If we were to make an adjustment, how would we do this? For example, is a cap or other constraint applied on the debt risk premium or credit spread an appropriate way to remove the residual outperformance identified?	• Not applicable. There is no need for an adjustment. • The experts at the concurrent evidence session did not think the case for an adjustment had been made out.
	18. Should we further consider making an adjustment for the residual outperformance of the EICSI compared to our benchmarks. Or should we adjust the benchmark term directly? If we were to make an adjustment for term how would this best be done?	• No – there is insufficient evidence for any adjustment.
Weighted trailing average return on debt	19. What are the relative merits of Options 1–4?	• The nature of the problem that would be solved by a weighted trailing average has not been fully explored. Nor have the details of the different proposed weighted trailing average solutions. • Therefore, at this point in time, it is appropriate to maintain a simple trailing average approach.
	20. Is there a better option to address our concerns?	
	21. Is there a case for taking a more tailored approach to determining the return on debt for regulated firms with temporarily large capex (for example, such as in Options 3 and 4)?	
	22. How would such an approach work under the current law and given the mechanistic nature of the Rate of return instrument?	
	23. In particular, if we were to set up a threshold of capex 'lumpiness', what would such a threshold look like? Would setting up a threshold present some gaming opportunities	

Issue	Question for stakeholders and experts	APGA response
	for businesses with capex programs that take them close to this trigger?	
Cross checks of the rate of return	24. Do you agree with our preliminary positions in the final working paper?	• Cross checks provide a useful "sense-check" that should inform the AER's decision making. • However, it needs to be clear that the return on equity can fail cross checks and this can lead to change (and how). This is because any estimate of the return on equity involves data and judgement, and the checks should check judgement – which should be capable of change. • This is detailed in our earlier submission,[46] and we provide further updates in Section 4.2, which responds to the AER's questions about our approach.
	25. Do the cross checks that we have selected provide a balanced assessment that promote the NEO and NGO?	• Financeability and scenario testing are useful cross checks. • RAB multiples should and can play only a limited role (see below). • The AER has been overly hasty in rejecting other regulators' decisions. These should focus on the different judgements used by other regulators because all regulators must use different judgement and most have similar goals, and so differences in judgement are critical to understand. • Other regulatory results are used best when differences in data (for example, in risk-free rates) are normalised, and focus on differences in judgement.
	26. Which financeability tests should be undertaken to inform our decision on the rate of return?	• This is explored in the ENA submission. • The ENA proposes tests based on a benchmark efficient entity. Such tests can play a useful role in ensuring a minimum for required returns has been met.
	27. How can RAB multiples be appropriately adjusted to identify and disaggregate the impact of the rate of return from other contributing factors?	• These can only have a very limited useful role. • This is further explored in the ENA submission.

[46] APGA, *APGA Submission to the AER: Rate of return omnibus papers*, 3 September 2021, pp.14–17.

Issue	Question for stakeholders and experts	APGA response
	28. Should we prioritise information from transaction RAB multiples or trading multiples?	• No, it is unclear why transaction RAB multiples or trading multiples should be prioritised. The measures provide limited insight into the appropriate rate of return. • The only trading multiple now available is for APA. As such, there is likely to be a maximum of one transaction multiple during the forthcoming regulatory period and it is much more likely that there will be zero. Thus, the only thing that transaction multiples can inform, when properly interpreted (see ENA submission) is whether prior RORIs were reasonable or not.
	29. Which scenarios should we consider to provide a balanced assessment of possible outcomes from our rate of return decision?	• The AER should consider four or 5 scenarios – and preferable an even number so there is no "middle" to act as a default. • The scenarios should cover the widest range of possible scenarios for variables of interest. There should be no consideration of some "most likely" scenario. • Importantly, the AER should not just show the WACC in each scenario, but show how customer prices would change, given some notional benchmark PTRM model.
	30. The ENA has provided some additional detail on how scenario testing can be used to inform the rate of return such as prioritising certain scenario(s) and not needing to assign probabilities to scenarios. We appreciate your comments on the ENA's proposal.	• The ENA model is an excellent start to the process of testing scenarios, and the AER should make use of this resource. • This does not mean that it should necessarily use the ENA scenarios themselves. The AER should rather develop its own scenarios, as outlined above. • But it should use the ENA model or another tool that is equivalent to it.
Other issues	31. Should hybrid securities be included in our analysis of benchmark gearing?	• No. Hybrid securities have their own peculiarities that make them unsuitable for estimating gearing. • Limited issues and different characteristics when comparing hybrid securities undermines their usefulness.

Issue	Question for stakeholders and experts	APGA response
	32. Should we adjust benchmark gearing to more closely align with market data?	• Gearing should be assessed by reference to market values. There is no useful role for book values. •
	33. Should we continue to assume that non-resident investors assign no value to imputation credits?	• Yes. This is an accurate reflection of reality. • The available evidence from valuation reports and elsewhere (see ENA submission) suggest that even domestic investors place limited value on imputation credits
	34. Are there additional debt data providers that we should consider in setting the return on debt estimate?	• Not that we are aware of.
	35. Are there any improvements or changes that can be made to the application of the return on equity cross checks at the point of making our 2022 Instrument?	• Yes. As explained our earlier submission,[47] cross-checks can and should play an important role when determining the assumptions and approach to setting the return on equity. • Section 4.2 responds to implementation issues raised by the AER.

[47] APGA, *APGA Submission to the AER: Rate of return omnibus papers*, 3 September 2021, pp.14–17.