Rate of Return Instrument Review

Response to ERA's Draft Rate of Return Instrument

6 September 2022

energy Networks
Australia

Contents

1 Overview

This document sets out key submissions to the ERA's process for developing its 2022 *Rate of Return Instrument* (RoRI):

» **ENA strongly endorses the ERA's proposed approach to the term of the risk-free rate**. Our view is that the appropriate regulatory task, in line with the NPV=0 principle, is to set the allowed return equal to the market cost of capital. Since there is overwhelming evidence that the market approach is to use a 10-year risk-free rate, that is the approach that should be used when setting the allowed return. We agree with the ERA that NPV=0 requires that the allowed return must be set to match the competitive rate of return required by real-world investors.

» **ENA strongly endorses the ERA's approach to having real regard to international comparator firms when estimating beta**. Our view is that a domestic comparator set that consists of a single live firm is wholly inadequate for the purpose of estimating equity beta, such that it is imperative that real regard be given to international comparators.

» **We make a number of suggestions in relation to the estimation of the market risk premium** (MRP):

  – When compiling the historical excess returns (HER) estimate, the weight given to the geometric mean is a mathematical function of variables including the length of the historical period and the period over which returns are compounded.[1] Thus, the weight afforded to the geometric mean is not a matter of subjective judgment – it should be justified by reporting the mathematical basis of the weight to be adopted.

  – If the ERA concludes that there *is* serial correlation in excess returns, that should be properly reflected in its MRP allowance. For example, negative serial correlation would imply that the expected return, and therefore the regulatory allowance, is higher in regulatory periods immediately after a 'down' year and lower immediately after an 'up' year. It would be inconsistent to have regard to serial correlation in applying some weight to the geometric mean, but then to ignore that same serial correlation by adopting the same MRP irrespective of whether the market has recently risen or fallen.

  – We encourage the ERA to apply a test of unbiasedness to its preferred specification of the DGM. An unbiased DGM produces estimates that are equal to observed MRP outcomes on average. The ENA's calibrated DGM is unbiased by construction – it is designed to produce estimates that are equal to observed outcomes, on average.

  – We encourage the ERA to subject its own preferred specification of the DGM to the same scrutiny and analysis that it has applied to the ENA's calibrated DGM.

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[1] See, for example, the mathematical formulas set out in Indro, D. and W. Lee, 1997, Biases in arithmetic and geometric averages as estimates of long-run expected returns and risk premia, *Financial Management*, 26(4), 81-90, and Jacquier, E., A. Kane and A. Marcus, 2005, Optimal estimation of the risk premium for the long run and asset allocation: A case of compounded estimation risk, *Journal of Financial Econometrics*, 3(1), 37-55.

2   The term for the allowed return on equity

Key messages

Observed market practice

A 10-year risk-free rate is the approach that is:

- Adopted by every Australian regulator other than the AER's draft RoRI;

- Adopted by finance practitioners;

- Adopted in independent expert valuation reports, including recent reports for Australian regulated networks; and

- Recommended by leading textbooks.

The key question for every regulator

» The key question for every regulator is whether the allowed return should be set to match the return that real-world investors <u>actually do</u> require or according to what a regulator considers that investors <u>should</u> require, based on that regulator's interpretation of a theoretical mathematical analysis.

The proper implementation of NPV=0 is to match the allowed return to the market cost of capital

» NPV=0 requires that the allowed return must be set to match the return that real-world investors actually do require.

» This is because the *raison d'etre* for NPV=0 is to incentivise efficient investment, which promotes the NEO and NGO. Efficient investment is incentivised by setting the allowed return to just match the market cost of capital that is required *by the investors* who will be making that investment.

» Our view is that the analysis of the term of the risk-free rate can end at this point:

- The appropriate regulatory task is to set the allowed return equal to the return that real-world network investors actually require in the market; and

- There is extensive evidence that the standard market practice is to use a 10-year risk-free rate; so

- The regulatory allowance should be set to match the market practice of a 10-year risk-free rate.

Alternative regulatory approaches

» We strongly endorse the ERA's approach of setting the allowed return to match the market cost of capital. This is the only way to properly achieve NPV=0.

» By contrast, the AER's draft RoRI proposes that the allowed return on equity should *not* be set to match the market cost of capital, but that it should instead be set in accordance with some mathematical analysis.

» We have identified a number of fundamental problems with the AER's mathematical analysis:

– Setting the allowed return to reflect what the AER thinks investors should require, rather than what they do require, is the wrong task. The NPV=0 principle must be implemented from the perspective of the real-world network investors who actually make network investments.

– The report from Professor Schmalensee from MIT, on whose work the Lally and AER maths is based,[2][3] explains that he has "no idea" how the AER's analysis can be defended[4] and he describes Dr Lally's mathematical analysis as "an amazing bit of sleight of hand"[5] and "almost exactly backwards."[6] (See Attachment A) In the body of this section, we explain the problems with the AER's mathematical analysis that leads to these conclusions.

– The AER's approach to the return on debt is to set the regulatory allowance to match the real-world cost of the prudent and efficient debt management strategy that infrastructure investors adopt in practice. The AER has not clearly explained why the allowed return should be set to match the market cost of capital for debt but not for equity.

– The QTC analysis of floating rate bonds shows that real-world investors do indeed look beyond the next re-set, which is inconsistent with the AER's contention that it is only cash flows to the end of the current regulatory period that are relevant to investors.

2.1   The standard approach is to use a 10-year risk-free rate

Our September 2022 submission to the AER[7] documents that a 10-year risk-free rate is the approach that is:

» Adopted by every other Australian regulator;

» Adopted by finance practitioners;

» Adopted in independent expert valuation reports, including recent reports for Australian regulated networks; and

» Recommended by leading textbooks.

2.2   The key question for every regulator

Our September 2022 submission to the AER[8] identifies that the key question for every regulator to consider is whether NPV=0 should be achieved by:

» Setting the allowed return to match what real-world investors do require; or

» Setting the allowed return in accordance with some mathematical analysis that tells us what investors should require.

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[2] Lally, M., April 2021, *The appropriate term for the allowed cost of capital*, p. 7, emphasis added.
[3] Lally, M., April 2022, *The appropriate term for the allowed cost of equity*, p. 4, emphasis added.
[4] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, pp. 9-10.
[5] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 9.
[6] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 7.
[7] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 3.1.
[8] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 3.2.

Every Australian regulator must answer this question and every regulator, other than the AER's draft RoRI, has concluded that NPV=0 requires the allowed return to be set to match what real-world investors do require. Indeed, the whole point of NPV=0 is to incentivise efficient investment (which is in the long-run interests of consumers) from the perspective of the investors who are required to make that investment.

In its June 2022 draft RoRI decision, the ERA reaches the same conclusion:

> *The ERA considers that the term for equity depends on what rate a regulator is setting:*
>
> - *A regulatory rate – A rate that provides required returns according to regulatory settings and principles, and recognises resets for every regulatory period. Application of such a rate reflects one view of efficient costs under a resetting regulatory framework.*
>
> - *A competitive market rate – A rate that provides the expected returns of equity investors according to market conditions and practices for infrastructure assets, which is generally a long-term rate with a term exceeding the length of the regulatory period. Application of such a rate reflects one view that regulated assets have long lives and investors are concerned with cashflows over the life of the asset. This rate also uses the longest term generally available (10 years) for a proxy that investors would use to discount cashflows.* [9]

The ERA concludes that the correct approach is for the regulator to set the allowed return to match the return that real-world investors actually do require:

> *Having assessed both approaches, the ERA now considers that the weight of the evidence requires that it change its approach to match common market practice for long-lived assets and support a longer term market rate when setting the return on equity.*
>
> *The ERA considers that a 10-year term for equity reflects the following advantages:*
>
> - *It recognises that efficient and prudent infrastructure companies require a long-term rate to reflect the long-term cashflows of their networks.*
>
> - *It is consistent with standard practice adopted by market investors, valuation professionals, academics and practitioner textbooks.*
>
> - *Recognises the reality of regulatory cashflows and returns being realised by equity investors over the life of the asset.*
>
> - *Does not disadvantage regulated assets which have to compete for funding with unregulated infrastructure with similar risk. Regulated infrastructure investments must compete for equity capital with similar unregulated investments, for which the required return is typically based on a 10-year term for equity.*
>
> - *Meets the NPV=0 principle. If the goal is to match the regulatory allowance to the market cost of capital (i.e. the return that investors require) the term should be set*

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[9] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 590.

> *to match the practices of investors. A 10-year term for equity supports efficient financing costs over multiple regulatory periods.*
>
> - *The use of a 10-year term for equity is widely applied by Australian and international regulators. Regulators have generally accepted the argument that the term of equity should be a proxy for the life of the regulated asset. Given the long-term nature of infrastructure asset investment, regulators generally consider that a long-term rate better reflects the expectations of investors rather than a shorter term.*
>
> *Therefore, the ERA considers that investors consider long-term cashflows across multiple regulatory periods and expect to receive returns consistent with this perspective.*
>
> *The ERA considers that should investors expect a longer -term return on equity, a shorter-term will lead to negative NPV outcomes. Setting a short-term rate would not best meet the NPV=0 principle, nor would it support efficient signals for both network owners or consumers.* [10]

ENA agrees entirely with the ERA's assessment on this point.

We also note that other Australian regulators have also concluded that a 10-year risk-free rate should be adopted for the same reasons – the appropriate regulatory task is to set the allowed return to reflect the market cost of capital; the return that is required by real-world network investors.

For example, the QCA has recently stated that:

> *We consider it is reasonable to use long-term Australian Government bonds based on a 10-year term to maturity. We consider **this approach reflects the requirements of investors and lenders who, in relation to long-lived infrastructure assets, will deploy equity over the entire life of the asset, rather than over any given regulatory period**. While we prefer a long-term bond based on the life of the assets, 10 years is the longest-term bond available that is sufficiently liquid.* [11]

ESCoSA also sets the allowed return to match the return that real-world investors actually do require, in line with the approach of other regulators:

> *[T]he 10-year term to maturity [on CGS for the risk-free rate] approximates the long-lived nature of the infrastructure assets being regulated. It is also in line with the term used by regulators and investment practitioners, and accommodates for the relatively limited liquidity of CGS that are well beyond a 10-year term to maturity.* [12]

Moreover, the AER has also previously stated that it has set the allowed rate of return in accordance with the NPV=0 principle.[13] The AER has previously interpreted NPV=0 as requiring that the allowed return be set to match:

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[10] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraphs 598-601.

[11] QCA, November 2021, *Rate of return review: Final report*, p. 83, emphasis added.

[12] ESCOSA, *SA Water regulatory determination 2020 – Final determination: Statement of reasons*, June 2020, p.218.

[13] AER, December 2018, *Rate of Return Instrument Explanatory Statement*, p. 35, emphasis added.

> *rates in the market for capital finance* [14]

which the AER terms the:

> *'market rate of return'* [15]

and the:

> *'market cost of capital.'* [16]

This has led every previous iteration of the AER to adopt a 10-year risk-free rate in accordance with market practice. Thus, the AER has previously concluded that a 10-year risk-free rate best promotes the NEO and NGO.[17]

ENA's view is that the analysis of the term of the risk-free rate can end at this point:

» The appropriate regulatory task is to set the allowed return equal to the return that real-world network investors actually require in the market, so that NPV=0 is achieved; and

» There is extensive evidence that the standard market practice is to use a 10-year risk-free rate; so

» The regulatory allowance should be set to match the market practice of a 10-year risk-free rate.

We note that the ERA's proposed approach is consistent with the ENA recommendations above. However, we also note that the AER has recently proposed an alternative approach, based on some mathematical analysis. We explain the problems with the AER's proposed approach below.

2.3   The AER's mathematical analysis

The approach proposed in the AER's draft RoRI

We note that the AER has adopted a different approach to that which is proposed in the ERA's draft RoRI (and which is adopted by every other Australian regulator).

The AER's draft RoRI proposes that the allowed return on equity should not be set to match the market cost of capital, but that it should instead be set in accordance with some mathematical analysis that the AER says is grounded in the NPV=0 principle.

That is, the AER proposes to set the allowed return to reflect what it considers network investors should require (based on its mathematical analysis), rather than what real-world network investors actually do require (based on market evidence). In particular, the AER concludes that network investors would be over-compensated if the allowed return is based on a 10-year risk-free rate, such that the NPV=0 principle would be violated.

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[14] AER, December 2018, *Rate of Return Instrument, Final Decision, Explanatory Statement*, p. 33.

[15] AER, December 2018, *Rate of Return Instrument, Final Decision, Explanatory Statement*, p. 33.

[16] AER, December 2018, *Rate of Return Instrument, Final Decision, Explanatory Statement*, p. 33.

[17] AER, December 2018, *Rate of Return Instrument Explanatory Statement*, p. 126, emphasis added.

Problems with the AER's reasoning

Our September 2022 submission to the AER sets out a number of problems with the reasoning adopted in the AER's draft RoRI.[18] We summarise each of those reasons below and we provide relevant references to the more detailed explanations in our submission to the AER.

Problem 1: The AER has undertaken the wrong task

We agree entirely with the ERA's assessment of the appropriate regulatory task. The allowed return should be set to match the market cost of capital – to create just the right incentive for efficient investment, which is in the long-run interests of consumers.

Setting the allowed return to reflect what the AER thinks investors should require, rather than what they actually do require, is the wrong task.

The NPV=0 principle must be implemented from the perspective of the real-world network investors who actually make network investments. NPV=0 is achieved if those investors receive a return that is just equal to what they require in order to efficiently invest consistent with the NGO.

In this regard, the ERA, and all other Australian regulators, have undertaken the correct task and the AER's draft RoRI embarks on the wrong task. In the ERA's terminology, the appropriate regulatory task is to set the allowed return to match the "competitive rate" that is required by real-world market investors. It is inappropriate to set the allowed return to a "regulatory rate" that is based on theoretical or mathematical considerations, even if those considerations were not affected by errors.

Problem 2: The AER's maths is wrong

The AER's June 2022 *Explanatory Statement* contains two brief mathematical expositions – one developed by Dr Lally and one developed by AER staff. Each consists of a few lines of algebra.

ENA has consistently advised the AER that this algebra establishes nothing more than that the regulator's allowed return must match the return that investors require. Such a match is the only way of achieving NPV=0.

Our September 2022 submission to the AER[19] explains that we have commissioned a report from Professor Richard Schmalensee, a renowned regulatory economist from MIT whose work has been cited over 30,000 times (Attachment A). Dr Lally explains that his mathematical analysis is based on a 1989 paper by Professor Schmalensee[20] and that he has "*merely extended Schmalensee's analysis.*"[21]

The report from Professor Schmalensee explains the errors in the AER's interpretation of the mathematical analysis. Professor Schmalensee states that he has "*no idea*" how the AER's analysis can be defended[22] and he describes Dr Lally's mathematical analysis as "*an amazing bit of sleight of hand*"[23] and his characterisation of his own work as "*almost exactly backwards.*" [24]

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[18] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 3.

[19] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 3.10.

[20] Lally, M., April 2021, *The appropriate term for the allowed cost of capital*, p. 7, emphasis added.

[21] Lally, M., April 2022, *The appropriate term for the allowed cost of equity*, p. 4, emphasis added.

[22] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, pp. 9-10.

[23] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 9.

[24] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 7.

Specifically, Professor Schmalensee identifies two key problems with the AER's mathematical analysis:

» The AER sets out an equation that establishes that NPV=0 is achieved if the allowed return matches the return that investors require. There are two ways to achieve that equality:

— Assume that investors require (or should require) a return that is equal to whatever the AER allows; or

— For the regulator to set an allowed return equal to the return that real-world market investors actually do require.

Professor Schmalensee notes that the AER has adopted the first of these approaches for the return on equity, whereas it is the second approach that is appropriate and logical. He concludes that he "has no idea how this assumption can be defended." [25]

» The AER sets out another equation that purports to show that NPV=0 is violated if the allowed return does not match the term of the regulatory period. This analysis considers the case where the investors' required return changes from one regulatory period to the next. It updates the allowed return in the numerator of this equation, but does not update the discount rate in the denominator. Professor Schmalensee concludes that "the cost of capital as assessed in period 1 is assumed by the AER to discount cash flows during period 2 even though, by hypothesis, it has changed between the two periods. I have no idea how this assumption can be defended either."[26]

Professor Schmalensee goes on to explain that the appropriate task for a regulator is to set the allowed return equal to the market cost of capital, as the ERA and all other Australian regulators have done.

Problem 3: Inconsistency between the AER's approach to debt and equity

Our September 2022 submission to the AER documents that the AER's approach to the return on debt is to set the regulatory allowance to match the real-world cost of the prudent and efficient debt management strategy that infrastructure investors adopt in practice.[27] The AER has not clearly explained why:

» The allowed return should be set to match the market cost of capital for debt but not for equity; or why

» Setting the allowed return to match the market cost of capital for equity was consistent with NPV=0 and promotion of the NEO and NGO in previous AER decisions, but is now inconsistent with those things.

On this point, the ERA's Independent Panel raises an issue as to consistency in the implementation of the NPV=0 principle:

The latter point goes to one of the Panel's overarching concerns regarding consistency in implementation of the NPV=0 principle, that is whether it is prudent to apply unequal terms for different inputs into the rate of return determination.[28]

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[25] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 9.
[26] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, pp. 9-10.
[27] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 3.5.
[28] ERA Independent Panel Report, August 2022, Table 2, p. 34.

In our view, the consistency issue can be addressed very easily. NPV=0 is always achieved by setting the allowed return to match the return that investors require – that being the very definition of NPV=0. For equity, there is very strong evidence that real-world investors set their required return using a 10-year risk-free rate. For debt, the regulator should first determine what it considers to be the prudent and efficient debt management strategy, and then set the regulatory allowance accordingly. In both cases, the allowed return is set to match the return that real-world investors require. And that is precisely what the ERA has done in its draft RoRI.

For equity, the ERA has adopted a 10-year risk-free rate because there is strong evidence that that is what investors do. For debt, the ERA has concluded that the prudent and efficient debt management approach is to issue 10-year debt, fixing the base risk-free rate at the beginning of each regulatory period using swap contracts, and has set the regulatory allowance to reflect the cost of implementing that strategy.

Problem 4: Inconsistency with market evidence

Our September 2022 submission to the AER[29] also notes that the careful and detailed analysis from Queensland Treasury Corporation (QTC) shows that Dr Lally's 'resetting bond' interpretation of regulatory cash flows is incorrect. The whole basis for the 5-year approach is that investors do not consider cash flows after the regulatory allowance re-sets, similar to a 'resetting bond.' But QTC shows that the yields on long-term floating rate bonds are higher than on shorter-term floating rate bonds – proof that investors do indeed look beyond the next re-set.

2.4   The Independent Panel assessment

The ERA's Independent Panel supports the 10-year risk-free rate proposed in the draft RoRI:

> *The Panel considers that the ERA's proposal to use a ten-year term is appropriate and based on sound reasoning.[30]*

The Panel also notes that the case for a 5-year risk-free rate is based on the mathematical analysis prepared by Dr Lally and that several weaknesses have been identified in relation to that analysis. However, the Panel concludes that the mathematical basis for NPV=0 remains open to debate:

> *Dr Lally makes the case that a five-year term better achieves the NPV=0 principle. Several weaknesses of this logic, and Dr Lally's proof which seeks to support it, have been identified. In the absence of a stronger rebuttal of Dr Lally's proof, or a competing proof supporting the notion that a ten-year term can achieve NPV=0, the finding that 5-year terms better achieve NPV=0 also remains open to debate. [31]*

In our view, the "stronger rebuttal of Dr Lally's proof" that the Panel requested has now been provided. Dr Lally indicates that his "proof" is based on the framework developed by Schmalensee (1989). Professor Schmalensee has been engaged to review Dr Lally's "proof" and concluded that Dr Lally has got

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[29] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 3.12.
[30] ERA Independent Panel Report, August 2022, Table 2, p. 38.
[31] ERA Independent Panel Report, August 2022, Table 2, p. 38.

the maths "*almost exactly backwards*" [32] and that it is not so much a proof as "*an amazing bit of sleight of hand.*" [33] He concludes that "*Dr Lally is simply wrong.*" [34]

It is difficult to imagine a stronger rebuttal from a more qualified expert.

Moreover, there is a very simple proof of how NPV=0 can be achieved with a 10-year risk-free rate. Indeed, NPV=0 is achieved whenever the allowed return is set to be equal to the return that investors actually require. This is, in fact, the very definition of NPV=0. This, if investors use a 10-year risk-free rate when determining their required return (which they do), NPV=0 is achieved by doing the same thing when setting the allowed return.

Professor Schmalensee makes the same point in his report:

> *Dr. Lally (2021) cites Schmalensee (1989) for the proposition that the NPV=0 condition is satisfied only if the regulator sets allowed rates of return in one particular way. Dr. Lally is simply wrong. Schmalensee (1989) shows that, properly computed, NPV=0 holds however the allowed rates of return are determined. Economic efficiency of course, requires that the allowed rate of return is always commensurate with the return that investors require.* [35]

The ERA has reached the same conclusion:

> *The ERA considers that a 10-year term for equity reflects the following advantages:*
>
> - *Meets the NPV=0 principle. If the goal is to match the regulatory allowance to the market cost of capital (i.e. the return that investors require) the term should be set to match the practices of investors. A 10-year term for equity supports efficient financing costs over multiple regulatory periods.*
>
> *The ERA considers that should investors expect a longer -term return on equity, a shorter-term will lead to negative NPV outcomes. Setting a short-term rate would not best meet the NPV=0 principle, nor would it support efficient signals for both network owners or consumers.* [36]

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[32] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 7.

[33] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 9.

[34] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 11.

[35] Schmalensee, R., July 2022, *Statement of Richard Schmalensee PhD to the Australian Energy Regulator*, p. 11.

[36] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraphs 598-601.

3   Market risk premium

Key messages

Historical excess returns (HER) approach

» In our view, the historical excess returns (HER) approach should use the arithmetic mean only.

» When compiling the historical excess returns (HER) estimate, the weight given to the geometric mean is a mathematical function of variables including the length of the historical period and the period over which returns are compounded.[37] Thus, the weight afforded to the geometric mean is not a matter of subjective judgment – it should be justified by reporting the mathematical basis of the weight to be adopted.

» If the ERA concludes that there *is* some serial correlation (such that the geometric mean is afforded some weight), it must also have regard to that same serial correlation when setting the allowed MRP. For example, negative serial correlation would imply that the expected return, and therefore the regulatory allowance, is higher in regulatory periods immediately after a 'down' year and lower immediately after an 'up' year. That is, the forward-looking expected return is either a function of the recent historical return for both purposes, or for neither.

DGM approach

» Any DGM estimate must be unbiased:

  – In statistical terms, the *Law of Iterated Expectations* requires that the mean of the conditional estimates (i.e., the average DGM estimate) must equal the unconditional estimate (the HER estimate).

  – In practical terms, the ERA proposes that the unconditional HER estimate can be interpreted as a forward-looking MRP in the sense that investors might reasonably expect the long-run average past MRP to be an appropriate estimate of the long-run average future MRP.

  – If investors expect/require a future MRP that is (on average) equal to the HER estimate, the allowed MRP (on average) must also equal the HER estimate.

  – The calibrated DGM is unbiased by construction. If the ERA prefers a different specification of the DGM, the *Final Decision* should establish that the adopted specification is also unbiased.

» In our view, the ERA's criticisms of the calibrated DGM approach are unwarranted. We consider each of these criticisms in some detail and demonstrate that they are either over-stated or apply equally to the ERA's preferred specification.

» ENA makes two primary submissions in relation to DGM estimates of the MRP:

  – We encourage the ERA to subject its own preferred specification of the DGM to the same scrutiny and analysis as it has applied to the calibrated DGM; and

  – We encourage the ERA to apply a test of unbiasedness to its preferred specification of the DGM. An unbiased DGM produces estimates that are equal to observed MRP outcomes on average. The ENA's calibrated DGM is unbiased by construction – it is designed to produce estimates that are equal to observed outcomes, on average.

> **Annual updating**
> » Given that the ERA is proposing to apply material weight to the prevailing, forward-looking DGM, it would be logical to update the MRP estimate at the time of each determination, or at least annually.

3.1   Arithmetic vs. geometric means

Key recommendation

ENA's view is that the historical excess returns estimate should use the arithmetic mean only. Our March 2022 submission to the AER reproduces a number of leading textbook explanations of why the arithmetic mean should be used and the geometric mean should not.[38]

Common ground

There appears to be a consensus among stakeholders and experts that the geometric mean of historical excess returns would only receive weight to the extent that:

» There is serial correlation in historical excess returns; and

» A forecast over more than one future period is required.

The ERA's *Explanatory Statement* cites academic work that quantifies the relative weight that should be afforded to arithmetic vs. geometric means as a function of the two factors above.

The ERA's proposed weighting

The ERA has proposed a 60/40 weighting to be afforded to the arithmetic and geometric means, respectively.

It is unclear to the ENA how those weights were selected, so we encourage the ERA to provide more detail about the selection of those weights in its *Final Decision*.

When compiling the historical excess returns (HER) estimate, the weight given to the geometric mean is a mathematical function of variables including the length of the historical period and the period over which returns are compounded.[39] Thus, the weight afforded to the geometric mean is not a matter of subjective judgment – it should be justified by reporting the mathematical basis of the weight to be adopted.

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[37] See, for example, the mathematical formulas set out in Indro, D. and W. Lee, 1997, Biases in arithmetic and geometric averages as estimates of long-run expected returns and risk premia, *Financial Management*, 26(4), 81-90, and Jacquier, E., A. Kane and A. Marcus, 2005, Optimal estimation of the risk premium for the long run and asset allocation: A case of compounded estimation risk, *Journal of Financial Econometrics*, 3(1), 37-55.

[38] ENA, March 2022, *Rate of Return Instrument Review: Response to AER's Final Omnibus and Information papers*, pp. 71-75.

[39] See, for example, the mathematical formulas set out in Indro, D. and W. Lee, 1997, Biases in arithmetic and geometric averages as estimates of long-run expected returns and risk premia, *Financial Management*, 26(4), 81-90, and Jacquier, E., A. Kane and A. Marcus, 2005, Optimal estimation of the risk premium for the long run and asset allocation: A case of compounded estimation risk, *Journal of Financial Econometrics*, 3(1), 37-55.

The relevant evidence of serial correlation

The *Explanatory Statement* notes that the evidence of serial correlation in historical excess returns is mixed. For example, a report from CEG concludes that the evidence to support serial correlation is weak, indicating that the preponderance of weight should be placed on the arithmetic mean.[40]

By contrast, the 40% weight proposed by the *Explanatory Statement* would seem to imply very substantial serial correlation – well beyond that supported by any evidence.

ENA submits that the *Final Decision* should specify the degree of serial correlation that underpins the ERA's proposed weighting, and the evidence for that figure.

The implications of serial correlation for estimates of MRP

In our view, it would be inconsistent and illogical for the ERA to:

» Have regard to serial correlation when computing the historical excess returns estimate (That is, by applying some weight to the geometric mean); but

» Have no regard to that same serial correlation when setting the allowed return on equity. (That is, by using the HER estimate as the ERA does – not changing the estimate according to whether the excess return in the prior year was above or below average to properly reflect serial correlation. For example, negative serial correlation would imply that the expected return, and therefore the regulatory allowance, is higher in regulatory periods immediately after a 'down' year and lower immediately after an 'up' year).

That is, the forward-looking expected return is either a function of the recent historical return for both purposes, or for neither.

3.2 DGM estimates

DGM estimate must be unbiased to meet the NPV=0 criterion

In our view, the most important feature of any DGM estimate is that it must be unbiased.

In statistical terms, the *Law of Iterated Expectations* requires that the mean of the conditional estimates (i.e., the average DGM estimate) must equal the unconditional estimate (the HER estimate).

In practical terms, the ERA proposes that the unconditional HER estimate can be interpreted as a forward-looking MRP in the sense that investors might reasonably expect the long-run average past MRP to be an appropriate estimate of the long-run average future MRP.

If investors expect/require a future MRP that is (on average) equal to the HER estimate, the allowed MRP (on average) must also equal the HER estimate. That is, the allowed return must equal the required return if the NPV=0 condition is to be met.

Thus, the NPV=0 criterion is only met if the average DGM estimate is also equal to the HER estimate. Otherwise a bias is introduced. Consequently, it is vital that the long-run average DGM estimate must equal the HER estimate.

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[40] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 756.

The ENA's calibrated DGM is constructed to ensure that the average DGM estimate equals the HER estimate – that is the whole point of our calibrated DGM. But this is not the only way of ensuring that the DGM estimate is unbiased. The important point here is that whatever specification might be selected for the DGM, it must be unbiased in that the average DGM estimate equals the HER estimate.

Any DGM approach that does not have this property will introduce a bias into the allowed MRP such that the NPV=0 condition will be violated. For this reason, we encourage the ERA to subject its preferred DGM specification to this test of unbiasedness. In our view, the *Final Decision* should demonstrate that the ERA's DGM estimates are, on average, equal to the HER estimate.

For example, our September 2022 submission to the AER[41] demonstrates that the AER's proposed specification of the DGM fails this unbiasedness test.

The criticisms of the calibrated DGM are unwarranted

The ERA's *Explanatory Statement* sets out a number of reasons for its rejection of the ENA's calibrated DGM. In our view, these criticisms are largely unwarranted. In the remainder of this sub-section, we set out each of the ERA's criticisms and our responses to them.

Adjustment to GDP growth rate

The *Explanatory Statement* proposes that the perpetuity growth rate should be linked to the economy-wide growth rate with a downward adjustment based on empirical evidence that dividend growth is lower than GDP growth.[42]

In our view, there are two problems with this approach:

» When that approach is applied to the 1988-2021 period, it produces an average MRP estimate materially below the HER estimate for the same period. That is, the approach produces an estimate that is downwardly biased;[43] and

» The deduction of 1% is based on a dated academic paper, Bernstein and Arnott (2003).[44] That paper purports to show that the growth in dividends per share has fallen short of the growth in GDP, on average over a long historical period. However, there are a number of problems with that conclusion:

— Previous submissions to the Australian regulatory process have established that the conclusion that dividend growth has fallen short of GDP growth is true only for data from the earlier part of last century. If the ERA drops pre-1958 data, as it has done for the HER estimate, there is no empirical basis for the deduction from the GDP growth rate.

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[41] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 4.3.

[42] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 794.

[43] Specifically, the HER estimate is the unconditional mean (or long-run average) MRP. The DGM approach produces estimates of the conditional (or prevailing) MRP. Statistically, the average of the conditional means must equal the unconditional mean. But the ERA's DGM specification fails this requirement.

[44] Bernstein, W. and R. Arnott, 2003, "Earnings growth: the two percent dilution," *Financial Analysts Journal*, 47-55.

- From 1990 (when central banks began targeting inflation), the growth in dividends per share has been equal to (or slightly higher than) the growth in GDP.[45]

- No reason has been proposed for why investors would expect the relationship between growth in GDP and dividends per share to be materially different over the next 30 years than what has been observed over the last 30 years.

- The notion that dividend growth must be capped at GDP growth or else the corporate sector will account for a growing proportion of total economic activity over time has no material effect.[46] For example, dividends from listed companies are currently represent somewhat less than 5% of total GDP.[47] If GDP grows at 5% p.a. and dividends grow at 6% p.a., it will take 50 years before corporate dividends represent even 8% of total GDP. It is not at all unreasonable that the share of the economy that consists of listed companies might increase by 3% over the course of 50 years.

Variation in long-run growth rate

The *Explanatory Statement* notes that the calibrated DGM uses a constant long-run (perpetuity) growth rate and proposes that it is possible that investors might have been adopting different perpetuity growth assumptions at different points in time.[48]

We addressed this point in our March 2022 submission to the AER.[49] Our calibrated DGM specification requires an estimate of the annual growth rate of dividends that applies from year 11 and onwards in perpetuity. The specification adopted by the ERA and AER ties this long-run perpetual growth rate to the long-run growth rate in the broad economy (GDP growth). The regulators' approach has been to adopt the same long-run perpetual growth rate regardless of the current state of the economy from time to time. We consider this approach to be sensible and reasonable – the current state of the economy is unlikely to have any bearing on the long-run perpetuity estimate of growth. The fact that economic growth might have been low in the current quarter does not lead to a downward revision of average economic growth for the perpetual future starting in year 11. Rather, periods of high and low growth cycle through time but have little impact on the best estimate of very long-run growth in perpetuity.

This approach of adopting the same long-run growth rate independent of current economic conditions can also be observed in Commonwealth GDP forecasts. Whether the current quarter has strong growth, low growth, or negative growth has important implications for the growth forecast next quarter, but not for the forecast of long-run perpetual growth starting 10 years later. A good example of this is in the 2021 Intergenerational Report, which shows that the pandemic has a very significant impact on near term GDP growth forecasts, but not on forecasts beyond 10 years in the future, as illustrated in Figure 1 below.

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[45] See, for example, SFG, 2015, *Alternative versions of the dividend discount model and the implied cost of equity*, https://www.aer.gov.au/system/files/Essential%20Energy%20-%20Attachment%207.10_Alternative%20versions%20of%20the%20dividend%20discount%20model%20and%20the%20implied%20cost%20of%20equity%20-%202014.pdf and HoustonKemp, 2018, Forecasting dividend growth, https://www.aer.gov.au/system/files/Attachment%203%20-%20HoustonKemp%20-%20DGM%20Memorandum.pdf.
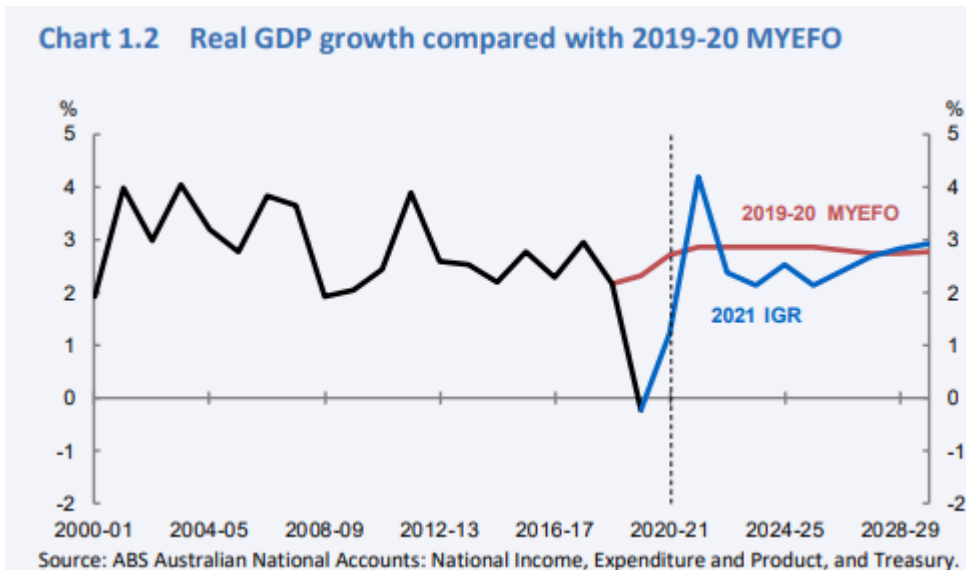[46] AER, June 2022, *Draft rate of return instrument: Explanatory statement*, p. 147.
[47] GDP of $2.2 trillion from ABS; ASX-listed dividends of $100 billion from Refinitiv.
[48] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 795.
[49] ENA, March 2022, *Rate of Return Instrument Review: Response to AER's Final Omnibus and Information papers*, pp. 80-81.

Figure 1: Short-term vs. long-term forecasts of GDP growth

Chart 1.2 Real GDP growth compared with 2019-20 MYEFO

Source: Commonwealth of Australia, June 2021, 2021 Intergenerational Report, Chart 1.2, p. 7.

ENA has adopted the same approach of a fixed long-run perpetual growth rate in our calibrated DGM model. We compute the unique constant long-run growth rate that ensures that the average DGM estimate equals the corresponding HER estimate. This is based on the notion that the best forecast of perpetual growth in the long-run future is relatively stable and does not vary markedly with the current market conditions.

Relevance of historical allowed returns

The *Explanatory Statement* notes that the calibrated DGM (like all DGMs) produces estimates that are sometimes above, and sometimes below, the long-run average. The current estimates are somewhat above the long-run average. This leads the ERA to express its concern about adopting this approach at a time that would result in higher allowances when it was not used in the past when it would have resulted in lower allowances. [50]

In our view, there are several problems with this line of reasoning. The first is that it implies that this DGM evidence could only ever be introduced at a time when the DGM estimate happened to be equal to the long-run average. Indeed, this point would seem to imply that no new evidence could ever be introduced other than at a time when it had an immaterial effect on the allowance that would otherwise be made.

Rather, the ERA should decide whether this DGM evidence is, or is not, relevant evidence that can usefully inform the estimate of the MRP. If it *is* relevant evidence, it should be considered. The current ERA's decision-making should not be affected by considerations of 'balancing up' allowances that might have been set in past ERA decisions.

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[50] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraphs 797-798.

We also note that, by construction and regardless of the starting point, the calibrated DGM will always produce the appropriate MRP on average – by construction. Thus, from any starting point, the average estimate from the calibrated MRP will equal the estimate from the HER approach.

Finally, we note that the ERA has given weight to its own DGM estimates for several years now. All that is proposed here is that the DGM specification be changed to one that is unbiased relative to the ERA's own HER estimates. That is, what is proposed is not the introduction of a new approach, but rather the removal of bias from an existing approach.

Implied growth rate

The *Explanatory Statement* expresses the ERA's concern that the implied long-term growth rate is above the ERA's estimate of long-run GDP growth.[51]

In our September 2022 submission to the AER,[52] we explain how the DGM can be set to reflect the prevailing long-run GDP growth forecast at the time of each estimate while also calibrating the estimates to ensure unbiasedness. In particular, we use the AER's 3-stage DGM specification to estimate the MRP every month from 1988 to the present. For each month, we adopt the estimate of long-term nominal GDP growth from the then prevailing Commonwealth Treasury *Intergenerational Report*. As a final step we adjust all estimates by the same amount to ensure that the mean DGP estimate equals the mean HER estimate over the same period.

That is, it is relatively straightforward to (a) align dividend growth to GDP growth; (b) allow for GDP growth expectations to vary over time; and (c) calibrate the DGM estimates to the HER estimates to ensure unbiasedness and symmetry.

Volatility of MRP estimates

The *Explanatory Statement* expresses the ERA's concern that the calibrated DGM produces a wide range of MRP estimates over the period from 1988.[53]

There are two key responses to this point. The first is that the alternative DGM specifications proposed by regulators produces a similarly wide range of MRP estimates. For example, our September 2022 submission to the AER demonstrates that the volatility in estimates from the AER's specification of the DGM is the same as that from the calibrated DGM.[54] The only difference is that the AER specification produces estimates that are below the observed outcomes, on average, whereas the calibrated DGM does not. We don't have access to an historical time series of ERA DGM estimates, but such estimates are likely to be very similar to those generated by the ERA given the similarity of the two specifications.

The second point is that what is most relevant to networks and consumers is not volatility in the MRP, but volatility in the allowed return on equity. Our September 2022 submission to the AER demonstrates that both versions of the DGM (AER and calibrated) produce an allowed return on equity that is much more

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[51] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 799.

[52] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 4.5.

[53] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 800.

[54] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 4.3.

stable than the HER approach.[55] Relative to the DGM estimates, the HER approach produces materially higher allowed returns during periods of high interest rates and materially lower allowed returns during periods of low interest rates. The greater stability in the DGM estimates results in the implied MRP changing in a way that absorbs/offsets some of the volatility in risk-free rates.

Sensitivity to historical period

The *Explanatory Statement* notes that the implied long-run growth rate depends upon the historical period to which the model is calibrated.[56] We see this as an important advantage of the calibrated DGM – it enables the calibration to be performed relative to the appropriate historical period. For example, the AER has concluded that the most relevant historical period is that starting in 1988. The AER's view is that investors observe the HER over the period from 1988 and expect to receive that return, on average, in the future. Thus, the DGM must be calibrated to produce that average return and not the average over some other period. In general, the DGM must be calibrated to whatever period (or periods) the regulator uses to produce its HER estimate(s). For example, the ERA has regard to four historical periods when analysing HER estimates, in which case each could be the subject of a corresponding DGM estimate.

It would be inconsistent to give weight to an HER estimate on the basis that it reflects observed MRP outcomes over a relevant historical period, but then to apply a DGM specification that produces systematically different MRP estimates, on average, over the same period.

We also note that the implied growth rates set out in Figure 3 in the *Explanatory Statement* are not relevant. One would only ever calibrate the DGM to an historical period that is used to produce an HER estimate – it would make no sense to calibrate the model to any other historical period. Since the period from 1988 is the shortest that could reasonably be used to generate an HER estimate, a consideration of growth rates calibrated to shorter periods is not relevant.

Moreover, as noted above, the HER approach produces estimates of the allowed return on equity that are more volatile than those produced by the DGM.

Transparency and replicability

The *Explanatory Statement* expresses some concern about the transparency and replicability of the calibrated DGM.[57] However, the only data that is required, beyond the Bloomberg data that is used for the AER and ERA specifications of the DGM, are dividend expectations from the 1988-2005 period. We have made that data available to both the AER and ERA for them to make available on the public record.

A balanced analysis

ENA make two primary submissions in relation to DGM estimates of the MRP:

» We encourage the ERA to subject its own preferred specification of the DGM to the same scrutiny and analysis as it has applied to the calibrated DGM; and

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[55] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 4.3.
[56] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 801.
[57] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraphs 802-804.

» We encourage the ERA to apply a test of unbiasedness to its preferred specification of the DGM. Does this specification produce estimates that are consistent with observed outcomes, on average, or is there some systematic bias?

4 Equity beta

Key messages

<u>International evidence has an important role to play</u>

» ENA strongly endorses the ERA's draft decision to have material regard to international evidence when estimating equity beta.

» We note that other Australian regulators also have material regard to international comparators.

» We also note that the ERA's Independent Panel has endorsed the approach of having regard to international comparators as being pragmatic and based on sound reasoning. [58]

» The fact that the domestic comparator set has only a single live member means that it cannot be used to the exclusion of all other relevant evidence. As the set of domestic comparators evaporates towards zero and becomes more and more out of date, the ERA must logically have less confidence in it.

» We agree with the Independent Panel's recommendation that the ERA continue to further develop its approach prior to the 2026 RoRI, by which time the de-listed domestic comparators will have become even more out-of-date and "*the ERA is likely to be forced to more fully incorporate international comparators.*"[59]

<u>The ERA's proposed equity beta is within the range adopted by comparable regulators, albeit at the lower end</u>

» Other comparable regulators of gas and electricity network businesses tend to adopt equity betas (re-levered to 55%) in the range of 0.7 to 0.8. (Other than the AER, which is a clear outlier).

» The ERA's proposed equity beta is at the lower end of that range due to the predominant weight applied to domestic comparators. The domestic comparators (1 live firm and 3 de-listed firms) receive approximately 14 times the weight of each international comparator.

4.1 The important role of international evidence

ENA submissions to the AER

ENA strongly endorses the ERA's draft decision to have material regard to international evidence when estimating equity beta. Our view aligns with the conclusions of the ERA's draft decision – a domestic comparator set consisting of a single live firm is wholly inadequate for the purpose of setting the equity beta for regulated network firms. We made this point in our March 2022 submission to the AER as follows:

> *The fact that the AER's comparator set will have only a single live member at the time of the 2022 RoRI is clearly one of the most significant issues to be addressed by the AER during the*

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[58] ERA Independent Panel Report, August 2022, pp. 43-44.
[59] ERA Independent Panel Report, August 2022, p. 44.

2022 review period. As the set of domestic comparators evaporates towards zero and becomes more and more out of date, it must logically receive less weight relative to the other evidence that is available.[60]

We remain of the view that there is no proper basis for maintaining the same weight on a comparator set that has now almost entirely evaporated and for which the dead firms have become even more out of date. In our view, the equity beta should be determined after having proper regard to all relevant evidence including a set of comparator firms that include more than one live firm, and the approaches and estimates adopted by comparable regulators performing the same task.

The ERA's proposed approach

In its December 2021 Discussion Paper, the ERA proposed a broadening of its comparator set to include international firms. The ERA had highlighted the obvious problems of having a comparator set with only a single live firm:

The ERA holds some concern with the use of such a small sample, including that:

- *A forward-looking equity beta requires live firms that can incorporate information into prices, where historical estimates cannot incorporate information due to being delisted.*

- *A sample that is largely reflective of one firm deviates from a benchmark approach to an actuals approach.*

- *A sample largely reflective of one firm also may be statistically unreliable. [61]*

The ERA also noted its concern that the one remaining comparator – APA Group – may be de-listed in the future leaving a null set. [62]

The ERA then identified a number of advantages of broadening its comparator set to include international firms:

The ERA considers that the international sample option has the following advantages:

- *An extended sample size could result in equity beta estimates that are more reliable and less sensitive to individual equity beta estimates of the Australian energy network sample.*

- *Using international samples could be a more robust approach over time, given the decreasing number of listed Australian energy networks.*

- *Other regulators have been using international comparators for their equity beta estimation, largely driven by the difficulty in finding a sufficient number of comparable businesses to estimate equity beta using a purely domestic sample. [63]*

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[60] ENA, March 2022, *Rate of return instrument review: Response to AER's Final Omnibus and Information Papers,* p. 95.
[61] ERA, December 2021, *2022 gas rate of return instrument review: Discussion Paper*, p. 72.
[62] ERA, December 2021, *2022 gas rate of return instrument review: Discussion Paper*, p. 73.
[63] ERA, December 2021, *2022 gas rate of return instrument review: Discussion Paper*, p. 75.

The ERA further noted that, where regulators have regard to international firms, they all estimate beta in the standard way via regression analysis against the local market index. None use an international CAPM. None make any adjustment for any perceived differences between markets.

The ERA then concluded that:

> *On balance, given the smaller Australian domestic sample, as a working view the ERA considers that examining both domestic and international listed energy networks may be useful when estimating the equity beta for Australian energy networks.*
>
> *The ERA proposes to use the following method:*
>
> - *To use a domestic CAPM model for each country to estimate the equity beta.*
>
> - *The use of an international CAPM would introduce complexity without substantial benefits as it relies on stronger assumptions than the domestic CAPM*
>
> - *To only include firms where the majority of the observations are present in the estimation window.*
>
> - *Consistent with the manner in which domestic equity beta estimates are unlevered and re-levered to the benchmark gearing level, international equity beta estimates will also undergo the same procedure.* [64]

The ERA has adopted its proposed approach in full in its draft Rate of Return Instrument, concluding that:

> *The ERA considers that market circumstances necessitate the examination of international energy networks in the benchmark sample.* [65]

Other regulators also have real regard to international evidence

We note that it is common for Australian regulators to have regard to international evidence, given the dearth of domestic comparators that are available. For example, the QCA has recently stated that:

> *We consider that continuing to use an international sample of firms (alongside domestic firms) is preferable, as relying purely on Australian firms to form comparator sets for the entities subject to our regulatory regime is problematic. We are not confident that there are a sufficient number of listed Australian firms for us to draw upon in order to determine reasonable betas. In particular, any industry sample would comprise a very small number of firms, which could result in beta estimates fluctuating by large margins from review to review. This does not provide regulatory predictability.*
>
> *An advantage of using a larger sample of firms is that the impact of any one seemingly anomalous beta estimate is not significant when taking an average or median beta from all the firms in the sample. This would not be the case when relying on a very small sample of firms. The potential loss of comparator firms from delisting as a result of mergers and acquisitions would only exacerbate the above issues.* [66]

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[64] ERA, December 2021, *2022 gas rate of return instrument review: Discussion Paper*, p. 76.

[65] Economic Regulation Authority of WA, June 2022, *Explanatory statement for the 2022 draft gas rate of return instrument*, paragraph 1044.

[66] QCA, December 2021, *Rate of return review: Final report*, pp.71-72.

The QCA has also concluded that, although there are some differences between international and domestic firms, the international firms are likely to be broadly similar in terms of their risk profile:

Despite these differences, we would expect many of the international energy firms to have broadly similar operational risks as a regulated energy business operating in Australia, such as Jemena or Ausgrid. [67]

And further that:

This arrangement is not dissimilar to regulated energy businesses in Australia that operate transmission and distribution infrastructure within specified areas as monopolists. [68]

The QCA has also observed that a number of international regulatory regimes share many of the same key features as the Australian framework:

Additionally, while there may be differences in regulatory frameworks across countries, we generally find that most international regulated energy businesses are regulated in such a manner that allows them to recover their efficient costs, including a return on capital commensurate with the risks they face. Many businesses are allowed to recover costs where they depart from forecast levels and some have 'decoupling' mechanisms that allow the business to recover revenue independent of volume—similar in effect to a revenue cap. [69]

IPART has also concluded that a broad sample of firms, including international firms, should be included in the comparator set:

We agree that a broad sample method is more objective, more likely to yield statistically reliable estimates, and more resistant to problems caused by companies dropping out of the sample over time (for example, because they become de-listed). [70]

4.2 The weight applied to international evidence

The ERA's *Explanatory Statement* summarises the various equity beta estimates in Table 14 and provides the individual firm estimates in Appendix 5.

The ERA considers 58 international comparators, 1 current domestic comparator, and 3 other domestic comparators that have been de-listed for some period.

The mean equity beta estimate for the international comparators is materially higher than the 0.7 figure adopted by the ERA. This implies that the domestic comparators have received materially more weight relative to the international comparators. In particular, the 0.7 figure implies that each of the domestic comparators (the 1 live and 3 previously listed firms) received 14 times the weight afforded to each of the international comparators.

In this regard, the ERA's Independent Panel shows[71] that beta estimates well above 0.7 would be obtained if:

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[67] QCA, December 2021, *Rate of return review: Final report*, p.72.
[68] QCA, December 2021, *Rate of return review: Final report*, p.72.
[69] QCA, December 2021, *Rate of return review: Final report*, pp.72-73.
[70] IPART, February 2018, *Review of our WACC method: Final report*, p.7.
[71] ERA Independent Panel Report, August 2022, Table 2, p. 44.

- » An equal-weighted average was taken over all comparator firms; or
- » A value-weighted average was taken over all comparator firms; or
- » An equal-weighted average was taken over the average beta estimate from each country in the comparator set.

We also show below that the ERA's adopted equity beta of 0.7 is at the lower end of the range adopted by other comparable regulators. This is due to the very high weight placed on the 4 domestic comparators – relative to that adopted by other regulators.

ENA recommends that this evidence from international comparator (live) firms, and from the approaches and estimates adopted by comparable regulators, would be given proportionately more weight in the 2026 RoRI as the de-listed domestic comparators become more out of date.

4.3   Beta estimates from comparable regulators

Our September 2022 submission to the AER sets out the equity beta estimates adopted by a number of regulators of gas and electricity network businesses.[72] We report those regulatory estimates, re-levered to 55%, in Table 1 below.

Table 1: International regulatory beta allowances: Electricity and gas networks

Regulator	Re-levered equity beta
FERC	0.75
NZCC	0.77-0.84
Ofgem	0.71-0.76
ERA of WA	0.70
AER (Draft RoRI)	0.53

Source: ERA, June 2022, Draft RoRI; AER, June 2022, Draft RoRI. Re-levered to 55% gearing.

Table 10 shows that the ERA's equity beta estimate of 0.7 is at the lower end of the range adopted by other comparable regulators. The AER's proposed equity beta estimate is a clear outlier, arising from the AER's analysis of a comparator set that consists of a single live firm and several firms that have not existed for periods ranging from less than a year to over a decade.

4.4   Independent Panel assessment and recommendations

The ERA's Independent Panel endorses the ERA's approach to beta, describing it as:

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[72] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 5.2.

A pragmatic approach, [73]

and concluding that:

The Panel considers that ERA's approach to incorporating international sample firms, as well as the country and entity selection, is appropriate and based on sound reasoning. [74]

The panel also noted the need to begin considering how international evidence might be more fully incorporated in the next RoRI, as the domestic data sinks further into history:

The Panel notes that ERA is likely to be forced to more fully incorporate international comparators at the next review. It would be advised to further use the period covered by the current Instrument to further develop its point of view on how to best incorporate international comparators, as there is significant judgement as to what nations and firms should be included and how they should be incorporated, even if there is in principle support for their use. [75]

The panel appointed by the AER to review its draft RoRI has made a number of recommendations in relation to the importance of having regard to a wider range of evidence – beyond the domestic comparator set (containing only a single live firm) that formed the basis of the AER's beta estimate.

For example, the Panel observes that the evidence that appears to receive the most weight in the AER's assessment of equity beta is the empirical estimates for Spark Infrastructure and AusNet Services. This is problematic because:

» There are only two firms on that list;

» Neither of those companies are currently listed;

» Both were affected by takeover speculation and sale processes over recent years; and

» Both had beta estimates that changed materially during the Covid period.

This led the Panel to recommend that the AER should consider a broader range of evidence. The Panel:

encourages the AER to consider a wide a (sic) group of proxies and alternative sources of insight. [76]

The Panel specifically noted the relevance of international evidence, and the importance of incorporating that evidence prior to the final determination:

it is critical that the AER complete, as soon as possible, an analysis of alternative methodologies for estimating beta including, but not limited, to use of international comparators…Ideally, that work would be undertaken prior to the final determination. [77]

The Panel also identified the relevance of other Australian infrastructure businesses:

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[73] ERA Independent Panel Report, August 2022, p. 43.

[74] ERA Independent Panel Report, August 2022, p. 43.

[75] ERA Independent Panel Report, August 2022, p. 44.

[76] AER Panel, August 2022, *Independent panel report: AER draft Rate of Return Instrument*, p. 39.

[77] AER Panel, August 2022, *Independent panel report: AER draft Rate of Return Instrument*, pp. 40-41.

In addition, to drawing insights from beta estimates for regulated international companies, the possibility of using risk and return data derived from Australian infrastructure stocks was also raised. The Panel believes that these opportunities should be given consideration. [78]

The Panel also noted the importance of having regard to the practice of other regulators, particularly those engaged in precisely the same task as the AER:

Given the data constraints that the AER faces, however, the Panel supports the use of a wide range of inputs including practices of other regulators. [79]

These recommendations are all consistent with the ERA's proposed approach of having real regard to international evidence.

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[78] AER Panel, August 2022, *Independent panel report: AER draft Rate of Return Instrument*, p. 40.
[79] AER Panel, August 2022, *Independent panel report: AER draft Rate of Return Instrument*, p. 41.

5 Scenario analysis

> **Key messages**
>
> » ENA endorses the Independent Panel recommendation that the ERA perform a scenario analysis to ensure that the proposed Instrument is robust to (i.e. provides sensible regulatory allowances) in a range of potential market conditions.

The ERA's Independent Panel recommends that the ERA perform a scenario analysis to be released with the final Instrument:

> *The final of the ERA's guiding principles is that it will select rate of return estimation methods sufficiently flexible as to allow for changing market conditions. Less clear is how the ERA has turned its mind to flexibility, and some additional consideration of this would be desirable. We note that the AER has also undertaken scenario analysis of a range of broad economic environments to aid their judgement whether the draft Instrument can operate under a range of economic conditions. Scenario analysis may be one method of the ERA achieving this additional consideration.*[80]

ENA supports this recommendation. The RoRI is in place for four years and decisions made under it are each in place for five years. Consequently, it is important that the RoRI is robust to the range of different market conditions that might be encountered while it is in force. This can be tested by considering a number of scenarios, informed by a range of historical market conditions.

Our September 2022 submission to the AER[81] sets out our views about how scenario analysis might be performed and interpreted. We consider that the ERA's decision-making process would benefit from a similar set of scenario analyses.

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[80] ERA Independent Panel Report, August 2022, p. 12/.
[81] ENA, September 2022, *Rate of Return Instrument Review: ENA response to AER's draft decision*, Section 7.4.