RATE OF RETURN GUIDELINE REVIEW – FACILITATION OF CONCURRENT EXPERT EVIDENCE

AUSTRALIAN ENERGY REGULATOR

21 APRIL 2018

EXPERT JOINT REPORT

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GLOSSARY

AER	Australian Energy Regulator
ARORO	Allowed Rate of Return Objective
BEE	Benchmark Efficient Entity
Beta (β)	Measure of risk in CAPM
β_e	Equity (or levered) beta
β_a	Asset (or unlevered) beta
CAPM	Capital Asset Pricing Model
CEES	Concurrent Expert Evidence Sessions
COAG	Council of Australian Governments
ERA	Economic Regulation Authority
EV	Enterprise Value, the sum of the market value of equity, debt and other liabilities
EV/RAB	Ratio of a market value of the enterprise to the Regulatory Asset Base.
Gamma (γ)	Value of imputation credits
GFC	Global Financial Crisis
HER	Historic Equity Market Return
LMR	Limited Merits Review
MRP	Equity Market Risk Premium
NEO	National Electricity Objective
NER	National Electricity Rules
NGO	National Gas Objective
NGR	National Gas Rules
NSP	Network Service Provider
PTRM	Post Tax Revenue Model, financial model used by the AER in setting price controls.
RAB	Regulatory Asset Base
ROE	Return on equity
ROR	Rate of return
RORG	Rate of Return Guideline
SL-CAPM	The Sharpe-Lintner Capital Asset Pricing Model
TACD	Trailing Average Cost of Debt
Theta (θ)	Measure of utilisation of tax credits
TMR	Total Market Return
WACC	Weighted Average Cost of Capital
'Wright' Approach	Estimation approach to the equity market risk premium on the assumption that market returns are constant in real or nominal terms, rather than assuming that market returns are at a premium to the risk-free rate.

EXECUTIVE SUMMARY

The Australian Energy Regulator (AER) is undertaking a review of its 2013 Rate of Return Guideline (RORG), which is to be completed by December 2018. One element of the Guideline review process is the provision of evidence by experts in economics and finance through concurrent expert evidence sessions (CEES), also known as "hot-tubbing". The aim of the CEES process was to identify areas of agreement between the experts, and where there was no agreement and the reasons for that. Evidence sessions took place in March and April 2018.

An independent facilitator supported the expert group and was asked to prepare this Joint Report. Expert views are set out in the main report: this Executive Summary is the independent facilitator's view of where there was broad agreement or disagreement among experts and issues to highlight.

The AER prepared discussion papers in advance of the evidence sessions which guided the issues and questions addressed by the experts.

Implications of the planned binding guideline

Council of Australian Governments (COAG) Energy Council published draft legislation on 2 March 2018 (COAG 2018) with the objective of creating a binding rate of return instrument. This law would require the AER and, for Western Australia, Economic Regulation Authority (ERA) to make a legal instrument "that specifies the rate of return on capital and the value of imputation credits or the value / methodology to calculate the rate / value". Provision has been made in the legislation that would allow the guideline currently being considered to become the first binding guideline.

The draft legislation would remove the Allowed Rate of Return Objective (ARORO) which requires the AER to set the Rate of Return to be "commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk". For consistency, most – but not all – experts considered that the AER should consider including the ARORO in the new guideline.

The draft law would provide that the AER would be able to reopen a binding guideline before expiry. Experts could envisage situations where this would be appropriate, and the exercise of judgement would be required, but were concerned that the hurdle for reopening should be high.

Experts considered that rate of return (ROR) parameters that were appropriate to be fixed included: gearing, beta, and gamma. The cost of debt, debt premium, and risk free rate for determining the cost of capital could be set through a discretion-free approach. Consideration was given to using a formula for the market risk premium (MRP), but on balance a fixed MRP was seen as appropriate in combination with scope to reopen the guideline.

ROR estimation – areas of agreement

The AER's approach to the cost of capital as set out in the 2013 RORG, uses a foundation model, the Sharpe-Lintner Capital Asset Pricing Model (SL-CAPM). Decisions by the AER on the appropriate rate of return are expressed in terms of the parameters of this model. Although the model has flaws, it is widely used and experts accept that the AER will use the model as its foundation model.

In the SL-CAPM, the expected return on an asset is determined by the asset's systematic risk, measured by the parameter beta, which reflects the extent to which returns on the asset are related to overall equity market

returns. The experts accept that the AER will measure the risk of a company using solely beta. However, although non-systematic risks do not affect the ROR calculation, the experts stated that such risks should be allowed for in the regulatory framework by using expected values in the setting of allowed revenues. There was concern that this is not explicit in the AER's current approach to setting price and revenue controls.

There was also agreement on the approaches that should be used to measure the parameters used in the CAPM:

- For **gearing**, experts concurred with approaches looking at Australian comparator companies. Most concurred that there is no new evidence to challenge the use of a 60% gearing ratio.
- For **equity beta,** experts considered that estimates of the parameter should use stock market data.
- For the **MRP**, backward looking estimates based on historic equity market returns and forward-looking estimates implied by Dividend Growth Models were considered the most appropriate evidence.

So, at a high level, there was broad agreement about the approach, and core concepts. In addition, the detailed views expressed in this document show that there is also a measure of agreement about some estimation issues.

ROR estimation – areas of difference

There were, however, a range of areas of disagreement on ROR estimation. These included:

- **Cost of debt.** Following the 2013 guideline, the AER calculates the cost of debt for companies based on the trailing average cost of debt for a Benchmark Efficient Entity (BEE). While most experts supported this approach and saw it as consistent with the ARORO and market funding practice. The dissenting view was that the cost of debt should be calculated at the time of a price control determination as, in this view, only then can consistency with the NEO/NGO be assured.
- **Releveraging beta.** It is standard practice in corporate finance to adjust measured equity beta to a standard gearing and most experts support the continued approach to this. However, there was an alternative view from some experts that the process of adjustment is not robust because of issues related to the appropriate releveraging formula, the consistency of corporate gearing policy, and measurement.
- **Comparator set for equity beta estimation**. With only three listed Australian comparator companies for equity beta estimation experts saw value in extending comparators to international energy network businesses and/or Australian related businesses. However, the experts noted a range of issues to be addressed in using such data and did not agree on whether the data are appropriate, or on how to use the data.
- **Use of the Total Market Return approach.** Under the 'Wright' approach, the mean real return to the market, rather than the MRP is presumed to remain constant through time. Experts had differing views on the validity and usefulness of this model either for estimation or for setting the ROR.
- **Use of Surveys.** There were strong views that parameter estimates drawn from surveys of investors were unreliable. There was also a view that with careful interpretation they could provide some information provided questions and the group surveyed are appropriate.

- **The weight that should be placed on Dividend Growth Models.** While the use of these models was accepted, experts had different views about the extent to which they could be relied on. Views on this were contingent on the confidence experts had about model assumptions, and in particular assumptions about long-term dividend growth.
- **The impact of data showing that low-beta stocks have delivered higher returns, on average, than the CAPM would predict.** Experts had different interpretations of this phenomenon and did not agree on whether the AER should adjust ROR estimates in response.

Alternative perspective

One expert had a perspective on ROR issues that was distinctive from the others. While recognising that the SL-CAPM had value as a foundation model and should be used by the AER, he had significant concerns about false precision in the application of the model. He noted that there were weaknesses in the estimation of CAPM parameters which means that it is difficult to be confident about the ROR estimates. He considered that there was value in examining business cash flows and using these to assess risk. He saw financial performance metrics as valuable in assessing whether rates of return are too high or too low. He had concerns about the circularity of parameter estimates, referring to published papers showing that beta statistics are related to the mean returns on assets, indicating that beta is an endogenous parameter. In addition, he considered that the decisions on ROR need to be considered in the overall context of the industry, including the prospective growth in RAB.

During the period of the CEES process, it was not possible to develop these ideas fully to explore how they might be incorporated in the ROR process. The AER may see merit in considering this perspective further.

Imputation tax credits

The experts also considered the way in which Australia's imputation tax system is reflected in the AER's regulatory framework under which the payment of corporation tax can deliver income tax benefits to eligible shareholders. The parameter gamma reflects the value of the imputation tax credits created, and is used to calculate the allowance for tax in the AER's building block approach.

The approach to gamma has been the subject of litigation. The Federal Court has ruled that the AER's approach, under which the "value" of credits can be measured by the reduction in tax payments accompanying the utilisation of credits rather than the market value of those credits is not incorrect. Experts did not consider the AER's approach to be correct. However, in the current circumstances it is accepted by most – but not all experts – that the AER's definition of the parameter gamma will be used.

At the CEES, experts agreed that the AER's approach is not consistent with any economic model. In particular, the AER uses a local (Australian) market CAPM, based on the assumption that capital markets are segmented and therefore excludes foreign investors. The AER's approach to estimating the utilisation of imputation credits, however, reflects the presence of foreign investors.

Gamma estimation is seen to be very problematic with the theoretical inconsistency combined with severe reservations about the quality of the data from the range of sources considered. In the circumstances an approach to measuring gamma was suggested at the CEES which would take account of data from the Australian Tax Office (ATO) to estimate the utilisation of credits, combined with estimates of distribution rates from companies that are considered to be sufficiently comparable. Agreement

could not be reached on a precise approach, but there is the prospect that further discussion may lead to agreement. It was agreed that it would be extremely helpful if measures could be taken to improve the expert group's confidence in the ATO's data.

Financial metrics

It has been suggested that a range of additional evidence could help the AER in its judgements on the appropriate ROR. In particular, experts were asked to consider:

- *ex post* analysis of financial performance by regulated companies (profitability analysis);
- *ex ante* analysis of financial ratios (financeability analysis); and
- the use of Enterprise Value / Regulatory Asset Base ratios.

Profitability analysis was considered to provide information on reasons for under- or over-performance by networks rather than evidence on the ROR expected by investors. Financeability analysis was considered to provide evidence on the timing of cash flow rather than required returns, although another view was that it could provide a consistency check on the regulatory parameters. EV/RAB ratios can in theory be used to assess differences between expected and required returns, but experts noted that considerable analysis to adjust for a myriad of reasons for observed ratios would be required. There was a difference of opinion on this. Some thought it would be difficult to incorporate objectively into a ROR process while others considered that the information would be helpful to the AER in deliberations on the ROR.

Process for determining ROR

The expert group did make a range of comments on the process of forming estimates including:

- **Sensitivity analysis**. One expert raised the issue of whether the parameter estimates have been chosen from the upper end of the plausible ranges because underestimation of the cost of capital was considered to be a more serious issue than overestimation. If so, he proposed that such adjustments be undertaken in a transparent manner and performed at the WACC level rather than for each parameter (as is the practice of the New Zealand Commerce Commission). An analysis of this type would also allow the impact of different assumptions on a range of parameters to be understood, and a wide range of experts considered sensitivity analysis to be of value.
- **Application of judgement**. There was concern by the experts about the way that judgement has been applied by the AER. In particular, concern was expressed that the AER may use one estimation method to determine a range of estimates for a parameter, and then another to choose from within that range. It was considered more appropriate for all the evidence on a parameter and the weight to apply to different evidence to be considered together,. However, there was a view that the AER should be able to disregard certain data, and weighting should not be formulaic as this could lead to gaming.
- **Consideration of what has changed**. It was considered helpful if changes to parameters were linked to changes in the evidence.
- **Overall tests of reasonableness**. There were strong views that reasonableness tests could not be objectively applied in conjunction with the foundation approach. However, there were also views against

this as some evidence may apply to the cost of capital rather than the parameters. These experts considered that evidence in relation to a parameter might be given little or no weight if its application would clearly result in a cost of capital that was unreasonable.

Work needed for the next review of the guideline

The time between the conclusions of the CEES process and the publication of the draft guideline is just over three months. Experts raised concerns that this timeframe meant it would not be possible for the AER to consider and make changes to reflect detailed concerns of experts and follow appropriate processes.

The experts suggested that the following issues should be considered by the AER before the start of the next formal review of the guideline:

- **Equity beta**. With only three listed Australian comparators, consideration should be given to the extension of the comparator set to international energy networks and related companies in Australia. This raises a range of theoretical and empirical issues. These relate to the index against which beta is measured, and the type of companies that can be considered sufficiently comparable.
- **Releverage approach**. One of the experts has substantial concerns about the approach to adjusting equity betas to make them comparable and suggested that this needs to be considered by the AER.
- **Time period over which to assess returns**. Conventionally return expectations are assessed over one year (in line with the AER's PTRM model for determining revenues). However, investors assess returns over different periods. This may or may not have implications for estimating their return expectations over one year.
- **Approach to capital gains tax**. The Officer model that is used by the AER is based on the assumption that capital gains are taxed at the same rate as interest and dividends. In practice this is not the case and this may have an impact on the specification of the CAPM used, and on ROR estimates.
- **Tax statistics**. The experts raised substantial concerns over the quality of the ATO data that have been used to estimate gamma and indicated that increasing confidence in this data would be of material benefit to the AER.
- **International CAPM**. The possibility of using estimates from an international CAPM as a supplement to estimates from a domestic CAPM was considered by one expert. The use of an international pricing model would raise numerous conceptual and measurement issues, but it is a reasonable question as to whether the use of such a model may help the AER reach a better estimate of the opportunity cost of capital for the companies it regulates.
- **Has the ARORO been met?** Experts considered whether there were ways to help the AER assess whether the ARORO had been met. Some suggestions were made by experts but further work is needed to address this issue.

1. INTRODUCTION

The Australian Energy Regulator (AER) is undertaking a review of its 2013 Rate of Return Guideline (RORG) to be completed by December 2018. One element of the review process is the provision of evidence by experts in economics and finance through concurrent expert evidence sessions (CEES), also known as "hot-tubbing". The AER scheduled two evidence sessions: Session 1 took place on 15 March 2018 and Session 2 on 5 April 2018. AER board members attended these sessions, and in addition selected stakeholders attended as observers. The experts were supported by an independent facilitator.

The purpose of the concurrent expert evidence sessions was to support the AER in the review process by defining the issues of agreement and disagreement on the issues considered by the sessions. The AER asked the independent facilitator to prepare this Joint Paper setting out the areas of agreement and disagreement and the reasons for those views. Transcripts of the two sessions have been published on the AER's website. Views on the ROR expressed in this document do not represent those of the independent facilitator or of CEPA.

1.1. Participants in the concurrent expert evidence sessions

Six stakeholders (AER, Energy Networks Association, Energy Consumers Australia, The Australian Pipeline & Gas Association, the Investor Group advising the AER on the RORG, and Major Energy Users Association) nominated experts to participate in the CEES process. Two of these proposed alternates for their nominee, resulting in a total of nine experts participating in the process. The participants were as follows.

Experts:

- Stephen Gray (SG)
- Jim Hancock (JH) (present for session 2 only)
- Greg Houston (GH) (session 1) / Simon Wheatley (SW) (session 2)
- David Johnstone (DJ)
- Martin Lally (ML) (gearing, imputation tax) / Graham Partington (GP) and Stephen Satchell (SS) (other issues)
- Ilan Sadeh (IS)

Facilitator:

- Jonathan Mirrlees-Black (JMB)

1.2. Duties of experts

The AER has asked that experts and the facilitator, comply with the requirements of *Expert evidence practice notes* provided by the Federal Court of Australia. The key requirement of relevance here is that experts are to act in the interest of the court rather than their sponsor. The experts and facilitator have agreed to this.

It is not a requirement that experts agree on all matters of the RORG. The objective is that "[t]he joint-report should be clear, plain and concise and should summarise the views of the experts on the identified issues, including a succinct explanation for any differences of opinion".[1]

[1] Federal Court of Australia. Expert evidence practice notes (GPN-EXPT).

1.3. Selection of issues

Selection of issues for the concurrent evidence session was undertaken by the AER. Some additional relevant issues were identified by experts and included within the agenda items.

The AER prepared papers on the key issues which are detailed on each of the sessions discussed below. The AER papers set out key issues and questions for the experts to address, and the background and context for each issue is not reproduced here. This paper should be read in conjunction with the AER's issues papers.

The experts considered other issues of relevance and either raised them as part of individual session, or at the end of the process. Additional issues not covered in the individual sessions are summarised in Section 8 of this report.

Session 1 issues

- The allowed rate of return, compensation for risk, and the use of data when judgment is required. This included assessment of the implications of the binding rate of return guideline.
- Gearing.
- Financial performance measures (RAB multiples, profitability analysis, and financeability analysis).

Session 2 issues

- Method of mechanistically applying return on equity.
- Estimating market risk premium.
- Estimating equity beta.
- Value of imputation credits.

1.4. The NEO, NGO, and the ARORO

The legal framework underpinning the ROR sets the framework that the AER is working within, and thus the issue that must be addressed by the experts. The key terms of the laws are the National Electricity Objective (NEO) and National Gas Objective (NGO), which are:

"…to promote efficient investment in and efficient operation and use of [natural gas services / electricity services] for the long term interests of consumers of [natural gas/ electricity] with respect to the price, quality, safety, reliability, and security of supply of [natural gas OR electricity]."

At present, the AER is required by law to set the ROR by the Allowed Rate of Return Objective (ARORO) which is:

The *allowed rate of return objective* is that the rate of return for a *[type of business] Service Provider* is to be commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk as that which applies to the *[type of business]* in respect of the provision of [*definition of regulated services*] (the *allowed rate of return objective*).[2,3,4]

The task of the experts is therefore specifically to address the issue of the RORG in the context of the current regulatory framework with changes that can reasonably be envisaged. This means that for the purposes of the experts' task, it can be taken as given that the interests of consumers are

[2] National Electricity Rules, section 6.5.2 (c).
[3] National Electricity Rules, section 6A.6.2 (c).
[4] National Gas Rules, section 87 (3).

best achieved when the allowed return is set at the opportunity cost of capital for investors, and the aim of the RORG is to support the AER in the estimation of this.

Experts did have views on the overall regulatory framework. Some of these are mentioned in the report where they are relevant to consideration of the RORG, but commentary on them has been excluded when they appear to be out of scope of the RORG and more relevant to broader regulatory issues.

1.5. Structure of this document

The objective of the process is to concisely summarise the areas of agreement and disagreement between experts. This is something of a challenge. The nine experts had to respond to 249 pages provided by the AER. These summarised a large set of decisions and evidence on the rate of return. The 2013 RORG and its appendices are also extensive, the literature on the cost of capital, both theory and empirical evidence, is vast, and many thousands of pages of evidence have been considered by the AER on this issue.

So while the experts and the facilitator have been guided by the objective of Federal Court expert guidelines to be concise, this document needs to reflect the evidence and deep analysis of the experts. Tables have been used extensively to help readers quickly identify issues and the positions of experts on those issues.

The document is structured as follows. Sections 2 to 7 each cover a set of issues covered by one of the discussion papers of the AER and discussed in one of the evidence sessions. For each of these sections, there are two sub-sections containing:

- A discussion of the context to the topic and key issues covered.
- A table which sets out key statements on topics together with reasons why experts agreed with a view or disagreed with a view. The level of support for statements of agreement is expressed in a comment on each statement. Those who explicitly said that they disagreed are identified in the right hand column by their initials, with reasons if given.

It should be noted that not all experts were present in all the sessions and may therefore not have given views on all issues. The issues on which experts contributed were set out above in Section 1.1. Graham Partington (GP) was unavailable due to overseas commitments from 14 April 2018 and provided limited input from that date, but did have sight of the final draft. David Johnstone provided input on drafts until 10 April 2018.

The report indicates when most experts held a particular view. However, assessing the views was not a quantitative voting exercise, but a way of identifying alternative views and the reasons for them. Dissenting views of any expert were considered to be of value and may inform the views of the AER.

Section 8 provides a list of additional issues that the experts considered should be addressed by the AER as part of the RORG process. It is recognised that the timetable for taking account of experts' views on the RORG is somewhat compressed. Section 9 sets out thoughts on work that the experts suggest that the AER should consider undertaking in advance of the next review of the guideline.

During the CEES process, some experts submitted additional evidence for consideration at the sessions. This material was included in pre-session papers for discussion which were published by the AER.

2. ALLOWED RATE OF RETURN, COMPENSATION FOR RISK, AND USE OF DATA WHEN JUDGEMENT IS REQUIRED

2.1. Context

The discussion of this section of the expert session was informed by the AER paper '*The allowed rate of return, compensation for risk and the use of data when judgement is required'* (AER 2018a). The summary of expert views represented in this paper needs to be read in the context of the AER's discussion paper.

In addition, experts considered the intention of COAG for the RORG to become binding to be important and that they should consider the implications of this.

Experts also had observations on the process of the review of the RORG review process, principles to be applied to the review and the CEES process itself. These have been included in this initial section.

2.1.1. The planned binding RORG Guideline

COAG Energy Council published draft legislation on 2 March 2018 (COAG 2018) with the objective of creating a binding rate of return instrument. This law would require the AER and, for Western Australia, Economic Regulation Authority (ERA) to make an instrument "that specifies the rate of return on capital and the value of imputation credits or the value / methodology to calculate the rate / value".[5]

As part of the process of finalising the instrument, the AER would be required to follow a consultation process. It would be a requirement under this legislation to "seek concurrent expert opinions or evidence about the proposed instrument".

Under the proposed transitional arrangements set out in the draft legislation, it is envisaged that the non-binding guideline which is the subject of the current review process would be used as the first binding instrument.

The non-binding expert sessions have therefore taken into consideration that the outcome of the review process may be a binding instrument determining the rate of return or its method of calculation.

Under the binding instrument, the AER would not be able to exercise discretion in the way it calculates the rate of return for individual price / revenue control determinations. However, the AER could exercise discretion during the development of the guideline, but would not be able to exercise discretion in the way it applies the guideline to individual determinations. The interpretation of this is that the is required either (a) to fix parameters as part of the guideline or (b) to provide a way for a parameter to be computed mechanistically and objectively, so that it is as commensurate as possible with the market conditions at the time.

These parameter estimates or mechanistic formulae would be determined as part of the guideline process and fixed for the four-year period until the instrument is reviewed. Given removal of LMR, removal of discretion for the AER in application of the guideline seen as important by experts.

In addition to the implications for parameter estimates, experts considered whether other changes to the guideline might be necessary if it were to

[5] COAG (2018a).

become binding. In particular, the ARORO is currently included in NER and NGR legislation but this would apparently be struck out if the current draft of the binding RORG legislation were to be enacted. Consideration was also given to whether, the conditions under which the guideline could be reopened, and by whom.

2.1.2. The overall ROR framework

AER has indicated that while it is open to change, it is intended that the current review of the RORG would be incremental. In this context, experts considered whether the underlying principles, including the use of the "foundation" Sharpe-Lintner CAPM supplemented by the use of other models remains appropriate and other related issues.

2.1.3. Criteria for the use of judgement

Application of judgement is seen by the AER as a necessary part of the process of setting the ROR, and experts concurred with this. The AER believes decisions are more likely to be consistent with the NEO and NGO when based on estimation methods, financial models, market data and other evidence that are:

- Reflective of economic and finance principles and market information.
- Fit for purpose, with regard to limitations of purpose, and preference for simple over complex.
- Implemented in accordance with good practice.
- Models of returns on equity and debt [are] robust, [and] not arbitrary.
- Market and other data used is credible and verifiable, comparable and timely.
- Sufficiently flexible to allow changing market conditions and new information to be reflected in regulatory outcomes.

Experts considered these criteria, and made other comments on the use of evidence which are included below.

2.1.4. Compensation for risk

Appropriate compensation for risk is an integral part of assessing the appropriate rate of return. The AER has considered systematic risk, defined in finance theory as the covariance of returns against a stock market index divided by the variance of returns of a market index), as the appropriate measure of risk to reflect in the allowed ROR. This is considered in the discussion paper, and this and associated questions were considered by the experts in this session. More detailed issues related to risk and estimation of related parameters were considered in the session on Equity beta.

2.2. Summary of expert views

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
2.01	**Principles to be applied to the review process** In the regulatory setting, there is a benefit to all stakeholders from stability and predictability. Consequently, a high threshold should be applied to any proposed change of estimation approach or fixed parameter estimate. Such a threshold should be applied consistently and symmetrically throughout the review.	Reasons most experts agreed: • There can be benefits to both consumers and investors if the regulator acts in a predictable and transparent manner. • The AER should have a high regard for certainty and stability - all stakeholders benefit as it keeps the cost of capital low and incentivises efficient and sustainable investment; and innovation. • Uncertainty/instability in markets should be seen as a real cost which adds to long-term costs of customers for the above reasons. • There should therefore be a high bar to change – not just prevailing theory of the day, nor objective approach combined with subjective factors. • This principle must be applied symmetrically and consistently to all parameters.	• GP. Certainty and stability imply a reduction in the risk of investment and greater stability of cash flow. This in turn implies a wealth gain for investors. This is not a free lunch, someone has to pay. The question is how much wealth consumers want to surrender for stability. • JH. While stability important, and move to binding guideline likely to reduce risk, reduced exposure to risk appears to benefit investors rather than consumers Need to consider how this risk reduction can benefit consumers. What adjustments to these parameters do we make to make allowance for reduced investor risks?
2.02	The Guideline should be free from political influence.		
2.03	The Guideline should set the allowed return on equity equal to the best estimate of the required return on equity.		
	The binding RORG	The experts' discussion of the matters set out below is predicated on the currently proposed legislative amendments in relation to future rate of return guidelines being put into effect.	
2.04	**ARORO** As the ARORO is consistent with the NEO/NGO, it would be helpful for the	Reasons why most experts agreed: • The NER and NGR include an Allowed Rate of Return objective. The draft legislation (COAG 2018 a) to	• GP considers that a principles based regulation is better than a rules

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
2.05	Binding RORG to confirm that the ARORO remains the working objective of the guideline. If the AER considers that the ARORO is not consistent with the NEO/NGO reasons for departures should be explained.	implement a binding RORG proposes to remove the ARORO. • Experts are not lawyers, but view was that the ROR objective can be derived directly from the NEO and NGO. • It would be useful for the new guideline to introduce the wording of the ARORO to make it clear that this is how the AER is interpreting it. • Would also be useful for the AER to transfer other 'guidance' from the Rules (which may now be redundant) to the guideline. For example, an indication that the AER will seek to estimate the required return on equity that is commensurate with the prevailing conditions in the market. • It would ensure continuity with the existing guideline process and benefit from the advantages of that. • It is important that the AER clearly explains the reasons for any deviations from the current rules.	based regulation. Including the ARORO would be too prescriptive. • DJ does not consider that this needs to be by reference to a benchmark entity. There is no requirement to specify a benchmark entity to inform the choice of values by using estimates derived from statistical analysis of market data. • DJ expressed concern that no effort was expended in determining that the current comparator firms were efficient in an engineering sense. An inefficient firm has higher opportunity to gain from efficiency improvement, which in turn appears in the valuation of incentives. It would be an error to then use estimates based on these returns to determine the WACC. It would perpetuate a reward for inefficiency.
2.06	**Reopening of Binding RORG** Under some foreseeable circumstances, it would be appropriate for a Binding RORG to be reviewed and replaced prior to the scheduled date ('reopened'). Such circumstances may reflect either	Reasons why most experts agreed: • Experts were supportive of reopening if there were a material change in market conditions. (GFC given as example). This would manage the risk of fixing parameters in the event of unexpected financial market developments.	• IS is concerned about the creation of routes for the use of discretion and considered that the bar to re-open or vary the guideline needs to be very high. The need for transparency and stability of the process may outweigh the risks from fixing parameters.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	industry-wide regulatory changes or changed financial market conditions.		
2.07	The hurdle for reopening should reflect changes in circumstance that are likely to have a material effect on the appropriate rate of return.[6]		
2.08	If the RORG were to be re-opened, the conditions would apply to the industry as a whole and not individual companies.		
2.09	It is not possible to specify in advance all circumstances that may warrant the reopening of a Binding RORG . Such a decision would require judgement which would need to be exercised transparently.	• Conditions would need to be spelled out in advance and limited to serious and low probability events. Suggested criteria include: allowed ROE found to be inconsistent with updated evidence (i.e. calculated incorrectly or from incorrect data); material discrepancies submitted by stakeholders; a data source becoming unreliable; estimation method becoming inappropriate (e.g., equity ownership approach to estimating gamma if tax laws are changed so that a material amount of credits distributed to resident investors are not able to be redeemed), substantial distortions in cost of debt such that prudent organisations were unable to raise debt; substantial changes to credit ratings and other related evidence. • There could be an option for the condition on re-opening to be qualitative not just quantitative. • There was a concern that this could provide a back-door route to change the agreed methodology of the binding guideline, i.e. a route to allow discretion. • It was suggested that the AER should give very specific examples of conditions under which it would exercise power to re-open, and the process that it would then follow. • There should be a high bar on introducing any subjective discretion through any form given the negative impact on investor and community confidence.	• There was **disagreement** about the conditions that might demonstrate that there was sufficient disruption in financial markets to warrant a re-opening. (e.g. should interest rates less than inflation warrant this i.e. negative real interest rates, which is a condition that has been true in many international financial markets for some years).

[6] 6A.7.3(a1)(5) of Chapter 6A and 6.6.1 of Chapter 6 provide for "pass through events" of costs. These "shipwreck" provisions can provide for the re-opening of determinations in the case of catastrophic events where additional capital programs may be needed. These do not affect the rate of return.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
2.10	**Parameters in binding guideline – fixed or formula?** Given the proposed legislative requirements, all rate of return parameters will need to be either fixed or set by means of a discretion-free methodology. Some rate of return parameters are more amenable to one or other arrangement. Those that are likely to change, and for which a mechanistic approach is appropriate are the debt risk premium, the cost of debt, and the risk-free rate to be used in the cost of equity.	Experts agreed that: • Parameters to be fixed should be relatively stable through a price control period or longer, or data is not as straightforward for estimating the parameter at any point in time (e.g. gearing). • Parameters for which a prescriptive methodology would be set would be those for which market variables would influence the appropriate value and are hence are more reflective predictor (e.g. risk-free rate). Settings for individual parameters: • Risk-free rate – prescriptive methodology from market evidence. • Cost of debt – prescriptive methodology from market evidence. • Beta – fixed. • Gearing – fixed. The approach for market risk premium is considered in section 7.	
2.11	**Institutional arrangements for re-opening** As specified in the draft legislation, it is appropriate that the AER is the organisation that determines whether the Binding RORG should be reviewed and replaced earlier than the maximum four yearly schedule.	Most experts accepted the AER's role because: • There was concern that any role for the COAG Energy Council or a Federal Minister would make the decision to re-open political. • Experts recognised that comments on this issue may not inform any AER decision as it is not the AER, but COAG, that will determine the rules around re-opening.	• IS, GP. Identifying a GFC type event, depression, or time of market closure hard to define precisely. It may make sense for COAG or a Federal Minister to confirm as this would be determined for broader reasons not just energy regulation.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
			This may allay concerns by politicians and AER on re-openers. • Some conditions may be determined objectively. However with others, the decision may be more subjective (e.g. reflecting difficulties in quantitatively determining when a GFC type event occurs).
	Approach to ROR		
2.12	**Foundation model** Given the context and the AER's stated objective of making incremental changes to the RORG, the foundation model framework should be retained. This gives primacy to the Sharpe-Lintner CAPM, with evidence from other relevant models to inform estimates of individual CAPM parameters as per the 2013 Guideline.	Reasons why most experts agreed: • In the context that this review is considered by the AER to be evolutionary, it makes most sense to take the foundation model framework as given and focus on how the application of that framework might need to be revised in light of evidence that's evolved on other issues.	• DJ accepts that AER should use foundation model as it provides a frame of reference for discussion. However, it is not the only data that is relevant in the determination of the allowed rate of return. The regulator cannot rely on developing the allowed rate of return merely by composition from a set of estimates of the underlying parameters, the regulator still needs to consider the implications of the proposed allowed rate of return as a whole, and in doing so should be informed by the consequences of its previous decisions. • However, the pseudo-scientific financial model approach hides the

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
			wood (dollars) behind the trees (beta, WACC, etc.), and is a recipe for gaming and false-consulting pressures on the regulators.
2.13	**Overall test of reasonableness** The rate of return is a market-based variable. Beyond the interpretation of market data there is no objective basis for the application of an overall test of reasonableness (or 'çross-checks') of AER's ROR determination.	Reasons why most experts agreed: • All evidence that is relevant to estimating a parameter should be considered together rather than reserving some evidence to the role of 'cross check.' • The difficulty is a consistent and objective application of cross checks. • There is a concern by some experts that this could result in, even if unintended, a further avenue for backdoor discretion which, following the removal of LMR, does not promote confidence in the stability of the process.	• GP considers that there is a role for reasonableness checks. This may also affect parameter estimation, e.g. an estimate may be given low weight if it leads to unreasonable estimates of the cost of capital. • DJ. The returns from regulated businesses are primarily determined by the decision of the regulator, but there is reason to believe that equity markets insufficiently discriminate this fact. Consequently, the regulator, in undertaking its overall assessment of the allowed rate of return, should analyse the rate of return that could be expected for an asset generating the cashflows of the regulated assets.
2.14	**Use of cash flows in ROR analysis** ROR should be based on evidence from security prices rather than analysis of business cash flows.	There was a proposal that evidence on the cost of capital parameters should be based on cash flows in the business, rather than evidence from financial markets. Reasons why most experts supported the use of security prices: • Although in theory beta statistics can be determined from cash flow data, there are few data points making	• DJ made the observation that cash flows from businesses are very stable, and that the current approach to regulatory decisions based on security prices does not

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		estimates unreliable, and if the regulator were to use these data it is possible for regulated companies to distort them. • The 'cash-flow' approach would be circular and destroy the incentive framework. Thus the setting aside of ex post cash flow analysis is in the interest of all stakeholders by encouraging ongoing innovation in delivery. • Concern over how the 'cash flow' approach would work in practice. • There is no precedent for using the 'cash flow' approach in a regulatory setting. • More weight should be given to parameters that are based on better data, with more confidence in market prices more than accounts-based information.	reflect the underlying low risk of the energy network businesses. • DJ also identified that the regulator needs to consider the lessons of behavioural finance in determining how much to rely on estimates from market data. Overall market risk premia are excessive because investors don't know what the distribution is of expected returns so as well as loss aversion they factor in their aversion for this uncertainty. The regulator, in undertaking its overall assessment of the allowed rate of return, should analyse the rate of return that could be expected for an asset generating the cashflows of the regulated assets. • GP. An ex-post audit of cash flows would be good practice. However, GP would not dispense with data from security prices nor remove incentives for efficiency by clawing back allowances.
2.15	**Use of judgement** AER's RORG guideline criteria for assessing information are broadly	Reasons why most experts agreed: • Exercise of some judgement in the determination of parameters seen as inevitable. However it should be	• SG: Criteria are only useful if they are specific, such that it is objectively clear whether a particular piece of evidence satisfies

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	appropriate, except for the criterion that concerns simplicity.	limited where possible and only changed if there is a significantly superior alternative (IS). • Sharing of data and detailed methodology seen as important so that AER analysis on which judgement based can be replicated. • View strongly held that where AER used judgement it needs to be held accountable for this. If scope for discretion, then needs transparency on how applied and process to ensure that the application is reasonable. • AER should explain reasons for why it exercised judgment in a particular way. What considerations led to it exercising its judgment in that way? Why did the AER reject submissions suggesting that judgement should be exercised in a different way? For example, why did the AER consider one piece of evidence to be more persuasive or reliable than another?	or violates the criteria. The criteria set out in the 2013 Guideline are vague, although largely inoffensive. It is impossible to apply them objectively to determine whether a particular piece of evidence should be ruled in our out. It is important to ensure that any application of such criteria is well-explained and consistent across all parameters. • SG otherwise agrees with majority views on this issue.DJ considers it inaccurate to call these 'judgement criteria.' The exact language in the guideline is 'the criteria that the AER proposes to use to assess the merits of the various sources of information in setting the allowed rate of return.' This is only part of the judgement that has to be applied by the regulator. Ultimately the judgement has to be applied to the whole value of the allowed RoR not just the constituent parts (as proposed above.) Additionally the sixth criterion is not as generally valid now as it was in 2013, as we agree that actually values for some parameters need to be chosen -

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
			though even for some of these such as MRP SG is proposing a formula. • There is an issue created by the need to both have an approach to the RoR that can be updated for changes in risk-free rate and debt rates, while also testing the WACC as a whole. This means the choice is inherently not simple as the choice on the individual values will be made as part of a decision as a whole rather than on each piece of data.
2.16	**Simplicity criterion** Simplicity should be preferred over complexity not 'where appropriate' but unless a more complex approach provides a better estimate of the allowed rate of return.	Reasons why the wording better reflects the views of experts: • The current guideline states that AER should "promote simple over complex approaches where appropriate". Many have a concern that greater complexity might be needed to reflect the evolving market conditions. • Simply put, experts agreed that the approach that is likely to produce the best estimate should always be used, even if a simpler but inferior approach is available.	• GP concurred with the revised wording but placed greater weight on a desire for simplicity.
	Compensation for risk		
2.17	**Which risks should be compensated?** The Sharpe-Linter CAPM estimates the required rate of return by reference to the degree of systematic risk	Reasons why most experts agreed: • Many held view that only systematic risk (expressed through equity β in the CAPM) is relevant to the required return on equity. Other risks that are diversifiable would	• DJ challenged standard CAPM approaches and for him this measure of risk would not be considered appropriate.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
2.18	associated with cash flows that have been determined on an expected value basis. It follows that only systematic risk should be reflected in the ROR. Providing that the effect of any non-systematic risks are properly reflected in expected cash flows, the allowed rate of return need not make any explicit allowance for such risks.	not affect the required return. Considered to be standard corporate finance theory. This does not mean that diversifiable risks are irrelevant to the allowed return. The allowed return would have to be set so that, factoring in the probability and magnitude of loss from a particular risk, the expected return for provision of capital was equal to the estimated WACC. • Experts agree that the WACC is an estimate of the *expected* return that investors would require for investment in a BEE. • There is also a view that the approach to systematic risk has been taken for some years, and with no compelling reason to change it should be retained.	
2.19	**Expected cash flows** Cash flows reflected in the building blocks approach to which the allowed rate of return is applied must be expected cash flows for a Benchmark Efficient Entity. Thus the regulatory allowance must be set so that the expected return is equal to the WACC.	Experts agreed because: • That means there should be allowance for non-systematic risk. For example, if there is an uninsurable negative risk with a particular probability, allowed cash flows should increase to reflect this. The consequence of this is that the utility may appear to outperform in years in which the negative risk did not occur. It was agreed that there cannot be double compensation for the same risk. • Another example would be a network working hard to improve its performance through, say research and improved practices and under the incentive framework. This should be rewarded – with the majority benefit already shared with customers under the EBSS/CESS mechanisms.	

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
2.20	**Risk and technology** It is difficult to assess the extent to which the risks associated with technological change are systematic in nature. In the circumstances, the most appropriate way explicitly to take account of such risks is to ensure that the non-rate of return elements of the regulatory framework operate so as to mitigate and/or manage technology risk. Empirical estimates of beta will ultimately reflect the systematic component of technology risks and be reflected appropriately in ROR estimates.	Reasons experts agreed: • It is hard to assess the systematic risk associated with these, will need to wait for empirical work on the impact and monitor how it develops.	Two further comments from experts on technology risks: • SG considered that RORG should explicitly state the extent to which the allowed return includes compensation for the risk of an exogenous write down of the RAB. and whether there has been any change in approach since past reviews. GH noted that it is not correct simply to ignore this risk and assert unquestioningly that RAB will be honoured. • IS had a concern that if investors in listed market equities do not fully appreciate the risks then these may not be reflected in data sourced from listed markets.
2.21	**Elaboration of risk** All risks – both systematic and non-systematic – must be accounted for within the framework. The AER should elaborate on the implicit classification of risks within the regulatory framework and identify where the allowance for each relevant risk is accounted for in the framework.	Experts agreed with this statement.	

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	Examples given included technology, climate change, cyber security, and broader political risk.		
2.22	**Quantification of risk** NSP businesses have not become less risky since the last guideline.	Reasons most experts agreed: • Evidence supplied by SG showing change in measured betas for domestic comparators as documented in the AER Beta paper. (see Session 2 pre-Session evidence paper).	• GP considers that to date there is insufficient evidence to conclude this.

3. GEARING

3.1. Context

The AER published a discussion paper *Gearing* (AER 2018) which set the context for expert discussion of this topic.

3.1.1. Use of gearing data

Gearing for a company is a measure of debt / enterprise value, or debt (including debt-like liabilities) / (debt plus equity). An estimate of gearing is used for two main purposes related to the RORG:

- **Consistent equity beta**. It is used in the process of converting observed equity β statistics into asset β (de-leveraging) and then re-leveraging them to an estimate of what the equity β for each company would be at the prescribed gearing level.
- **Setting price controls.** An estimate of gearing is used to determine allowed revenues:
  - The allowed return on debt is RAB x cost of debt x gearing.
  - The allowed return on equity is RAB x cost of equity x (1-gearing).

3.1.2. Gearing issues

At present the gearing for the BEE is estimated from an estimate of the average gearing of Australian energy network companies that are listed or owned by listed groups.

There are two main sets of issues related to gearing:

- Approach. The main questions relate to the definition of gearing that should be used, and which companies are considered reasonable comparators.
- Measurement. There are a range of detailed measurement questions that have been raised by the AER in its discussion paper.

One additional gearing related issue is the leveraging formula used to convert equity betas to asset betas, and then to equity betas at the BEE gearing level. The appropriate formula to do this is considered in section 5 below.

3.2. Summary of expert views

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
3.01	**Definition of gearing used (based on market values vs book or RAB measures)** Market-based estimates are the only appropriate measure of gearing. They should be used both for re-gearing β and for calculation of required revenue in price controls.	Reasons most experts agreed: • Derivation of these re-gearing formulae start with the rate of return which embodies market values by definition, and in using a formula one must use definitions for parameters within that formula that arise in the course of the derivation. • As market gearing considered to be the only relevant data, only data from listed entities considered to be relevant as reliable information on market value of equity for unlisted entities is not generally available. • There are data limitations with all data sets in considering gearing (e.g. relative contribution of unregulated value in the enterprise value, limitations of RAB as a denominator if that measure is used, distortions of book and accounting measures, lack of observable data for the enterprise value in unlisted networks). • Market measure of gearing also seen to be the only appropriate one to be used for application to calculation of required revenue in price controls. One reason for a discrepancy between market and RAB measures seen to be regulatory error. There was also considered to be a practical difficulty in separating debt secured over a network's whole cash flows for a business which includes a regulated and unregulated component.	• GP: Strictly speaking we should be using the debt capacity of the RAB. That is the quantum of debt that the RAB adds to the firm's total debt (debt contributed by the RAB/ RAB). Observability may dictate the use of the firm's debt ratio unless it is believed that the firm and the RAB have a substantially different debt capacity.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• Calculations of regulatory gearing (actual debt / RAB) thought to provide no material information on gearing levels or the RORG. • Current approach seen to produce an outcome (60%) that is considered reasonable.	
3.02	**Stability of gearing measure** The estimate of gearing adopted by the AER should be relatively stable.	Reasons experts agreed: • Unlike the cost of debt, conceptually, gearing should not change regularly as the core capital structure decisions of companies are stable. • Changing regulatory gearing in either direction would lead to unnecessary costs on companies as they would need to change their capital structure in response. • A case from the NZ High Court sets out why changing gearing may have unintended consequences for the overall WACC estimation.[7] • The WACC is not very sensitive to the gearing within the range of gearing levels that could be chosen by the AER. Maximum gearing error of 8% would lead to a change in WACC of 0.08% which is not material in context. It is therefore not valuable to spend time on this parameter.	
3.03	**Appropriate comparators** The use of Australian listed energy network comparators is a reasonable representation	Reasons most experts agreed: • The three firms used have credit ratings which are at or close to that of the BEE.	• Noted by ML that there is a methodological inconsistency as the set of firms for which credit ratings are available is larger than the set for which market gearing is available. A suggestion is to estimate the optimal value of one of gearing

[7] See Wellington International Airport Ltd & Ors v Commerce Commission [2013] NZHC [11 December 2013] Part 6.14, pp 515 – 541.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	of the BEE for the purpose of determining gearing.	• Only Australian firms should be used because of the requirement that the tax regime and legal framework (for bankruptcy) be the same. • The three domestic comparator firms all have gearing consistently close to 60% (over last 5 and over last 10 years and at the time of previous reviews).	or credit rating and then modifying the estimate of the second to reflect the chosen value of the first parameter. If gearing is done first, the point is relevant only to estimating the credit rating of the BEE which affects the cost of debt. • An alternative view was that the very limited Australian listed company comparator set raises the question of whether international evidence on gearing should be drawn upon. • There was a comment that Government owned firms, private-sector firms with corporate parents, firms with significant unregulated activities (e.g. greater than 20%) to be excluded as not representative of the BEE. It was noted that such a restriction would exclude the comparators currently used.
3.04	**Use of directly sourced data vs data vendors** There is value to using directly sourced data rather than that from data vendors (e.g. Bloomberg):	Reasons experts agreed: • This ensures that financial instruments (e.g. shareholder loan notes) are categorised correctly.	
3.05	**Net debt vs gross debt** Gross debt is preferred to net debt.	Reasons most experts agreed: • Rationale is that a cash balance is needed to support the operation of the business, so the cash balance is not available to be paid out.	• IS prefers net debt. Banks as first in line creditors can take the cash in an enforcement scenario. Therefore it is the approach that rating agencies use and is embedded in most lender covenants. • It is also the way that listed investors view enterprise value.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• The 60% gearing for the BEE viewed in past decisions as gross debt. Use of net debt would require a revision to the gearing ratio in the WACC. • ML noted that this issue only matters if the cash level is large, and likely would then be temporary. If the abnormal cash arose from a capital injection for the purpose of investing, the investing would merely swap one asset for another, gross debt would be warranted after the swap and hence also before it. If the abnormal cash arose from operations, and was then intended to repay debt, net debt would then be appropriate but predicting the use of the cash would be problematic. This supports use of gross debt.	
3.06	**Averaging period** Gearing choices typically reflect a long-term investment strategy so market evidence should be averaged over 5-10 years.	Reasons most experts agreed: • Market value gearing changes as stock prices change, so need to average over some period rather than take spot estimate at a point in time. • Regulatory cycle considered to be too short. Gearing / credit policies of large networks are not changed lightly, and market capitalisation movements of a listed company could distort short run numbers.	• ML. For regulatory purposes, one seeks to estimate the average gearing level desired by firms over the next regulatory cycle, desired levels fluctuate over time, and are likely to be mean reverting. This favours some historical averaging. In addition, observed gearing fluctuates around the level desired by firms due to fluctuations in equity values, and this also suggests averaging over past gearing levels. The optimum extent of historical averaging is not clear but using the 'wrong' period and hence over or under estimating gearing would not materially affect WACC.
3.07	**Adjustments to gearing for non-regulated assets**	Most experts agreed.	• IS more concerned by this, as it is hard to compare between asset types (unregulated activities in distribution businesses are very

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	There is neither a clear principle nor a practical basis on which to adjust observed gearing estimates for the existence of non-regulated services that is appropriate for AER estimates of gearing.		different from those in transmission) and there is a degree of subjectivity in judgements. Rating agencies in Australia and investors do not always analyse in sufficient detail and in practice it is hard to separate fully.
3.08	**Adjustments for hybridsand loan notes** It is appropriate for stapled shareholder loan notes to be treated as equity. The treatment of hybrids should depend on the terms of the instrument.	Reasons most experts agreed: • ML noted that stapled notes have to be treated as equity in order to obtain a measure of equity value simply because they are stapled to shares. Whether this is merited is second order. • ML. Genuine hybrids like convertible bonds can be properly split into their equity and debt components and do not require an arbitrary split. Subordinated bonds do not in principle warrant splitting or classification as equity, and doing so would not change the WACC because the risk premium for them could not be estimated in any other way than by continued use of the debt risk premium.	• GP. The question is do the loan notes have the characteristics of equity? Deciding this would require a careful analysis of the terms and conditions of each note and some may have debt-like characteristics. • Hybrids might be treated as 50/50. For example, AusNet hybrids receive 50% equity credit by ratings agencies.
3.09	**Is it appropriate for the AER to see through holding company structures?** It is appropriate for the AER to look through holding company	Most experts agreed with this.	• IS. Considers that this is not appropriate as where such structures exist they are typically at the portfolio level of an owner of a number of networks, and are not included in the credit ratings agencies assessment of the network rating.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	structures to estimate gearing.		

4. FINANCIAL PERFORMANCE MEASURES

4.1. Context

The AER has produced a discussion paper *Financial performance measures* which provided guidance to the experts on issues to cover. In addition, experts were provided with the paper by Darryl Biggar (2018) *The role of RAB multiples in regulatory process*. Within this topic, three areas were considered by the expert group.

4.1.1. Profitability data

The AER discussion paper notes that stakeholders have raised concerns about profit levels, and refers to a separate work stream analysing network profitability (AER (2017)). This responds to concerns from the CCP that there is a "persistent pattern of excessive profits, not explained by efficiency improvements relative to AER's cost benchmarks". The Public Interest Advocacy Centre (PIAC) has submitted that "the AER did not take sufficient note of the extraordinary profits that the regulated businesses were making…[and that] AER benchmark its decisions on the rate of return by making more use of actual financial information taken from the DNSPs annual audited reports and other sources".[8]

In their deliberations, experts considered what can be learnt from network company financial reports and the implications for the RORG.

4.1.2. EV/RAB ratios

Enterprise Value / Regulatory Asset Base ratios (EV/RAB) measure the value that investors place on the value of a regulated asset and compare it to the asset value used by the AER to calculate allowed revenues (by multiplying the RAB by the allowed ROR as part of the building blocks methodology). EV/RAB ratios can be measured at the time of transactions of unlisted assets, or using market values of listed assets.

It has been suggested that analysis of EV/RAB ratios may provide evidence on how allowed returns compare to investors' required returns, providing a way to check whether the AER determination of the ROR is commensurate with the opportunity cost of capital. In the discussion paper, the AER referred to its position in the 2013 RORG explanatory statement that EV/RAB multiples would not be used as direct reasonableness checks, but it would "use these multiples as part of a set of indicators that we monitor over time and across network businesses to help inform us of potential areas of inquiry and research". This reflects a range of factors that can affect RAB multiples as well as differences between expected and allowed returns.

The discussion paper also referred to reports including discussion of EV/RAB ratios from other Australian and international regulators, and other published expert views including that of Darryl Biggar (2018). These reports comment on the range of factors that can affect measured RAB multiples and the conclusions that can be drawn from them.

[8] Quoted in AER (2017b) p2.

4.1.3. Financeability

The AER discussion paper refers to the suggestion from stakeholders that financeability analysis could play a role in the RORG.

In a financeability analysis for a price or revenue control determination, the regulator would prepare financial projections for a regulated company. Proposed price / revenue control parameters, operating cost, capital cost, and financial assumptions are used as model inputs. The main model outputs are estimates of the financial ratios used by credit rating agencies in their rating determinations for similar companies. The analysis may therefore provide information on how rating agencies might respond to particular price / revenue control parameters. Regulators may use this information to adjust elements of the price control determination.

In the discussion document, the AER states that "Like all other regulators whose views on financial metrics we are aware of, our views in past decisions have been that it is inappropriate to adjust the rate of return or any other NPV non-neutral revenue component to address financeability metrics".

In their deliberations, experts considered whether it is appropriate to adjust price controls in response to financeability analysis, or whether financeability analysis could provide information on whether the cost of capital is commensurate with the opportunity cost of capital.

4.2. Summary of expert views

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
4.01	**Use of profitability data** Ex post firm-specific profitability data contains no information that assists in estimating the rate of return required by the market.	Reasons most experts agreed: • It was agreed that this data should be collected by AER to assist with achieving its other non-rate of return regulatory objectives. • View expressed by most experts was that historic profitability analysis was a function of expectations at time price control set, provides no information on appropriate rate of return, and an ex post review would be fundamentally inconsistent with an incentive based regulation framework. • A better means of considering the best use of such data would be to refer it to a joint meeting of the ENA-CRG working group for discussion, additional work, and recommendation to the AER.	• DJ expressed the view that this could be used to assess if company or industry returns were too high (further development of this to provide approach for how this would be done). He suggests that financial performance measures of interest are profitability, stock price increases, and RAB multiple changes. The ex post view (actual financial performance outcomes) gives an indication of whether the idealized building block approach has done something "reasonable" and sustainable. If not, it can either be tossed out for a different and possibly simpler and more transparent framework (e.g. CPI increases only) or the input parameters can be changed, to achieve a realistic level of "good" regulation.
4.02	**Use of EV/RAB ratios** It is not practicable for observations of EV / RAB multiples to be decomposed in order to draw inferences as to the rate of return required by the market and used by the AER	Reasons most experts agreed: • There are myriad reasons why RAB multiple above 1 might be observed, only one of which is that the allowed return on equity is generous. • Other reasons highlighted included: the existence of assets outside the scope of the RAB; the fall in interest rates that raised the market value of debt in businesses	• GP does not agree with this. • DJ expressed the view that high EV/RAB multiples can still indicate that returns are too high. People come up with esoteric reasons/excuses for why RAB multiples "should be" greater than one, but that is an attempt to obscure how

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	in the process of setting the ROR.	that have been purchased; expected outperformance against regulatory targets. • "A RAB multiple that differs from one may be at most a trigger for further investigation" (Biggar 2018). But not at all clear what such "further investigation" would involve. • Risk of incorrect inferences from RAB multiples. Particularly if a conclusion drawn from a single RAB multiple (that reflects the unique characteristics of one transaction) was extrapolated to the whole industry. • Risk of moving from debate about WACC parameters to debate about RAB multiple disaggregation. • Concern around circularity in use of RAB multiples. Resolving this more nuanced than suggested in the Biggar (2018) paper. • To use RAB multiples in process would need documentation of reasons for difference, and identification of those factors that affected required return. Considered hard to develop such a process for current guideline review. • This is similar to profitability, as the EV in the RAB multiple represents one prospective owner's view of a variety of factors including the likelihood of a particular network outperforming its incentives over time. This is a subjective assessment and represents a risk taken on by the acquirer.	the market is extracting a share of these regulated income streams.
4.03	**Financeability analysis** Financeability analysis may provide insights on the time	Reasons most experts agreed: • View that financeability discussion needs to distinguish between implications (if any) for (a) the allowed return,	• SG suggested that financeability analysis could be used as a test of the internal consistency of the regulatory

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	profile of cash flows. However, it does not provide objective information for use in setting the ROR required by the market.	and credit rating assumptions, or (b) the speed at which companies receive a return of their capital (expressed through depreciation). • If a cash flow profile were to breach credit metrics and lead to a downgrade, this would be considered to be an issue of the timing of cash flows. To remedy this situation, a company's management would be able to raise equity and/or defer dividends. Alternatively a regulator may have flexibility to adjust depreciation schedules in an NPV neutral way. • If done would require consultation with rating agencies, corporate treasury departments. • The approach would use a gearing assumption based on that of the BEE rather than the actual gearing of companies. A range of other stylised assumptions would need to be made (e.g. borrowing at the rate assumed in the trailing average debt calculation).	determination. If a financial model shows a persistent degeneration in the credit metrics this might lead one to revisit assumptions. A credit rating is assumed in determining the allowed cash flows. Key financial ratios derived using those allowed cash flows should support the credit rating that was initially assumed.

5. EQUITY BETA

5.1. Context

The AER published a discussion paper *Equity Beta* in February 2018 which framed the expert discussions.

Equity β is a key parameter in the foundation model (the Sharpe-Lintner CAPM) used by the AER in setting the ROR. It is a measure of risk used widely in finance theory and practice, and this context is set out in the AER's discussion paper and is not repeated here.

5.1.1. Key issues related to equity beta

Experts deliberated on the following types of issue:

- Methodological issues. These include the formula for releveraging equity β to the notional gearing level.
- The choice of appropriate comparators. The AER needs to estimate equity β for the BEE, the BEE is not directly observable so comparators need to be chosen. The number of relevant Australian comparators has fallen.
- Estimation details. This includes consideration of length of data series for estimation and periodicity of data.
- Approach to interpretation of evidence, or how the AER uses judgement to choose a point estimate of β from the range of relevant evidence. This includes a consideration of the implications of the finding in the academic literature that low-β stocks have delivered higher returns, on average, than the CAPM would suggest.

5.2. Summary of expert views

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	Methodology		
5.01	**Is the overall framework appropriate?** A framework for estimating β that includes estimating equity β from market data, delevering to estimate the asset beta and relevering to the assumed gearing of the BEE (60%) is appropriate.	Reasons experts agreed with this: • This seen by most (SG, IS, JH, ML and SW) to be correct theoretically. It is the appropriate way of estimating the systematic risk of the equity of a BEE. • The approach is consistent with investment practice and there has been no change to financial theory indicating a change to this approach. • The approach is well accepted, and consistent with expert views on the need for a high bar to change, there is no compelling reason to make an adjustment to the approach. Also no viable alternative has been proposed. • Given that the AER must adopt a gearing estimate for use in the WACC formula, internal consistency requires that all beta estimates must be estimated on the basis of a common gearing assumption. This issue not addressed by those favouring the alternative approach.	• GP agrees that higher leverage is associated with higher equity risk, and the theoretical merit of using asset beta, he considers that the approach to deleveraging and releveraging to a common gearing level to be problematic. • SS agrees with GP, mixing good data with bad is always problematic. • DJ suggests that the notion of beta within the standard CAPM framework is not adequate, as an asset's beta depends both on the expected payoff on the asset and the payoff covariance with the market. In addition, it is argued that WACC and the underlying regulatory asset value are subjective, which has implications for the approach to regulation. Under this view, the existing framework has an over reliance on "questionable finance logic".
5.02	**Releveraging** AER should only compare equity β estimates that have been relevered to the same level of gearing.	Most experts concurred with this. • Given that the AER must adopt a gearing estimate for use in the WACC formula, internal consistency requires that all beta estimates must be estimated on the basis of that level of gearing.	• GP prefers to calculate WACC directly, and determine a ROR from these estimates. • GP sees a number of issues with deleveraging including: measurement of

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	Leverage has an effect on equity beta because debt ranks ahead of equity. This has nothing to do with 'interest-rate risk' or 'refinancing risk' or 'insolvency risk'.	• The alternative approach that has been suggested involves estimating a WACC that is inconsistent with the AER's assumed gearing. Once a gearing level has been adopted, all equity beta estimates must be consistent with that gearing level.	debt, leases, choice of data; the formula to be used, and whether tax shields have the same risk as the assets; whether the debt policy of comparators is consistent with the constant leverage assumption, and whether the debt beta is material. • SS also dissents.
5.03	**Formula for deleveraging and releveraging β** The AER uses the formula $\beta_e=\beta_a(1+D/E)$ for deleveraging and releveraging. This is the appropriate formula.	Reasons most experts agreed: • This is consistent with the assumption that the BEE will have constant leverage. While not literally true, was considered by most experts to be a reasonable representation of behaviour. • Constant leverage is also built into the AER's processes via having a constant leverage figure in the Guideline and in the PTRM. • SW noted that the Miles-Ezzell formula[9] is $$\beta_e = \beta_a\left(1+\frac{D}{E}\right)\left(\frac{1+r_d\left(1-T_c\frac{D}{V}\right)}{1+r_d}\right)$$ The second term in parentheses on the RHS is approximately one - which gives the AER formula - which is the formula one would get were a firm to maintain a constant leverage through time. [10] (The symbols in this	• GP. Considering other formulae may be appropriate depending the behaviour of firms and other financing issues. • SS agrees with this; the multiplicity of formulae raises further concerns about levering/delevering • JH. This is a simple, neat formula that is a natural starting point to illustrate the distinction between asset beta and equity beta. But for the purposes of RoR determinations we should not rule out other formula that include allowance for other material factors e.g. inclusion of a debt β.

[9] As quoted in Taggart (1991) equation 2B.6.
[10] Equation 2C.6 in Taggart (1991).

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		equation take their usual meaning in cost of capital literature).	
5.04	**Debt β** In principle debt β is a component of the equity β calculation. Reasonable estimates of debt β are small enough that their inclusion has no material impact on calculations. Therefore debt β may be omitted from calculations.	Reasons most experts agreed: • SG prepared a table (reproduced in an Annex in the pre-session note) that relates the estimate of β for a company assuming a zero and the correct debt β. For the range of parameters chosen (debt β <= 0.1) the impact of assuming it to be 0 is considered small. • IS does not agree with the principle of a debt β and notes it β is not commonly used in the market.	• GP has seen evidence that debt β is material and may be more than 0.1 (reference not supplied in the evidence session). • SS also dissents. • JH. Agrees debt β is a component in principle. The SG table has debt β's up to 0.10, but are values higher than this plausible? Groh and Gottschalg (2011) report a debt β of 0.296 estimated on 314 open-end funds investing in investment-grade corporate debt. I'm not suggesting their result is the last word but it seems to me that the question of materiality remains open.
5.05	**Endogenous β** AER should be mindful that its decisions on rate of return may influence β of the firms the AER regulates.	Where commented on, experts agreed with this: • DJ set out the argument linking equity β to expected payoff in published papers[11] and referred to it during the sessions. It is a consequence of this theory that if AER were to change β, which changes the payoff for a given RAB, the β of the firm would in theory respond to this.	

[11] Johnstone (2017).

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• GP considers that there is merit to the argument, but it is hard to consider how to reflect that observation in the ROR deliberations. • SW notes that the evidence that differences in regulatory regimes affect beta is weak, but doesn't rule out an effect in practice. • SG concludes that any relationship between the AER's allowances and beta estimates for AER-regulated firms is another reason to expand the set of comparators to ensure that there are firms not subject to his effect entering the beta estimate. • JH. Something to be aware of although probably not a problem in practice. It would be hard for an entity to manipulate its own price to distort its β estimate. Possibly some potential to change its capital structure if this produced a higher WACC, but it is not clear how this could be done.	
5.06	**Source of data on β** β should be assessed from stock market data.	Reasons experts agreed: • Experts considered approaches to estimating beta based on stock market evidence. • Consideration of qualitative evidence on risk not considered.	
5.07	**Judgement** Use of judgement by AER in estimating β in the application of the 2013 Guideline has not been transparent.	Reasons experts agreed: • Experts viewed the AER's current approach to selecting the β estimate as problematic. • Two-stage approach of using one subset of the relevant evidence (domestic NSPs) to construct an immutable	• GP disagrees. • SS. Transparency is not a virtue just increases the propensity for manipulation.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		range, and then using all other relevant evidence to select a point estimate from within that range is flawed. Better approach is to consider all relevant evidence together, having regard to the strengths and weaknesses of each piece of evidence. • Experts consider that independent experts provided with an explanation of the AER's process and the same data would be unable to replicate the conclusions of the AER.	
5.08	**Technological risk** Technological risk does not need to be considered separately in estimating β.	Reasons experts agreed: • No real value in considering technology risk separately from other factors and attempting to classify it as systematic or non-systematic. • It may be that some of the technology risks are systematic, but it is hard to detect that ex ante. • Risks not fully understood (and hence valued) as it is developing quickly and the policy response is evolving. • Considered more sensible to assess overall risk reflected in β and check for reasonableness. • This is one reason for also considering beta estimates over a more recent period (e.g., 5 years) to test whether there is any evidence of beta estimates tending to move higher or lower over time.	• IS: Listed comparator stocks may not have fully priced in new technology, climate change, sovereign risk and other potential structural shifts in society and the economy in their required return.
5.09	**Comparators** The range of comparators should be extended, but care must be taken to ensure	Experts considered the following to be appropriate for inclusion: • International Network Service Providers • Domestic infrastructure firms	• GP. Shrinking sample is a problem. But given the relative stability of β, using historic data is not irrelevant. There is a trade-off between representativeness and sample size. More observations can

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	inferences drawn are appropriate.	Reasons for use of additional comparators and commentary on these include: • GP. There is only benefit in broadening the sample of comparator firms if they are representative of the industry. A bigger sample of itself is of no value. • SG. A strength is that it improves statistical reliability. Weakness is that the expanded set of firms are less comparable to the BEE. But there is a trade-off to be made and the 'other' evidence will naturally receive relatively more weight as the set of domestic NSPs continues to shrink. Note that the inclusion of even a slightly biased estimate can improve the final estimate in a mean squared error sense. • SW. In using foreign data there will be a trade-off between bias and precision. Using foreign data will likely lead to more precise estimates but the estimates may be biased. The case for using foreign data will be stronger the smaller the number of domestic comparator firms. If there were no domestic comparator firms, then it would be difficult to argue against using foreign data. There is a substantial amount of evidence against a domestic version of the SL CAPM. While the use of an international asset pricing model is, in principle, an appealing alternative to the use of a domestic model, there is also evidence against an international version of the SL CAPM. Any evidence against a version of the SL CAPM should be taken into account in using that version	reduce the standard error of the estimate, but mixing populations to get a bigger sample is not appropriate. Given beta's from distinct populations that cannot be mixed, then the AER will have to exercise judgement. It is difficult to see how this can be fully transparent, or permit the type of weighted average approach that SG would likely advocate • IS Although the existing comparator set has narrowed since the 2013 RoR Guideline, the reduction in the sample size is not, in and of itself, a sufficient rationale to include additional comparators at an equal weighting to domestic networks (unless they are appropriate and relevant). In descending order there may be some merit in a cross-check against recently delisted comparators, then international network service providers if they are adjusted for material differences in regulatory framework between jurisdiction. Domestic infrastructure firms from other sectors are of limited to no value. Unless there is a demonstrably superior method or data set or a material change observed in the estimates using the existing method and data, a change in

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		to produce an estimate of the return required on the equity of a benchmark entity. • SS accepts that a slightly biased additional estimate could reduce mean square error but would need strong evidence that such an estimate exists. Weaknesses and strengths of the SL-CAPM are well-understand and sees no additional gain in resurrecting these arguments.	equity beta is likely to introduce uncertainty and therefore cost and risk. International firms should not be used without caution and scrutiny given materially different regulatory and political environments • JH The case for including international NSPs and domestic infrastructure firms has not been made. They should be included only if it can be shown that they provide useful information about the β's of Australian regulated NSPs. It is true that β estimates for delisted Australian networks will become increasingly older but it does not follow that they will become increasingly "wrong". It is likely that true βs "cycle" but not clear why they would "trend" or "random walk".
5.10	**Beta estimates of other regulators** Other regulators produce estimates of β. If appropriately adjusted (to the gearing of the BEE) then these estimates provide useful evidence to the AER.	Reasons experts agreed: • SG. These estimates are not direct market evidence, but provides information on how other regulators have made inferences in the context of limited listed comparators.	• JH Do not believe that they constitute "evidence". However, it is reasonable to consider OS regulators' decisions to understand their methodologies and improve one's own, identify data sources, etc.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
5.11	**Adjustments to allow appropriate consideration of international data** No simple adjustment can be made to make international data comparable. Consideration will need to be given to the currency and sector composition of the index against which β is measured.	Reasons experts agreed: • No simple mathematical adjustment exists. The fact that these firms come from a different market is simply one of the considerations when determining the relative weight to be applied. That is, the fact that these estimates come from a different market with potentially materially different regulatory frameworks is a weakness to be weighed against the strength of the fact that there is a large set available to produce statistically reliable estimates. • There are trade-offs involved but there are also trade-offs that the AER has chosen to make in using a domestic version of the SL CAPM. A benefit from using the model is that it is a simple one. Two of the costs in using the model are that Australian capital markets are largely integrated with international capital markets – and the model presumes this to be untrue – and that there is strong evidence against the model. • JH. Careful consideration should be given to the way that other comparators are used to generate β's for network assets. Ideally this would be on the basis of econometric analysis that identifies robust correlations with historical β's—both within and across specifications—for the larger historical dataset of Australian networks (including the now-delisted firms). • While no mechanical formulae exist for adjusting estimates of the betas of international comparators, in using international comparators to estimate the equity beta of a benchmark entity, trade-offs must also be made.	• SS probably at best suggestive.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		Using international comparators will increase the precision of estimates but may entail some bias.	
5.12	**Use of comparator sector indices** Sector βs based on indices are not appropriate comparators.	Reasons most experts agreed: • Properly selected individual firms are likely to be the most appropriate comparators. Industry and sector indices are likely to be too broad, with different risks reflected than those of the BEE.	• GP considered that the β for indices might be relevant (other experts contended that precision on estimation and use of estimate needed). • SS regards this as an open research question. • JH Should keep an open mind on this. I agree that they are probably too broad but it should be tested. It is possible that some Australian sector indices have a closer correlation with Australian regulated network β's than overseas comparators.
5.13	**Delisted firms** De-listed firms should be included in the comparator set, but the weight to place on the estimates should decline in line with the length of time since delisting.	Reasons experts agreed: • GP considered that given the relative stability in beta estimates over time the evidence of delisted firms remains relevant. • The estimate of β for these companies remains frozen in time. However, with a shrinking set of listed direct comparators, the comparator set is likely to expand to include companies that are not directly comparable. In these circumstances it was considered by experts to be appropriate to give some weight to the de-listed firms. The weight could depend on the time since the company was delisted, and also whether the evidence points to substantial change in the equity β of a BEE since the de-	• JH Delisted firms should be in the comparator set. But the case for reducing their weight with time since listing has not been made. Since weights have to sum to 100%, it relies on identifying better alternatives. That has not yet been done.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		listing. For example, if beta estimates for 'live' firms have changed materially since the firm was de-listed, that would be evidence that the de-listed estimate is less relevant to the task of estimating the current beta.	
5.14	**Business cash flow analysis** Business cash flow analysis should not be used as evidence for β.	Reasons most experts agreed: • GP. Conceptually the CAPM can be implemented it terms of the covariance of cash flows and this is consistent with DJ's approach. Practically, it is unlikely that the business cash flow can be measured at sufficient frequency to allow sensible measurement of the covariance. • SG. By definition, beta is a measure of correlation between stock and market returns. It is hard enough to estimate beta directly from returns. Trying to model how cash flows might affect returns, and then beta, adds yet more noise to the process. • IS, JH. Difficulty in understanding how this would practically work without creating more subjectivity. For example, the discussion in Session 1 around unregulated cashflows, some listed stocks having non-network assets. Observations not sufficiently frequent, there is potential for companies to manipulate to influence β. Comparing ex-ante allowed cashflows versus ex-post actual cash flows also mixes the rate of return on capital from other deliberately separate elements of the revenue building blocks e.g. the incentive mechanisms and would not penalise underperforming networks. • SW. There are a number of multi-period models in which cash-flow betas play a role and there are submissions to UK regulators that have used these models. Using these	• DJ supports the use of this cash flow analysis as the evidence from cash flows is more reliable than market data and better reflects the low risk nature of the cash flows. (Other experts have indicated that they would like more precision on a proposal of how the data would be used to comment on this).

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		models would represent a surprising departure by the AER from its use of the SL CAPM but could hold out hope of producing better estimates of the return required on the equity of a benchmark entity. I would be surprised, however, if there were long enough time series of cash flows to reliably estimate cash-flow betas.	
5.15	**Differential beta for transmission / distribution and gas / electricity** Different sectors may (or may not) conceptually face different risk. Businesses and other stakeholders may present evidence in support of alternative estimates of β for specific businesses.	Reasons most experts agreed: • There are no strong theoretical reasons to believe that the asset betas of regulated electricity and gas businesses should be the same. • Stakeholders should be permitted to submit theoretical arguments and empirical evidence to support the case that there is a difference or, alternatively, to support the case that there is no difference between the asset betas of regulated electricity and gas businesses. • It would be open to the AER to reflect such differences in the Guideline (as the NZCC does). • Once the Guideline is set, there will be no further opportunity to change the beta allowance, so any risk differences (e.g., higher stranding risk for a particular asset) would have to be accommodated through accelerated depreciation or some other cash flow allowance.	• IS doesn't think there should be real scope to consider betas from different sectors as areas such as toll roads, airports, sea ports, electricity retail are inherently and substantially different in a number of ways from the risks faced by regulated energy networks. • GP. There appears to be no objective way to make such estimates, presumably the different betas would be based on the AER's judgement of the arguments presented. It is not clear that this would give the transparency often called for and could lead to concerns about uncertainty associated with the exercise of discretion. • Regulators in other countries may use different betas, but some place all the utilities in one risk class. So if guidance is to be sought from overseas practice, what is the criteria for best practice?

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	Detailed estimation		
5.16	**Estimation period for β and the time period over which β is observed** Long periods of data for estimating β are likely to produce the most statistically reliable results. However, shorter periods – e.g. 5 years – can robustly identify movements in true βs (which would bias longer term β estimates) and indicate whether there are changes since the last review that may merit further investigation. Consideration should therefore be given to both long and short term estimates.	Reasons experts agreed: • Long data series provide more precise estimates (SG, JH, SW), in particular, if equity β of BEE is relatively constant. But movement over shorter periods (e.g., 5 years) may reflect evidence of more recent movements, particularly if there is a consistent body of evidence across the relevant comparators. • IS. Consistency with estimation of gearing and other metrics. Changes to β should reflect a consistent approach to estimation of the parameter, not a change in methodology. • SS consider that this really depends upon our view of what we think beta is doing. If it is constant, longer data will be better. If it is changing slowly, some version of a rolling window better. Beta may be expected to change as the market changes and/or the nature of the relevant entity changes.	• JH. Not convinced that shorter periods do robustly identify movements in true β's. E.g. if I look at AER Table 5 its weekly OLS estimates for utilities are higher in the last 5 years than the previous 5 years (0.63 vs 0.50), but the annual estimates bounce around and its not clear to me that there has been a statistically significant change.
5.17	**Data frequency for beta estimation** Weekly or monthly data are preferred to daily data.	Reasons most experts agreed: • Longer observation periods likely to reduce issues from thin trading.	• SW. Daily and weekly data should be used with adjustments for infrequent trading where necessary or filters to remove illiquid firms. The use of daily and weekly data will provide more precise estimates and provide an early warning of changes in risk.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• Highly illiquid firms e.g., closely held firms that rarely trade) should not be used. Can filter out objectively using Amihud measure[12] or other statistical measures. • Daily estimates tend to be more variable and more susceptible to statistical problems (illiquidity/non-trading).	• SS. No quick answer; depends upon properties of various frequencies available; research question.
5.18	**Binding guideline and β** Equity / asset β is relatively stable. It is acceptable to fix β estimates for the duration of the guideline.	Reasons most experts agreed: • True systematic risk likely to be stable. • This is consistent with the way risk is viewed in unlisted markets. • JH Even if true βs vary, we are operating with very imperfect knowledge of the true values. Given the uncertainties, do we really know enough to be finessing them during the duration of the guideline?	• SW. Beta is a relative measure of risk. So the equity beta of a benchmark entity can change through time even with no change in the behaviour of the returns to the benchmark. The equity beta can change, for example, if the makeup of the market changes. There have been large changes in the makeup of the market over the last 10 years and this may or may not have contributed to a change in the equity beta of a benchmark entity. It is nevertheless acceptable to fix β for the duration of the guideline. • SS. Probably reasonable for a 5 year period but could be persuaded by evidence.
	Interpretation of evidence		
5.19	**Transparency**	Reasons most experts agreed:	

[12] The Amihud measure (Amihud 2002) is the average absolute stock return to dollar volume. It measures price impact per dollar of trading and is one of the most widely used measures of liquidity.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	In choosing a point estimate for β, the AER should set out all relevant evidence and explain the reasons for the weighting it gives to each source of evidence.	• Current approach is to use a subset of evidence to determine an initial range, then a different subset to select a point estimate from within that range, and then a third subset of relevant evidence to check (and possibly revise) the point estimate. This approach has no reasonable basis and is likely to lead to error. • It is unlikely that an independent expert could derive the AER's point estimate of the equity beta of a benchmark entity even if provided with a full description of the AER's current process and the same set of data.	
5.20	**Has β changed?** Empirical evidence from Australian listed comparators indicates that beta has increased since 2013.	Reasons most experts agreed: • The estimates for the three live firms are materially higher over the period since the last guideline. • According to the estimates in the AER's discussion paper, all of the beta estimates for all of the live firms have increased since the 2013 Guideline. • The international evidence (including from other regulators) and the evidence from other domestic infrastructure firms indicates a beta above 0.7.	• GP argued that there is no substantive evidence for change. • SS. Evidence seen by SS suggests that it is more to do with problematic gearing than any change in the equity-based calculation. If the Australian market is becoming more global, could be falling. • JH disagrees with the statement.
5.21	**Black CAPM and higher than expected returns for low β stocks** There is sound evidence that low β stocks have exhibited higher returns than the S-L CAPM predicts.	Reasons most experts agreed: • The evidence has been produced by leading finance researchers and is so well-accepted that it appears in all standard finance textbooks. • The evidence has been consistent over decades and across national markets. The empirical evidence in relation to low-beta stocks has not weakened since the 2013 Guideline.	• GP. The Black CAPM should be disregarded as too subjective in its application. Empirical estimates of zero beta returns submitted by the regulated networks have been inconsistent and in many cases implausibly large and highly variable.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• The observed evidence likely reflects the actual returns required by investors. The evidence is consistent over time and across markets. It has been conducted by leading researchers. It appears in all textbooks. The probability that the result is due to a previously unknown methodological error or luck is remote.	SS Black CAPM produces highly variable estimates and seems quite inappropriate. Would recommend disregarding it. • JH Much of the evidence around this issue comes from the US. On balance the Australian data support the proposition but there are questions around the soundness of the findings. Tests of Australian data tend not to have great power.
5.22	**Adjustments for low β outperformance** Under the foundation model approach, adjustments should be made to the S-L CAPM β to reflect the empirical evidence in relation to low-beta stocks.	Some experts agreed: • SG. The extent to which the SL-CAPM produces downwardly-biased estimates of the required return on equity is an issue that, within the AER's foundation model approach, requires an adjustment to the best estimate of beta for the BEE. The adjustment must be sufficient to offset the downward bias. • SW. The AER should adjust the equity beta of a benchmark entity for the higher than expected returns for low-beta companies, but it should rely on the empirical evidence and not the theory behind the Black CAPM to do so. The Black CAPM relaxes the assumption underlying the SL CAPM that investors can borrow freely at a single risk-free rate. Other more recent models, however, relax other assumptions that the SL CAPM makes. Relaxing the assumption that investors share the same beliefs can lead to more dramatic departures from the SL CAPM than the Black CAPM provides.	• SS. Even if you accept the evidence, not clear what the appropriate response is Low-beta arguments flawed in a number of respects. Even assuming that they are correct, corrections could involve subtracting alpha rather than raising beta There are other factors that can affect low-beta stocks. For example, the structural decline in interest rates since 1980 has benefitted low-beta stocks. As interest rates go up we might anticipate that the historic observed phenomenon might reverse. Slope and intercept are negatively correlated. • IS. It is hard to explain properly the reasons (noting it is probably correct). For example, total actual returns on

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
			stocks may include an "alpha" for expected outperformance on incentives etc as empirically listed network stocks have benchmarked more efficient than average. Or it could simply be floor returns (reverse in other situations) because of dividend yield expectations of listed investors. • JH If we were to move away from SL-CAPM we need to reconsider the whole model of WACC so that we were left with a consistent framework after adjustment. And there would need to be more extensive empirical investigation of the redefined model parameters.
5.23	**Stakeholders' desire for stability** There is value in stability in the approach to estimation of the required return, and this consideration should inhibit change in estimation approaches or parameters.	Reasons most experts agreed: • There can be benefits to both consumers and investors if the regulator acts in a predictable and transparent manner. • The AER should have a high regard for certainty and stability - all stakeholders benefit as it keeps the cost of capital low and incentivises efficient and sustainable investment; and innovation. • Uncertainty/instability in markets should be seen as a real cost which adds to long-term costs of customers for the above reasons	• GP. Certainty and stability imply a reduction in the risk of investment and greater stability of cash flow. This in turn implies a wealth gain for investors. This is not a free lunch, someone has to pay. The question is how much wealth consumers want to surrender for stability. • JH. While stability important, and move to binding guideline likely to reduce risk, reduced exposure to risk appears to benefit investors rather than consumers. • Need to consider how this risk reduction can benefit consumers. What

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• There should therefore be a high bar to change – not just prevailing theory of the day, nor objective approach + subjective "vibe".	adjustments to these parameters do we make to make allowance for reduced investor risks?
5.24	**Use of evidence in incremental review** In the context of an incremental review, the AER should begin with its estimate of beta from the previous review and consider how the evidence has moved since then.	Considered appropriate by some experts. Reasons included: • 'Incremental' review, by definition, involves determining the increment to be applied to the previous figure. • JH If we were to move away from SL-CAPM we need to reconsider the whole model of WACC so that we were left with a consistent framework after adjustment. And there would need to be more extensive empirical investigation of the redefined model parameters.	

6. EQUITY MARKET RISK PREMIUM (MRP)

6.1. Context

The equity market risk premium (MRP) is a key parameter in the CAPM used to estimate the cost of equity and in turn the weighted average cost of capital (WACC). It is the return that investors in the Australian stock market expect to earn above the risk-free rate which is measured by the returns that can be expected on Australian government securities. In the context of the AER's decision, it may be considered to be the expected return on a broad stock market index less the return on long-dated government securities.

The discussion in this session was guided by the AER discussion paper *Market risk premium, risk-free rate averaging period, and automatic application of the rate of return* published in March 2018. The comments here should be read in conjunction with that paper.

The issues discussed by experts

- The overall approaches to estimate the forward looking MRP.
- Detailed measurement issues associated with these approaches.
- The weighting of evidence to determine an estimate of the forward looking MRP.
- The appropriate approach to the MRP in the context of a binding ROR guideline (and in particular would the MRP be fixed, or the subject of a formula).

6.2. Summary of expert views

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
6.01	**Methods of estimation of market returns** Three techniques may be considered to estimate the equity market risk premium (MRP): backward looking historic equity market returns (HER); forward looking implied cost of equity using dividend growth models (DGM); and surveys of market participants. There are no other methods that need to be considered.	Reasons experts agreed: • These three techniques are in common use by the market and regulators. • Long time series of returns are useful for estimating the unconditional or long-run MRP and the long-run mean real return to the market. • Regressions of returns on predictors and the dividend growth model are useful for estimating the conditional or short-run MRP and the short-run mean real return to the market. • Estimates of the short-run MRP can also be extracted from option prices and research using estimates like these suggests that the short-run MRP was high during the global financial crisis. Extracting estimates of the MRP from option prices, however, is not a method that has gained wide acceptance and so is not considered appropriate for MRP estimation for the RORG. • Experts did not identify other techniques for consideration.	• SG notes that historic equity market returns can be analysed in two ways – by taking the mean of historic excess returns (relative to risk-free rate) and by taking the mean of historic real returns. He also notes that 'surveys' can include independent expert valuation reports and decisions of other regulators.
6.02	**Arithmetic vs geometric average returns** In considering the HER, only the arithmetic average should be used on one-year returns.	Some experts agreed: • View of some experts (SG, SW) consistent with current AER practice (using 1 year arithmetic returns) • SG. Arithmetic average is statistically consistent with 1 year expected returns. Geometric average is not relevant and should not be used. Considered surprising that it is still an issue.	• GP/SS. Both are used in practice and it is likely that the MRP lies somewhere between the two. While the AER doesn't compound returns, investors do and form expectations of returns over longer periods than one year.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		We are seeking an MRP to be used in the AER's process for setting allowed returns. Because that process involves no compounding, the arithmetic mean must be used. The fact that someone else may compound returns in some other process is irrelevant. • SW. When compounded over many periods, an estimate of the WACC that uses the arithmetic mean can be biased upwards. Unless compounded over many periods an estimate of the WACC that uses the geometric mean will be biased downwards. To all intents and purposes the regulatory process that the AER employs never compounds an estimate of the WACC. So no weight should be placed on an estimate of the MRP that uses the geometric mean.	• JH. Arithmetic is the appropriate estimator in a pure statistical sense so long as excess return observations are independent of each other. But there are grounds to believe that there is some negative autocorrelation in excess returns-of uncertain extent-in which case the arithmetic average may be misleading in application to multi-period predictions. While it is conventional to use a 1 year return period, the CAPM is silent on the length of the return period. The AER should investigate inconsistencies in rate of return estimates achieved using different return periods (e.g. 1-year vs 5-year vs 10-year). If there is material inconsistency in cost of capital estimates calculated across different return periods, the most appropriate rate of return period for WACC calculations is likely to be one that has a duration similar to the average asset life that it applies to. • DJ. Geometric returns are what investors receive.
6.03	**Role of HER in MRP estimation** Estimates that use the HER are one set of evidence on the MRP. They	Reasons experts agreed: • GP. The historic excess return provides a starting point, but has been highly variable and the true MRP could	• JH. Estimates based on HER are not the only relevant information but they are

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	should not be considered preeminent, but rather considered alongside all other relevant evidence.	easily differ from the HER by one percent and possibly more. • SG. This is one piece of relevant evidence that should receive material weight, but not determinative weight above all other evidence. The reason for this is best illustrated in the context of the GFC - the HER approach suggested that the cost of equity capital fell dramatically during the peak of the GFC. Clearly, such an approach should not be the determinative method for setting the allowed return on equity. • SW. An estimate of the long-run MRP that uses a long time series of returns should be given some weight.	preeminent. They involve less subjectivity than the alternatives. • SS. Strongly agree with JH.
6.04	**Data for HER estimation** The HER data should use the "NERA" adjustments that Dimson, Marsh & Staunton employ in recent Credit Suisse Global Investment Returns Yearbooks.	Reasons most experts agreed: • There were careful adjustments in the early years of the series that are considered to be the most accurate.	
6.05	**Length of time series for HER** HER based estimates of the MRP should only employ periods of 50 years or more.	Reasons most experts agreed: • Shorter periods not considered to provide sufficient evidence.	• GP suggested that the MRP is falling. (The evidence was not presented to the panel, it would presumably rely on shorter series. • SS. Depends upon circumstances and beliefs about the dynamics of MRP. • JH. Lengthening the dataset has an advantage and a disadvantage. The advantage is that with a stable underlying distribution of returns extra observations

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
			improve the precision of the estimate of the population mean excess returns. The disadvantage is that if the distribution is trending or has a structural break the "old" observations may be misleading. Probably the best approach is to start with as long a dataset as possible, but to admit models that robustly demonstrate a change in the parameter over time.
6.06	**Role of DGM** The DGM provides a useful source of evidence on the MRP that should be considered alongside other sources of evidence.	Reasons most experts agreed: • The evidence indicates that estimates of the MRP that use the dividend growth model can track variation in the short-run MRP through time. Its primary weakness is that it requires an estimate of long-run dividend growth and forecasting long-run dividend growth is difficult. Other methods of estimating the forward looking MRP, however, also have their weaknesses. • Commonly used in practice, including in the regulatory setting. • DGM should receive material weight. The only method that estimates a forward-looking return that is commensurate with the prevailing conditions in financial markets. • Note that FERC (US regulator) only allows the CAPM to be used if a DGM estimate of the MRP is used. HER estimates are not allowed at all. • Relevant to consider the weight that other regulators place on DGM estimates of the MRP.	• SS not very convinced by the DGM; we can disagree about earnings and discount rates, too much scope for gaming. Perhaps a variant where there is agreement on the inputs might have some limited use. • GP. Plenty of weaknesses, but used in practice. Future cash flows/earnings are imprecisely estimated as is their pattern of growth or decay and the future funding required to support future cash flow. A key issue is the range of possible estimates of the long term growth rate.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		• The AER's estimates of the required return on equity are entirely plausible and relatively stable over time.	
6.07	**Fixed MRP or fixed TMR?** Experts believe that neither (a) the MRP is constant through time; nor (b) the mean real return to the market is constant, implying that changes in the risk-free precisely offset changes in the MRP. The truth likely likes somewhere in between.	Reasons most experts agreed: • SW. Some weight should be placed on estimates of the long-run MRP that use long time series of returns. The Wright assumption is that the mean real return to the market is constant through time. An alternative assumption is that the MRP is constant through time. Neither assumption is likely to be true – the truth is likely to lie somewhere in between. • IS. It is also important to consider this relative to the risk-free rate measure used e.g. cost of equity is essentially based on a short-term/spot measure, where private investors tend to think of a steady MRP against a more long-term average risk-free rate. This doesn't change on a 1:1 basis as rates move, but can change in very high/low parts of the interest rate cycle as capital moves between equity and other markets	• GP. There is need to distinguish between equilibrium return expectations and returns expected. We are interested in equilibrium return expectations and they may change somewhat, particularly in nominal terms. The problem is reliable measurement. There is no compelling case for a negative correlation between the risk-free rate and the MRP, and so the TMR approach does not help estimate equilibrium returns. • Strongly disagree that we should consider TMR constant, or make it the alternative to a fixed MRP. MRP varies, but this does not make it some weighted average of a fixed MRP and a constant TMR – Rf. A more appropriate representation could be as a stochastic process, but specification of that process would be a challenge. Alternative specifications should be considered in particular the Gordon and Gordon Model.
6.08	**TMR vs MRP estimation** The approach of estimating the total market return (TMR) (referred to in Australia as the 'Wright'	Reasons some of the experts agreed: • SG. Wright approach is a valid method for estimating MRP (or total market return). Should be paired with	• GP. The Wright approach has little to recommend it.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	approach) rather than the MRP has merit.	the historical excess returns approach as two end point approaches for processing the historical data. These two approaches should receive equal prominence.	• SS Wright method slips in an assumption which seems hard to verify. • IS. TMR implies a fixed risk-free rate for all networks across the guideline period which cannot be hedged as it is communicated after number is set, and therefore would expose networks to material mismatch risk. • JH disagrees with the statement.
6.09	**Independent expert valuation reports** Independent expert valuation reports provide relevant evidence to inform the estimate of the MRP.	One expert suggested this as additional evidence on MRP.	• JH disagrees with the statement.
6.10	**Parameter estimation for the DGM** Forecasts of long-run dividend growth to be used with the DGM should be linked to the empirical evidence on past dividend growth**.**	Reasons some experts agreed: • SG Long-run GDP growth rate should be the starting point. Any adjustment should be made on the basis of evidence, not assertion. For example, if it is argued that a downward adjustment should be made to reflect the extent to which corporate earnings grow at a slower rate than GDP, that adjustment should be demonstrated with evidence. • SW. The current estimate of two per cent real dividend growth is conservative and lies below estimates of mean real dividend growth computed using historical data. Adding between 50 and 100 basis points to the estimate would bring it closer into line with the mean	• GP. There is no optimal way to estimate growth rates, if there were the DGM would be much more useful. The appropriate course of action is to consider the impact of alternative growth estimates.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		of historical real dividend growth rates. The best way of estimating real dividend growth - that is, forecasting real dividend growth - would be to examine the relation between real dividend growth and other variables that are likely to be linked to real dividend growth - for example, real GDP growth - for which we may have forecasts.	
6.11	**Surveys and MRP** Surveys of market participants are unreliable as a source of evidence and no weight should be placed on them in estimating the MRP SG.	Reasons some experts agreed: • SG. Surveys where market participants are asked what they think the MRP is are meaningless and should have no weight whatsoever. Independent expert reports (that are used in the context of actual commercial transactions) *are* relevant evidence. If surveys and/or independent expert valuation reports are to be used to inform the estimate of the MRP, regard must be given to the risk-free rate that is paired with the MRP. Alternatively, it is the TMR that should be extracted from this source. It would be wrong to use this evidence to support an allowed return on equity that is materially lower than that being used by the respondent/independent expert. • JH. Survey results are noisy, and it is not clear what model people have in mind when they announce their response.	• GP. Greenwood and Shleifer paper[13] indicates that if you want to know what rate of return investors are thinking about and acting on then look at surveys. Surveys may not be a good forecast, but they do indicate what people expect. • SS. Surveys are usually bad forecasts but contain potentially useful information; should not be disregarded; fundamental issue here is the role of sentiment in the market. • IS. There can be some use when the respondents are well versed in the issues and understand what the survey is being used for. There are a number of interdependencies between ROR parameters and to seek an opinion on a point in isolation is dangerous without the full picture.

[13] Greenwood R. & Shleifer A. (2014). Expectations of returns and expected returns. *Review of Financial Studies 27 (3)* 714 – 746.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
6.12	**Risk-free rate estimation** The AER's proposed approach for the risk-free rate to be used in estimating the ROE is reasonable.	The AER's proposed approach is for the use of between 20 and 60 business days, with the period nominated by the business subject to certain criteria being satisfied. Reason most experts agreed: • Consistent with ARORO, avoids gaming.	• SW. Some stakeholders would prefer to see an averaging period of between 20 and 90 business days with businesses having the option to select the exact length in their regulatory proposals. I have no objection to this alternative proposal. • IS agrees.
6.13	**Appropriate methodology for setting parameter / formula for MRP in binding guideline framework** The MRP should be fixed for the duration of the guideline subject to an event of sufficient magnitude triggering a reopening of the guideline.	Statement made above that MRP is neither constant nor directly inversely related to the risk-free rate. It may have been considered appropriate therefore to develop a formula for the MRP that reflected a balance between these two models. However most experts considered it most appropriate to fix the MRP for the duration of the guideline for the following reasons: • Given the uncertainty over the appropriate models more appropriate to fix the MRP.	Alternatively, there should be a formula for the MRP that is dependent on the risk-free rate: • SG. Experts might consider whether the AER's approach to date (which has been to fix a constant MRP) results in the allowed return on equity being too high when rates are high and too low when rates are low. And if so whether (in an NPV=0 sense) this requires consideration when setting the MRP in the current guideline. The AER had regard to such a consideration when changing its approach to the allowed return on debt – ensuring that its change does not crystallise any windfall gains or losses from the previous regulatory period. • SS considered that if there were reopeners these should not be one-sided; if we allow adverse reopeners, we should allow beneficial reopeners.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
6.14	**Use of evidence** In the context of an incremental review, the AER should begin with its estimate of MRP from the previous review and consider how the relevant evidence has moved since then.	One expert (SG) suggested this, there was some agreement: • 'Incremental' review, by definition, involves determining the increment to be applied to the previous figure. • JH Yes, subject to the proviso that the regulator would not simply be relying on a mechanistic assessment of data. AER would need to be able to make changes arising from methodological considerations as appropriate.	

7. VALUE OF IMPUTATION CREDITS

7.1. Context

The AER published a discussion paper *Value of imputation credits* which framed the discussion on this topic.

In addition, AER circulated *Note on ATO staff response to AER staff inquiries about Hathaway's 2013 report on imputation credit redemption*. This note provided additional comments on one of the methods of estimating imputation credit parameters.

7.2. Parameters to be considered

Australia has an imputation tax system. Under this system, investors in Australian companies receive imputation credits for tax paid at the company level, which for eligible shareholders can deliver personal income tax benefits.

In the building block model used by the AER to set company revenues, companies are given a "Vanilla" return (post-tax equity, with no tax adjustment for the cost of debt), with a separate allowance for associated tax. The tax allowance is calculated as a

$$\text{Taxable income} \times \text{tax rate} \times (1-\gamma)$$

In the above formula, the parameter γ ("gamma") reflects the value of the imputation credits to investors. The larger is the parameter γ, the smaller the tax allowance. The reason for this is that if γ is large, a higher proportion of tax paid by the company is considered to be a pre-payment of income tax by investors.

The AER uses an approach to estimation of the parameter γ set out in a paper by Monkhouse (1996). This determines γ as the product of:

- A payout ratio, or "distribution rate". This is the proportion of imputation credits expected to be distributed to investors; and
- A utilisation rate, often referred to by the parameter θ ("theta"), which represents the value of utilising imputation credits per dollar of imputation credits distributed.

7.3. Litigation on imputation tax

The detailed approach to imputation tax by the AER has been the subject of litigation, in particular with respect to the meaning of the term "value" of imputation credits used in the determination of the parameter theta. The AER argued that the "value" of credits is the extent to which investors can utilise the credits to reduce their tax obligations or obtain refunds whereas other parties argued that "value" means the market value that investors place on the credits. Litigation on this led to a decision in the Federal Court in 2017[14] which held that the AER's interpretation was not incorrect.

This decision is important in the consideration of the discussion by the experts on imputation tax. For most experts, it was considered appropriate to take the AER's interpretation as given even though they did not necessarily agree with the approach.

[14]Federal Court of Australia, AER v ACT (No 2) [2017]FCAFC 79, May 2017, paragraphs 632, 679, and 756.

7.4. Issues to consider

Issues considered on this topic by the expert group covered:

- The overall framework
- Appropriate comparator companies
- Individual methods of estimation of parameters

The assessment of gamma and discussions about it are complex because of the interaction of the above issues.

The overall framework matters, and in particular the issues associated with the determination of theta. The four approaches to determining theta are (i) treating it as the weighted average of the utilisation rates of local and foreign investors in the Australian market as the AER does; (ii) treating it as the weighted average of utilisation rates of only local investors (iii) that it is the redemption rate of distributed credits and (iv) that it is the market value per dollar of distributed credits.

Approach (iv) is seen by a number of the experts as being the correct way of assessing theta, but the AER has adopted a different approach which the Court has ruled to be open to it under the NER / NGR. (ii) is seen as correct in a domestic asset pricing model in which foreign investors are excluded by the assumptions of the model, so that all imputation credits are utilised by domestic investors. Experts have indicated that (i) and (iii) are inconsistent with the 'Officer' CAPM framework used by the AER because it assumes that national equity markets are segmented. (One expert also commented that this also applies to approach (iv)). If it is accepted that (i) is the approach to be adopted, then parameter estimates need to be made.

For the distribution rate, one would ideally estimate the distribution rate from companies that were similar in relevant respects to the BEE, but it is by no means obvious what the appropriate comparator companies are and for which reasonable data are available.

Finally, the quality of some items of data that have been identified are considered by the experts to be unreliable.

All this makes the estimation of gamma extremely problematic. However, at the second CEES it was established what the issues are, if not a precise view on how they should be resolved.

7.5. Summary of expert views

No	Issue / statement	Reasons for agreement	Reasons for disagreement
7.01	**Overall approach** For the purposes of the guideline the value of imputation tax credits should be interpreted as the utilisation of credits rather than the market value of those credits, i.e. the approach proposed by the AER.	Reasons most experts agreed: • GP. From a regulatory perspective this seems to be settled by the Federal Court decision. Value in use is given by credit redemption and this measurement is consistent with a value measured before investor taxes and costs. • ML. The issue seems to be settled in legal terms, and that may be conclusive in the present situation. Judging from their submissions, the regulated businesses also hold this view. • SG. My view is that gamma should be interpreted as the (market) value of credits, not the proportion that might be redeemed. But I am unaware of any stakeholders who see merit in challenging the AER's current interpretation. So we should proceed on the basis of a 'utilisation' estimate of gamma. • SW. Gamma is the product of the distribution rate and theta, where theta measures the impact on the return required on equity of imputation credits distributed. Theta will typically fall far below the redemption rate and so the redemption rate will in general provide a poor guide as to the value of theta. My understanding is also, however, that stakeholders currently see no merit in challenging the AER's view that theta is the rate at which credits distributed are redeemed or utilised. • JH Perhaps the safest approach, given that different investors will place different values on theta, and this gives a weighted average.	• IS. I don't think it has been legally settled, the Federal Court found that the AER's approach was not incorrect, not that it was better than other definitions/approaches. The dividend drop off studies and ATO statistics do provide relevant information. But agree with SG that it is unlikely to be a fruitful exercise and we should move forward on the basis of the AER's construction. To ML's point - I don't think all regulated networks agree with the AER's approach on gamma at all, they have not been able to show another method is "materially preferable" and judicial review is not the forum to evaluate the merit of approaches. That does mean given the opportunity to review the current approach we should not see its limitations and strive for a better outcome more in line with regulatory principles. There are two broad issues at play: ○ Should theta capture potential value (upper bound) or value realised (actual)? ○ For the given approach, is the data sufficiently "clean"?

No	Issue / statement	Reasons for agreement	Reasons for disagreement
			The market value approach is preferable to redemption or utilisation approaches, as it gives a better estimate of how investors practically *extract* value rather what is *prima facie available* to them (i.e. there is a friction and time value of money element). To assume away friction is unrealistic. Simply ask a person whether than would like $1 of income or a $1 franking credit! GP. I don't necessarily agree with this. I do agree that the current approach is not consistent with either a domestic CAPM (credits are fully valued) or an international CAPM (credits have no value).
7.02	**Interpretation of model** The AER defines theta to be the weighted average utilisation rate across investors in the Australian market including foreign investors but this approach is not consistent with any economic model. There is general agreement that theta is an economy-wide parameter.	Reasoning by some experts assenting to the statement was as follows: The usual approach to this sort of exercise would be to write down a model and then to estimate all parameters in a way that is consistent with that model. Thus, one could start with a segmented markets model in which there is no foreign investment in the domestic market. Under this model, there is no need to estimate theta at all, because it must be 1 under the assumptions of the model. However, the AER has decided not to apply that approach because the assumption of no foreign investment is clearly violated in practice and because other WACC parameters are estimated using market data which does reflect the impact of foreign investment.	• JH. It is consistent with a model in which those who redeem credits fully value them and those who do not place zero value on them. Consider an Australian natural person on a 30% marginal tax rate who fully values credits. She receives a fully franked dividend of $700 with franking credit of $300. She declares $1,000, is liable for $300 of tax on it, and this is fully covered by the credit, so she is $700 better off after tax. What level of unfranked dividend would she need to achieve this result? A $1,000 unfranked dividend. So she is indifferent between

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		Alternatively, one could adopt an integrated market model in which market clearing occurs in a single integrated world market. Under this model, there is also no need to estimate theta because it would be (approximately) 0 under the assumptions of the model. Again, the AER has decided not to apply that model. This leaves us seeking a model in which assets are priced relative to a domestic market, but where the influence of foreign investment is taken into account. However, there is no such model at this stage. Thus, we cannot look to a model to inform us about how theta should be estimated. At this point, there are two alternatives to consider: • The AER does not use an approach for estimating theta as the market value of credits using market data that reflects the influence that foreign investors have on domestic equity prices. Market value estimates are therefore not relevant. • The AER's current approach is to simply define theta to be the weighted average utilisation rate for the credits across all investors in the Australian equity market. This definition appears to be based on advice from Handley whereby 'the market' is defined to include foreign investors 'only to the extent they invest into the domestic market.' There is no economic basis for this approach. Including a subset of the wealth of an investor is inconsistent with any equilibrium asset pricing model with a market-clearing condition. Nevertheless, this is the approach to be used. Thus, we need to recognize that theta is to be estimated as the weighted average utilisation rate because the AER has	the $700 franked dividend paid in cash with a stapled franking credit and a $1,000 unfranked dividend paid in cash. Therefore she values the franking credit at $300. And she has redeemed $300 of credits, which is 100% of what was distributed to her. In contrast an overseas investor who cannot use the franking credits and lets them lapse gains no value and redeems nothing. Theta just represents the weights of these two investor types, those who value at 100% of the nominal value of franking credits and those who value at 0%.

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		defined theta to be that – not because that is consistent with any economic model. This is important because no model will guide the estimation of theta.	
7.03	**Statutory tax rate and benchmark efficient firm – what if the BEE if firms do pay less?** It is most appropriate to assume that the BEE pays tax at the statutory corporate tax rate.	Reasons most experts agreed: • An assumption needed for the BEE tax rate, and most considered it appropriate to assume that a company paying tax at the statutory rate would be efficient. • The PTRM derives taxable income. There is no basis for applying anything other than the statutory rate to this taxable income figure. • ML noted, that if the BEE is considered to be paying tax at the statutory rate, the estimate of the distribution rate should ideally be based on companies that pay tax at the statutory rate.	
7.04	**Distribution rate estimation** The distribution rate (which is a firm-specific parameter) should be set by defining a BEE and then estimating the distribution rates of firms that accord or approximately accord with that definition.	Most experts agreed that: • The estimation of the BEE's distribution rate should be set by defining the BEE and then estimating the distribution rates of firms that accord or approximately accord with that definition.	
7.05	**Sources of evidence on the parameter estimates**	Experts agreed to this.	

No	Issue / statement	Reasons for agreement	Reasons for disagreement
	ATO data, equity ownership statistics, and data from other representative firms) are all relevant evidence for consideration of the parameters. But there are also flaws with each of them, and the use of the evidence needs to be carefully assessed with the use of judgement.		
7.06	**Benchmark firm for estimating parameters** Benchmark firm for estimating the distribution rate is a corporate entity that pays tax at the corporate tax rate, it operates entirely within Australia, and has a capital expenditure level that is comparable with that of network businesses.	Most experts agreed. The benchmark efficient entity for estimating the distribution rate and other parameters in the ROR assessment should be the same. However, data availability for firms to estimate each parameter will be different. Therefore for estimating distribution rates, it is necessary to use data from a broader range of companies that are comparable in a relevant way for estimating that parameter. In practice, it is difficult to construct a data set for such companies. Alternatives identified as sources of relevant evidence include: • The individual firm. But this could create an incentive for the firms to distort the regulator's decisions for that firm and also where entity structures are different for entirely separate and valid reasons. • Collection of companies that are good comparators. This could include those used for beta estimation. But it is a limited group of companies, and data is not straightforward to obtain.	• ML. The BEE definition depends on the parameter. For estimating theta, the BEE needs to be subject to the same regulatory regime. For the distribution rate, the BEE should pay company tax at the full corporate rate. The first requirement is irrelevant to estimating the distribution rate whilst the second requirement is irrelevant to estimating beta. • SG notes that it is highly unlikely that a regulated firm would materially reduce its dividend payout policy to seek to influence the regulatory estimate of gamma. Shareholders are much more concerned about stable and increasing dividends than with the regulatory estimate of gamma.

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		• All listed companies, and then ATO data for the distribution rate are available. But there are issues with the quality of elements of the ATO data. • All companies, listed and unlisted. But this includes a range of structures which are likely to be unrelated to the benchmark firm. • IS noted that a distribution rate based solely on listed data (one of the options) is likely to overestimate gamma. Unlike other BEE parameters which use listed data as fairly representative of various networks, the distribution rate is inherently higher for listed firms that the average firm (e.g. with unlisted firms) as listed stocks often trade on short term dividend yield.	
7.07	**Use of tax statistics** The ATO has itself highlighted problems with certain elements of the data that it supplies that have been used to estimate gamma. The ATO is a source of relevant evidence. But the use of its data requires clarification about whether the problems that it identifies are significant or trivial. The ATO should be encouraged to examine its dataset to help in this regard.	Issues noted with the ATO data include: • Non-resident companies paying company tax in Australia which do not generate franking credits. The ATO has not quantified this; some experts interpret its comments as indicating that this effect is likely to be small. • Data includes all companies, listed and unlisted. This is satisfactory for estimation of the utilisation rate, but not the distribution rate if the distribution rate for the BEE is considered to differ from the distribution rate for the average firm. • There are two estimates within the ATO data for the distribution rate of 50% and 70%, and it is not clear which is correct.	• ML. The problems with the data are too great to allow much reliance to be placed on ATO data. The ATO commentary itself suggests a very low weight should be placed on evidence from these statistics. • JH. While accepting that ATO statistics may be valid in that they reflect collection data, issue is whether that the data reflects the BEE.

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		• The main benefit of this approach is that it provides an estimate of gamma that does not require a separate estimation of the distribution rate and the utilisation rate. Experts were aware of most of these issues before the communication from the ATO to AER. So while there are now additional concerns, they are not sufficient to stop using the data altogether. • GP. This estimate provides a ballpark figure for the value of franking credits in use. Implicitly this approach values franking credits retained at zero, which is likely to downward bias the estimate. There are some problems with tax statistics, so the estimates should be treated with caution. • SG. No question about the reliability of company tax paid or credits redeemed. Provides a direct estimate of the 'utilisation' gamma across the economy. Much more reliable evidence than the equity ownership approach. Not clear why any other approach would be preferred to this direct estimate. • SW, SG. The ratio of credits redeemed to company tax paid constructed from ATO data (properly adjusted, if necessary, for the fact that some non-resident companies pay company tax that does not give rise to franking credits) will be a reliable measure of the 'utilisation' gamma for the economy as a whole. The ATO should know what credits have been redeemed in any year and what corporate taxes have been paid. So unless one suspects that the distribution rate for a benchmark entity	

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		differs from that of an average firm, there will be no need to estimate a distribution rate. Even if the distribution rate were to differ from that of an average firm, however, the ATO data will be of use. Suppose that one were able to show that the distribution rate for a benchmark entity is 10 per cent lower than that for an average firm. Then the ATO data would indicate that the 'utilisation' gamma should be set to a value of 0.90 times the ratio of credits redeemed to company tax paid constructed from ATO data.	
7.08	**Use of equity ownership statistics** Equity ownership statistics from the ABS are relevant evidence, for the estimation of the utilisation rate.	Reasons some experts agreed: • SG. The equity ownership approach is only relevant because the AER has defined it to be relevant. It would have no place in any equilibrium asset pricing model. Must be interpreted as an upper bound for the redemption rate as it omits the effect of the 45-day rule and all other reasons why domestic investors do not redeem credits. ATO data provides a more direct estimate that does incorporate all reasons why domestic investors do not redeem credits. • GP. Implicitly this approach assumes the value of imputation credits to overseas investors is zero, which is likely to downward bias the estimate. Exemption from withholding tax has some value in use. Indirect trading of franking credits has some value in exchange. An upward bias in this estimate will be created if the availability of cash refunds is withdrawn. It would be useful to have advice from the ABS on the precision of their ownership estimates.	• Estimates of theta are used by the AER in a number of ways. One way in which they are used is in computing estimates of the MRP. Using estimates of theta in this way requires a time series of theta estimates because adjustments have to be made from 1987 onwards. Producing a time series of 'utilisation' theta estimates from equity ownership data will require adjustments be made not just for the 45-day rule but for the fact that prior to 2000 credits redeemed could not exceed an investor's tax liability. • There are concerns about the reliability of the equity ownership data in that it is based on surveys, it is highly aggregated, and various filters and refinements must be applied.

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		• ML considers that since the Officer model used by the AER assumes that national equity markets are closed to foreign investors and all or virtually all local investors can use the credits, the appropriate estimate for the utilisation rate is 1, and there is accordingly no need for the ABS data. However, if one considers that the presence of foreign investors must be reflected in the estimate of the utilisation rate, then equity ownership data provides the natural estimate of the utilisation rate , and the ABS data seems to be the best equity ownership data. • JH If the ATO data are deemed so bad as to be unusable, and if it is decided instead to approach the estimate of utilisation by calculating the relative shares of domestic and overseas investors then the ABS data could support this. But the results would not be as good as accurate ATO data.	• IS. There is a distortion because of the 45-day rule (so the statistics will over estimate redemptions). • SW. It is not obvious that the use of ownership data rather than the ATO data will lead to a better estimate of the 'utilisation' gamma. Since not all credits received by domestic investors are redeemed or have been redeemed in past years, adjustments would have to be made to estimates of the redemption rate produced from ownership data.
7.09	**Should weight be given to the "Lally" approach, using 20 firms?** Data from the estimates of the distribution rates of large listed firms (the "Lally" approach) provides useful insights into the the distribution rate for the BEE.	Reasons some experts agreed: • ML. The data for estimating the distribution rate should be from listed firms (because regulated businesses are listed or subsidiaries of listed firms, and unlisted firms in general have lower distribution rates). Imposing significant additional criteria in accordance with the definition of a BEE may lead to a sample size that is too small to provide a good estimate. Accordingly, the use of all listed firms may be the best approach subject to deleting firms with substantial foreign income. In addition, the data used must be reliable. This leaves only	• SG. These 20 firms are clearly inappropriate comparators in relation to imputation credits. Most of these firms have material foreign income that they can use to distribute credits. The BEE has no such foreign income, by definition. Thus, this sample violates the proposition that the distribution rate should be estimated for a firm that has the relevant characteristics of the BEE.

No	Issue / statement	Reasons for agreement	Reasons for disagreement
		financial statement data, as the ATO data on distribution rates is unreliable. If all listed firms are sought (subject to deleting firms with substantial foreign income) and financial statement data are used, this suggests using the highest value firms to obtain maximum coverage of the population by value. • GP. A large random sample of dividend paying firms would be a highly informative source of information on distribution rates for the market. • Analysis of the full population of dividend paying firms would give a definitive result on historic distribution rates for the market. However, this involves a large hand collection of data task. This has been an impediment that explains why researchers have not followed this path in the past. • The appropriate distribution rate for a BEE would be the rate for a large firm with a strong and stable positive cash flow. The Lintner model suggests that the distribution rate for such a firm would be higher than average.	Also, there are many technical problems with the 20-firms approach. Take BHP as one example. Over the last two years alone, BHP Ltd has distributed over $1 billion of credits to UK shareholders in BHP Plc as part of its 'dividend equalisation scheme.' These credits are clearly wasted (and therefore the subject of activist shareholder revolt). But the 20-firms approach assumes that such credits are available for residents to redeem. Another example is AGL, which has a $300 million tax liability overturned in the courts, reducing its FAB by $300 million. That figure is assumed to be a distribution to shareholders under the 20-firms approach. At best, the 20 firms approach should not be relied upon until it can be properly assessed. (Such assessment has not occurred to date, because the debate has focused on whether gamma should be interpreted as an economic value or a redemption proportion). • IS. The top 20 ASX companies are largely financial firms, which does not accurately reflect BEE. For example, electricity networks are capital intensive businesses

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			requiring large retention of operating cashflow to be reinvested in capex. • SW. It is not clear that the benchmark entity will resemble a top-20 listed firm. The AER stated in its 2009 WACC review that 'the AER does not agree that a benchmark efficient NSP be defined as a large stock market listed NSP' and so it would appear that at that time the AER shared this view.
7.10	**Parameter estimates and ranges** What is a reasonable estimate of the 'utilisation' gamma for a BEE?	Estimates range from 0.34 to 0.55. 0.34 favoured based on use of ATO data. Higher figures based on equity ownership data from ABS for 'all equity' and combined with distribution rates based on 20 listed firms. Figures would be higher under a pure local market model with utilisation rate assumed to be 1 (consistent with the Officer model). Figure would be close to 0 under the assumption of fully integrated capital markets.	
7.11	**Summary approach to estimation** Take properly adjusted ATO credits redeemed to credits created estimate, the overall estimate for gamma for the whole economy. Take an estimate of the distribution rate for a BEE. Compare that with the average of Hathaway's two		• ML. It is possible that both of Hathaway's estimates for the distribution rate from ATO data are wrong, in which case this approach is not viable. • GP. Concern about looking at all approaches and giving weight to each as This presumes all approaches have merit which seems unlikely.

No	Issue / statement	Reasons for agreement	Reasons for disagreement
	estimates for the distribution rate from ATO data (50% and 70%). Use any difference to adjust upwards or downwards the gamma for the economy as a whole.		

8. OTHER ISSUES

Most of the issues considered by the experts were in response to the AER's discussion papers and the questions raised by these. Experts were given the opportunity through the process of the evidence sessions and preparation of this report to suggest other issues that it would be helpful for the AER to consider. A summary of these is set out in the tables below.

8.1. Summary of expert views

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
8.01	**Cost of debt** The AER approach to the cost of debt, using a trailing average, is considered satisfactory.	Reasons most experts agreed: • IS was strongly in favour of this as it more practically accords with the way in which investors typically finance networks of such scale (given their need for debt diversification). • Trailing average approach provides a regulatory allowance that is consistent with the efficient financing cost of the benchmark efficient entity, so should be maintained. • There is broad agreement that reversion back to a 100% rate-on-the-day allowance would raise the prospect of regulatory risk and uncertainty, given that the AER has only recently moved away from that approach, and given that businesses are all part-way through a transition to the TACD. • Re-examining this issue so soon after a mechanism has been put in place to transition to a trailing average approach would reduce the attraction, all else constant, for current and prospective investors, of investing in regulated energy utilities, and of all stakeholders in the stability of approach on key matters by the AER. • AER has indicated that the TACD allowance is likely to be maintained under an incremental review.	• GP is not in favour of current trailing average approach as it doesn't satisfy the requirement that future investments have a zero NPV. Is there any other business where customers effectively guarantee the historic cost of debt?
8.02	**Sensitivity Analysis** It would be helpful for the AER to set out the impact on calculated allowed return from making alternative	Experts agreed, comments on this included: • DJ. While agreeing with the approach, he considers that this is a partial solution to making excessive reliance on the false precision of the CAPM.	

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
	combinations of assumptions about CAPM parameters.		
8.03	**Asymmetric risks of setting ROR too low or too high** The risk of a cost of capital set too low may be worse than one set too high. The AER should explicitly state its view in relation to this point in the Guideline and whether its approach to this point has changed since previous reviews.	Comments on this included: • ML. Summarised how this assessment was done explicitly in NZ, and could provide further information in the joint report. In NZ, the reaction to this issue is done explicitly. For each parameter, the mean and the probability distribution function are estimated. By combining these, the mean and probability distribution for the WACC is determined and the NZCC explicitly picks a point in the WACC distribution at a specific percentile, rather than choosing the mean point. It was argued that this approach avoids the compounding effect of over-conservative estimates for a number of parameters.	• DJ. Only true if consumption is increasing. With declining consumption excessive investment imposes costs for long periods. Underinvestment can be rectified in the next regulatory control period. • ECA has also advised DJ that their Energy Consumer Sentiment Survey indicates that consumers are more satisfied with the level of reliability than they are with value for money, and so their preference is (counter to the conclusion of the Commerce Commission) for lower prices over maintenance of current reliability standards. Problems arising from lack of investment are slow to arise. If we drop price today, the penalty for a lack of investment now will not show itself for a number of years It is unlikely that the AER will not have time to make changes which will reverse any loss of reliability, security, etc. before consumers are severely impacted. • JH Overinvestment and under-investment both impose societal costs. It has not been demonstrated that they are asymmetrically distributed. This is

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			reinforced when one takes into account that networks make many investments each of which has its own risk characteristics and therefore required RoR characteristics. Networks may (a) omit risky investments which are highly beneficial to consumers and (b) carry out low risk investments which are not very beneficial to consumers. Changing the R0R changes the extent of these two types of "errors". It is reasonable to suppose that the elasticity of investment to RoR is not discontinuous around any particular RoR. Therefore investment responses similar on the upside and the downside.
8.04	**Cross checks** The AER should not cross-check its final assessment using other market data.	Reasons some experts agreed: • Some market data is used as a "cross-check" of the rate of return derived using the foundation model approach. However it should not be used as a means to subjectively override the primary method. • SG suggests that the use of evidence in a 'cross check' role is problematic for three reasons: (1) How do we know whether the AER's allowed return has passed or failed a particular cross-check? (2) What happens if the allowed return passes some cross checks and fails others? (3) If the failure of a cross-check results in a change to the allowed return so that it passes the cross-check, the cross-check dominates the original evidence, so why did we	• DJ supports use of cross checks. The ex post view (actual financial performance outcomes) gives an indication of whether the idealized building block approach has done something "reasonable" and sustainable. If not, it can either be tossed out for a different and possibly simpler and more transparent framework (e.g. CPI increases only) or the input parameters can be changed, to achieve a realistic level of "good" regulation. • JH disagrees with the statement. Cross checking should be open to the AER.

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
		bother looking at the original evidence and not just go straight to the cross check. • SG consider better approach is to consider all relevant evidence together when estimating WACC parameters, rather than dividing the relevant evidence into 'primary' evidence used to determine an initial range, 'secondary' evidence used to select a point estimate from within the range, and 'cross-check' evidence used to assess the preliminary point estimate. • IS is strongly opposed to an ex-post cross check as it cuts right across the principle of incentive based regulation. You must be getting paid too much if you've been a consistent high performer, or don't worry if you're inefficient, we'll pay you more. And you can't have it asymmetric. We have to use listed stock data because it is all that's available, but listed stocks are empirically more efficient than the average network.	However, the AER would need to identify a valid cross-check method.
8.05	**Assessing the NGO / NEO – how?** There is no way for the AER to judge ex post whether it has made an appropriate decision on ROR.	• No announcement is made of what the true WACC was ex post. Only required returns can be estimated. • Reduced capital spending in response to a ROR that was too low would not be observed over a short time frame. Investors consider over long periods.	• SS suggests a research question comparing regulated companies vs non-regulated companies. See which companies have "low-beta" bias. • DJ – measures of financial performance stock prices, profits and cash flows, combined with assessment of the behaviour of firms would provide evidence. • SW. A useful way of proceeding is to ascertain whether any strategy that the AER proposes to use in setting the return

No	Issue / Statement	Reasons for agreement	Reasons for disagreement
			required on the equity of a benchmark entity would have produced forecasts of returns that are not significantly biased in long series of historical data. This known as back-testing.
8.06	**Capital gains tax and the CAPM** Consideration should be given to using a version of the CAPM that reflects the Australian capital gains tax regime.	. • ML suggested that this might provide an estimate of the ROR that better reflects the ARORO.	• SG. This would not be part of an incremental review. To be considered after the current review. • IS. Doesn't agree with this. The ROR allowance, like other elements of the MAR building blocks, translates into current revenue received and therefore taxable as income not a capital gain. There are equally areas of the revenue allowance that should receive a tax allowance but this is highly impractical such as a level of incentive/ outperformance. In other words why is $1 of outperformance (post sharing under the EBSS/CESS) worth less than $1?
8.07	**International CAPM** Consideration should be given to using an international version of the CAPM as an input into the estimation of the ROR.	• ML suggests that equity markets are neither totally internationally integrated nor totally segmented. To estimate a model that reflects a partially integrated market would be too complex. So he suggests estimating the cost of equity using a local CAPM and an international CAPM and taking account of the evidence from each.	• IS highlighted concerns from an investor viewpoint that there would be increased discretion without objectivity. • SG. This would not be part of an incremental review. To be considered after the current review.

9. PREPARING FOR THE NEXT ROR GUIDELINE

The process of consulting experts on the RORG has come a few weeks before the AER publishes its draft guideline. This means that it is unlikely that any proposals from the expert group that requires significant work to gather evidence will be implemented in the 2018 guideline. The expert group considers that in order to prepare effectively for the next guideline review, AER should undertake or commission work so that proper consideration can be given to issues before the formal review process starts.

Suggested work (which is not necessarily supported by all experts) includes:

- **Equity beta**. With only 3 listed Australian comparators, consideration should be given to the extension of the comparator set to international energy networks and related companies in Australia. This raises a range of theoretical and empirical issues. These relate to the index against which beta is measured, and the type of companies that can be considered sufficiently comparable.
- **Releverage approach**. One of the experts has substantial concerns about the approach to adjusting equity betas to make them comparable and suggests that this needs to be considered by the AER.
- **Time period over which to assess returns**. Conventionally return expectations are assessed over one year (in line with the AER's PTRM model for determining revenues). However, investors assess returns over different periods which may or may not have implications for estimating their return expectations over one year.
- **Approach to capital gains tax**. The Officer model that is used by the AER is based on the assumption that capital gains are taxed at the same rate as for interest and dividends. In practice this is not the case and this may have an impact on the specification of the CAPM used, and on ROR estimates (although some experts noted that the model would need to be tested and evidence against it taken account of in the event that it used for ROR estimation).
- **Tax statistics**. Substantial concerns over ATO data related to imputation tax credits arose during the discussion, and increasing confidence in this data would be of material benefit to the AER.
- **International CAPM**. The possibility of using an international CAPM as a supplement to estimates of domestic CAPM was considered by one expert. Use of such a model would raise numerous conceptual and measurement issues, but it is a reasonable question as to whether use of such a model may help the AER better estimate the opportunity cost of capital for the companies it regulates (although some experts noted that the model would need to be tested and evidence against it taken into account in the event that it is used for ROR estimation).
- **Has the ARORO been met?** Experts considered whether there were ways to help the AER assess whether the ARORO had been met. Further work is needed to address this issue.

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