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UNITED ENERGY

United Energy

Response to AER Preliminary Determination

Re: Rate of return and gamma

Public

United Energy – draft response to AER Preliminary Determination re rate of return and gamma

CONTENTS

1   Overview

This section of our submission on the Preliminary Decision addresses the allowed rate of return, the value of imputation credits (gamma) and the method for forecasting inflation. These topics are addressed together in this section because they each impact on the overall return to investors. Specifically:

- under the National Electricity Rules (**NER**), the allowed rate of return is the post-tax return allowed to investors, calculated as a weighted average of the return on equity and return on debt;[1]

- gamma represents the value of imputation credits to investors associated with the payment of company tax. This value effectively forms part of the overall return to equity investors;

- forecast inflation is used to adjust the cash flows to maintain a real rate of return framework.[2] It thus has an important interrelationship with the rate of return, and impacts on the overall return to investors—it is akin to capital gains earned on an investment. If inflation is not correctly forecasted, the adjustment to cash flows may be too large (or too small) and thus investors may receive an overall return that is too low (or too high).

In order to promote the National Electricity Objective (**NEO**), the overall return to investors must be sufficient to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers. Critical to the promotion of efficient investment is that businesses be provided with a reasonable opportunity to recover efficient costs (i.e. the costs that would be incurred by an efficient business in a workably competitive market). This means that:

- the return on debt allowance must be such as to provide a reasonable opportunity to recover at least the efficient debt financing costs of a benchmark efficient entity (**BEE**) with a similar degree of risk as that which applies to United Energy (UE) in respect of the provision of standard control services;

- the return on equity allowance must reflect returns required by equity investors to invest in businesses facing a similar degree of risk;

- gamma must reflect the value that equity-holders place on imputation credits (not simply their face value or utilisation rate). If the value of imputation credits is over-estimated, the overall return to equity-holders will be less than what is required to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers; and

- the inflation forecast must reflect market expectations of inflation over the regulatory period.

The Preliminary Decision does not provide for an overall return that is consistent with the NEO. For reasons set out in this section:

- the allowed rate of return is not commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to UE in respect of the provision of standard control services;

- the value of imputation credits is over-estimated, meaning that the reduction to the overall return to account for imputation credits is too large; and

- the AER's forecast of inflation is also over-estimated, meaning that the reduction to the overall return to account for expected indexation of the regulatory asset base is too large and otherwise does not reflect current market expectations.

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[1] NER, cl 6.5.2(d)

[2] While the PTRM is a nominal model in that it has nominal inputs including for the rate of return, the PTRM is properly understood as embodying a real rate of return framework in that it derives a real revenue path for the regulatory period, expressed in terms of the real X factor for each regulatory year of the regulatory period, that includes compensation for a real rate of return (effectively derived by the PTRM by taking a nominal input for the cost of debt and equity and deducting forecast inflation).

This section of our submission explains our specific concerns with the preliminary decision in relation to the rate of return, value of imputation credits and forecast inflation.

As explained below, in some areas (such as the benchmark gearing level and term of debt) we agree with the AER's position in the preliminary decision. To the extent that the AER proposes to change its position in any of these areas in its final decision, we would need to be informed of that, and provided with a reasonable opportunity to respond to any proposed change of approach.

1.1   Achieving the allowed rate of return objective

The allowed rate of return objective (**ARORO**) is the touchstone for estimating the allowed rate of return. The NER require that:

- the return on equity for a regulatory period be estimated such that it contributes to the achievement of the ARORO;[3] and

- the return on debt for a regulatory year be estimated such that it contributes to the achievement of the ARORO.[4]

The ARORO is that the rate of return for a distribution network service provider (**DNSP)** is to be commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the DNSP in respect of the provision of standard control services.[5]

As can be seen, the ARORO has two key elements:

- first, the ARORO requires identification of the level of risk that applies to the DNSP in respect of the provision of standard control services; and

- secondly, the ARORO requires estimation of efficient financing costs for a BEE facing a similar degree of risk.

We consider that the relevant level of risk is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia. Therefore, in constructing comparator datasets for the purposes of estimating a rate of return that is commensurate with efficient financing costs of a BEE, these datasets should include entities that face a similar degree of risk to that faced in the provision of electricity distribution services. That is, they should not be restricted to regulated entities.

If we are incorrect that the relevant level of risk is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia, but rather, the relevant level of risk is that of a regulated energy network business, we submit that the reference to 'efficient financing costs' in the ARORO is to costs incurred (and therefore financing practices adopted) in a workably competitive market to finance an investment with that risk profile.

That is, regardless of what the relevant degree of risk is, once this risk benchmark is established, the assessment of efficient financing costs requires consideration of what financing practices would be engaged in by businesses operating in a workably competitive market, facing the relevant degree of risk. Such an interpretation of the term 'efficient financing costs' in the ARORO is consistent with the object of regulation itself, which is to simulate competitive market outcomes. This is because it is ultimately competition that drives efficient behaviour and is the benchmark that the NEL seeks to replicate. The 'workably competitive market' concept is described in more detail below.

Many of the issues dealt with in this chapter are the subject of applications for merits review of the AER's distribution determinations for the NSW electricity distributors (Ausgrid, Endeavour Energy, Essential Energy),

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[3] NER, cl 6.5.2(f).

[4] NER, cl 6.5.2(h).

[5] NER, cl 6.5.2(c).

the ACT electricity distributor (ActewAGL), and the NSW gas distributor (JGN) (**NSW and ACT merits reviews**). These issues include the approach taken by the AER to estimating the return on equity and the methodology to estimate the return on debt. The applications were heard in September and October 2015. Once the decision of the Tribunal has been published, we will review the decision and consider the implications, if any, of that decision for the determination the AER is required to make for UE. To the extent we consider that the decision does have implications for its determination, UE will make any submissions to the AER on those implications as soon as practicable after the Tribunal's decision has been published and considered by us.

1.2   Return on debt

As became clear from the detailed consideration of the return on debt issue in the NSW and ACT merits review processes, the method that the AER proposes to adopt in its preliminary decision for estimating the return on debt will not deliver a return on debt estimate which contributes to the achievement of the ARORO and the NEO. The ARORO is concerned with the financing costs and practices that are efficient in the economic sense, that is, the financing costs incurred, and practices adopted, in a workably competitive market.

As set out below, we submit that the debt management practice that would be expected absent regulation is the holding of a staggered portfolio of fixed rate debt, the cost of which can be estimated by the trailing average approach. Given the intent of regulation is to replicate, insofar as possible, the outcomes that would be expected in workably competitive markets, the efficient financing costs to be estimated pursuant to clause 6.5.2 of the NER are required to be estimated using the trailing average approach and this approach should be adopted without any transition (AER Option 4).

The AER's approach to transitioning to the trailing average estimation method will lead to a return on debt allowance for the 2016 regulatory period that is below the efficient financing costs of a BEE for that period. This is because:

- The AER's approach proceeds on the incorrect premise that the efficient financing costs of a BEE are those that would be incurred under the financing practices that would have emerged under the previous regulatory approach to estimating the return on debt. The correct approach is to identify the efficient financing costs of a BEE, which are the costs that would be incurred in a workably competitive market (or, put another way, the costs that would be incurred absent regulation).

- The AER considered that the trailing average approach may be more reflective of the actual debt management approaches of non-regulated businesses and therefore, more likely to represent efficient financing practice.[6] The AER found that the efficient financing practice under the trailing average approach is to hold a staggered portfolio of fixed rate debt. [7] The efficient financing costs of a BEE are thus the costs associated with a staggered portfolio of fixed rate debt.

- Expert advice from CEG confirms that a 10 year trailing average approach would largely mimic the debt management strategy employed by unregulated infrastructure businesses.[8]

- Given that the costs associated with a staggered portfolio of fixed rate debt are best approximated by a trailing average methodology, the immediate implementation of the trailing average approach to estimating the return on debt will provide an allowance that reflects efficient financing costs. Conversely, application of a transition that results in the return on debt being different from efficient financing costs will, by definition, lead to an allowance that is not commensurate with the efficient debt financing costs of a BEE.

For these reasons, we consider that the trailing average approach should be implemented immediately, with no transition.

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[6] AER, *Rate of Return Guideline: Explanatory Statement*, December 2013, pp 108–111.

[7] AER, *Rate of Return Guideline: Explanatory Statement*, December 2013, pp 108–110.

[8] CEG, *Efficiency of Staggered Debt Issuance*, February 2013, [92], [97], [101] and [102].

Alternatively, even if the AER's approach of estimating efficient financing costs by reference to the financing practices that would emerge under regulation were correct, the appropriate approach would be to adopt a hybrid form of transition where only the hedged base rate component of the return on debt is subject to a transition (AER Option 3). This is because the AER has concluded that under the previous on-the-day approach to estimating the return on debt, an efficient financing practice would have been to engage in hedging of the base rate. By contrast, the AER has conceded that the debt risk premium (**DRP**) component of the return on debt cannot be (and could not have been) hedged, with the result that there is no reason for a transition to be applied to it.

If the hybrid transition is to be adopted, it would then be necessary to consider to what degree hedging would have been efficient. While the AER's reasoning assumes that the efficient level of hedging was 100%, this is incorrect as a matter of fact and the evidence demonstrates that the efficient level of hedging of the base rate under an on the day approach to estimating the return on debt is significantly less than 100%.

On any view of what are efficient financing costs, the AER's transition cannot be justified. Even on the AER's view of the correct approach to estimating efficient financing costs, and assuming that the BEE hedged the base rate 100%, application of the AER's transition would lead to a mismatch between efficient financing costs and the regulatory allowance on the DRP component as the DRP could not have been hedged by a BEE.

In respect of implementation issues, UE submits that the AER should:

- adopt a benchmark credit rating of BBB, as per our Regulatory Proposal

- continue to adopt a benchmark term of 10 years;

- follow the procedures set out in section 5 of the report that we submitted with our Regulatory Proposal entitled "Rate of Return on Debt: Proposal for the 2016 to 2020 Regulatory Period - Attachment to UE Regulatory Proposal" (dated 30 April 2015). In support of this we have submitted a revised report from Esquant with this RRP entitled "Estimating the yield on a benchmark corporate Nov/Dec 2015: Analysis to support the hybrid form of the transition to a trailing average rate of return on debt"; and

- include a new issue premium of 27 basis points in the estimate of the return on debt for each regulatory year if the AER does not adopt the immediate transition approach.

1.3   Return on equity

The method adopted by the AER in its Preliminary Decision does not result in a return on equity that is consistent with the ARORO.

The evidence before the AER is that its estimate is too low. In particular:

- the AER's estimate fails a number of its own cross-checks;

- it is below all available and relevant evidence as to the return on equity required by investors.

- This outcome is the result of:

  – the AER relying solely on the output of a model that is known to produce biased estimates, without the AER correcting for this bias;

  – the AER applying this model in a way that does not reflect market practice and which results in the return on equity simply tracking movements in the risk-free rate; and

  – errors in interpretation and use of key evidence, including empirical evidence relating to the estimation of the market risk premium (**MRP**) and equity beta.

UE continues to believe that the ARORO is best achieved through an approach that properly has regard to estimates from all relevant return on equity models. In its initial proposal, we proposed that each of the Sharpe Lintner Capital Asset Pricing Model (**SL CAPM**), the Black CAPM, the Fama French Three Factor Model (**FFM**) and Dividend Growth Model (**DGM**) be estimated, and that these estimates each be given appropriate weight in deriving a return on equity estimate. We maintain our view that this approach would best achieve the ARORO.

However if the AER proposes to continue relying solely on the SL CAPM to estimate the return on equity, it becomes even more important that the estimates of the MRP and equity beta are calculated in a manner that has proper regard to relevant material in order to ensure that its estimate of the return on equity is consistent with the ARORO and reflects prevailing market conditions. Of particular importance are the DGM estimates for the MRP and evidence from wider datasets for the equity beta.

This submission outlines an alternative approach that involves properly adjusting SL CAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:

- determining a robust 'starting point' equity beta estimate, based on a sufficiently large sample of comparable businesses;

- making a transparent and empirically based adjustment to the equity beta estimate to account for the known shortcomings of the SL CAPM, particularly low beta bias and book-to-market bias; and

- deriving the MRP in a way that gives appropriate weight to measures of the prevailing market conditions (i.e. the prevailing MRP).

This alternative approach leads to an estimate of the prevailing return on equity of 10.05 per cent.

1.4 Gearing

UE maintains its proposed gearing ratio of 60 per cent, accepted by the AER in the Preliminary Decision, for the reasons set out in our regulatory proposal, and the Preliminary Decision. We note that this gearing assumption is broadly consistent with evidence of gearing ratios for businesses operating in a workably competitive market providing services similar to standard control services.

1.5 Gamma

The AER's estimate of gamma does not reflect the value of imputation credits to investors. The AER has over-estimated gamma, meaning that the reduction to the overall return to account for imputation credits is too large.

The AER's approach to estimating gamma is premised on an incorrect interpretation of the NER. The AER seeks to estimate gamma on a "pre-personal-costs" basis, which is equivalent to estimating gamma as the *rate of utilisation* (or assumed utilisation) of imputation credits, rather than their *value* to investors.

As a result, the AER has erred in its use of evidence in relation to gamma:

- the AER uses equity ownership rates as direct evidence of the value of distributed credits (theta), when in fact equity ownership rates are no more than an upper bound (or maximum) for this value;

- the AER also uses redemption rates as direct evidence of the value of distributed credits (theta), when in fact redemption rates are no more than an upper bound (or maximum) for this value; and

- the AER has erred in concluding that market value studies can reflect factors, such as differential personal taxes and risk, which are not relevant to the task of measuring theta. Market value studies are direct evidence of the value of imputation credits to investors.

Further, the AER has made errors in its interpretation and use of key evidence, including by proceeding on the incorrect footing that estimates of theta based on data for listed companies can only be combined with estimates of the "listed equity" distribution rate.

On a proper interpretation of the empirical evidence:

- both tax statistics and equity ownership data indicate that theta can be no higher than 0.45, and that therefore the upper bound for gamma is 0.3;

- the best evidence as to the value of imputation credits – from SFG's updated dividend drop-off study – indicates that theta is approximately 0.35 and that gamma is 0.25.

Even on the AER's interpretation of the NER, its gamma estimate cannot be supported. The evidence demonstrates that if gamma is estimated on a "*pre personal costs*" basis, the best estimate is approximately 0.3.

1.6   Forecast inflation

Recent market evidence demonstrates that the AER's forecasting method is currently over-estimating inflation.

The consequence of this is that:

- the inflation forecast used to make adjustments to cash flows is inconsistent with the forecast of inflation implied in the nominal rate of return; and

- the downward adjustment to depreciation cash flows will be too large, thus artificially depressing the overall return to investors.

UE proposes that an alternative forecasting method, based on market data, be adopted. This alternative method will ensure consistency between the inflation forecast used to make adjustments to cash flows and the forecast of inflation implied in the nominal rate of return.

1.7   Interrelationships

There is a well-recognised interrelationship between the return on equity and the value of imputation credits – since the MRP needs to be grossed up for the value of imputation credits, a higher theta estimate implies a higher required return on equity.

- This interrelationship is accounted for in this submission and the supporting expert advice.

- If the AER were to reduce its estimate of theta to 0.35, while maintaining its current approach to estimating the MRP, no adjustment to the AER's MRP estimate would be necessary. This is because the top of the AER's range of estimates of the historical average MRP (used by the AER as its MRP point estimate) would remain at 6.5%.[9]

There is also an interrelationship between the method for forecasting inflation and the amount that is deducted from the annual revenue requirement for indexation of the regulatory asset base, and between the allowed rate of return and the method for forecasting inflation. Due to these interrelationships, the forecast of inflation needs to be accurate (i.e. as close as possible to actual inflation, which is used to roll forward the RAB at the

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[9] For reasons set out in section 4.4, UE does not agree with the AER's approach to estimating the MRP. However we note that if the AER were to maintain the same approach to estimating the MRP while lowering its estimate of theta, its estimate of the MRP would not need to change.

end of the regulatory period) and consistent with the implied forecast of inflation in the nominal rate of return. The best way to do this is to rely on the same dataset (i.e. market prices of securities) to estimate both.

We do not accept that there is an interrelationship between the method for transitioning to the trailing average approach to estimating the return on debt and the equity beta. As noted by Chairmont, the required return on equity is not affected by the DRP mismatch risk as it is a diversifiable specific risk rather than a component of market systematic risk.[10] Therefore any change in the AER's approach to estimation of the return on debt (including any change to the transition method) will not affect the equity beta.

Finally, we consider that the return on equity and return on debt need to be estimated on the basis of a consistent approach to the ARORO. As explained below, our proposed approaches to estimating the return on equity, return on debt and the overall rate of return, as set out in section 8, are consistent with the approach to the ARORO described in section 1.1 above.

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[10] Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 40.

2. Background

2.1 Recent changes to the rate of return rules

As has been noted by UE, the rules relating to the allowed rate of return and gamma were amended in November 2012 (the **2012 Rule Amendment**). A key aspect of the November 2012 rule changes was the removal of the requirement to estimate the return on equity using the SL CAPM. This was replaced with a requirement to estimate the return on equity such that it contributes to the achievement of the ARORO, having regard to relevant estimation methods, financial models, market data and other evidence.

In making the rule amendments, the Australian Energy Market Commission (**AEMC**) stated that the amendments provided the regulator with the flexibility to adopt the approach it considers appropriate to estimate the rate of return, "provided it considers relevant estimation methods, financial models, market data and other information". The AEMC noted that:[11]

> *This is so the best estimate of the rate of return can be obtained that reflects efficient financing costs of the service provider at the time of the regulatory determination.*

> *In this way, the regulator can better respond to changing financial market conditions, particularly where volatile market conditions impact on a service provider's ability to attract sufficient capital to finance the expenditure necessary to provide a reliable energy supply to consumers.*

In relation to the return on equity, one of the key drivers of the rule changes was a concern that estimation of the return on equity had become overly formulaic, and unduly bound to a single model (the SL CAPM). Such a concern was expressed by the Expert Panel on Limited Merits Review:[12]

> *Put bluntly, at the moment the AER is required to proceed, as a matter of law, on the basis of a model that is known to abstract from a factor considered (in the Panel's view, rightly) to be a matter of such significance (i.e. regulatory risk or uncertainty) that it is afforded special mention in the revenue and pricing principles section of the NEL.*

> *That this is more than a theoretical point is indicated by the fact that the Financial Investors Group told us that they had been concerned about the narrow, CAPM focus of the regulatory approach to date, and had urged the AER to pay more attention to conditions in capital markets themselves (in contrast to models of those markets). Whilst the Panel believes that the AER has rather more discretion than the AER itself appears to believe it has, it does appear to be the case that there is an inconsistency in the current combination of laws and rules that is impeding a more realistic, market-focused approach to the determination of returns on capital.*

> *The practical relevance of the problem has also been illustrated by the ACT's recent ATCO decision, the detail of which the Panel has not yet had time to fully absorb. In the name of regulatory certainty, the decision appears to elevate the standing of the CAPM in the NGR to something akin to its standing in the NER. The Panel is concerned that binding regulatory decisions hand and foot to a financial model **with known defects** does not immediately commend itself as an approach that will advance the NEO and NGO.*

The AEMC echoed this concern in its rule determinations, and accordingly sought to devise a new framework for estimating the rate of return that would require consideration of a wider range of models and estimation techniques. In its draft rule determination, the AEMC stated:[13]

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[11] AEMC, *Rule Determination: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, November 2012, p iii.

[12] Professor George Yarrow, The Hon Michael Egan, Dr John Tamblyn, *Review of the Limited Merits Review Regime: Stage One Report*, 29 June 2012, pp 41-42.

[13] AEMC, *Draft Rule Determinations: Draft National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; Draft National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, August 2012, p 47.

*The rate of return estimation should not be formulaic and be driven by a single financial model or estimation method. The estimation approach to equity and debt components should include consideration of available estimation methods, financial models, market data and other evidence to produce a robust estimate that meets the overall rate of return objective. This means giving the regulator discretion on how it should estimate these components, rather than limiting the estimation process to a particular financial model or a particular data source. **In the context of estimating the return on equity, the estimation should not be limited to the standard CAPM, but should consider other relevant evidence**. [Emphasis added.]*

The AEMC, like the Expert Panel on Limited Merits Review, clearly considered that an estimation approach that was limited to a single model would not best meet the NEO and the revenue and pricing principles. Rather the AEMC considered that that estimates are likely to be more robust and reliable if they are based on a range of estimation methods. The AEMC explained (emphasis added):[14]

*There are a number of other financial models that have varying degrees of weaknesses. Some of the financial models that have gained some prominence include the Fama-French three-factor model, the Black CAPM, and the dividend growth model. Weaknesses in a model do not necessarily invalidate the usefulness of the model. **Ultimately, it is important to keep in mind that all these financial models are based on certain theoretical assumptions and no one model can be said to provide the right answer.***

Given that there are other financial models and methods for estimating the cost of equity capital that vary in their acceptance academically and consequent usage by market practitioners, restricting consideration to the CAPM alone would preclude consideration of other relevant estimation methods.

***The Commission is of the view that estimates are more robust and reliable if they are based on a range of estimation methods, financial models, market data and other evidence.** A framework that eliminates any relevant evidence from consideration is unlikely to produce robust and reliable estimates, and consequently is unlikely to best meet the NEO, the NGO and the RPP.*

The changes to the return on debt rules were at least partly driven by a concern that the "on-the-day" approach to estimating the return on debt previously required by the NER did not reflect efficient financing practices engaged in by businesses operating in competitive markets. The AEMC considered that the NEO would be advanced by an approach that better aligned with efficient financing and risk management practices that might be expected in the absence of regulation.

In the final determination in relation to the 2012 Rule Amendment, the AEMC indicates that one of its fundamental policy objectives in amending the allowed rate of return framework was to provide flexibility to take account of changing market conditions by making necessary adjustments to the method for estimating the return on debt.[15]

The AEMC emphasised the intention of the amended rule to align the return on debt estimate with the return required by investors of debt capital issued by a benchmark efficient service provider: [16]

The return on debt estimate represents the return that investors of debt capital would require from a benchmark efficient service provider. Aligning the return on debt estimate with the efficient expected cost of debt of a service provider is therefore an important element in determining the rate of return.

The 2012 Rule Amendment amended clause 6.5.2 of the NER to explicitly permit the return on debt methodology to be designed to reflect an average return that would have been required by debt investors in a

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[14] AEMC, *Draft Rule Determinations: Draft National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; Draft National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012*, August 2012, p 48.

[15] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, pp. 44, 45-46, 49 and 55-56.

[16] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 73.

benchmark efficient entity if it raised debt over an historical period. The AEMC considered that the amendment would permit the adoption of the trailing average approach to estimate the return on debt, which would better align efficient debt costs with the regulatory allowance.[17]

The Commission's rate of return framework draft rule proposal provides the flexibility for the regulator to consider alternative approaches to estimating the return on debt, including historical trailing average approaches that may better align the debt servicing costs of an efficiently run service provider with the regulatory estimate of the return on debt.

While the amended rules did not specify the methodology to be used to estimate the return on debt, the AEMC was clear in the guidance set out in its final rule determination that whatever methodology was used, it should result in a regulatory allowance for the return on debt that reflects financing practices (and ultimately costs) that, insofar as possible, would be expected absent regulation.[18]

In its draft rule determination, the Commission considered that the long-term interests of consumers would be best served by ensuring that the methodology used to estimate the return on debt reflects, to the extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation.

The AEMC went on to consider whether it should depart from this approach in the draft determination, and concluded that (relevantly) there should be no change. Further, the AEMC observed that the NEO and the revenue and pricing principles are more likely to be met by a methodology that allows the AER to more accurately match debt conditions in the market for funds.[19]

2.2 The ARORO

Under the rules as amended by the AEMC, the ARORO is the touchstone for estimating both the return on equity and the return on debt. The NER require that:

- the return on equity for a regulatory period be estimated such that it contributes to the achievement of the ARORO;[20] and

- the return on debt for a regulatory year be estimated such that it contributes to the achievement of the ARORO.[21]

The ARORO is that the rate of return for a DNSP is to be commensurate with the efficient financing costs of a BEE with a similar degree of risk as that which applies to the DNSP in respect of the provision of standard control services.[22]

As can be seen, the ARORO has two key elements:

- first, the ARORO requires identification of the level of risk that applies to the DNSP in respect of the provision of standard control services;

- secondly, the ARORO requires estimation of efficient financing costs for a BEE facing a similar degree of risk as that DNSP.

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[17] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determinations*, 23 August 2012, p. 78.

[18] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 76.

[19] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 86.

[20] NER, cl 6.5.2(f).

[21] NER, cl 6.5.2(h).

[22] NER, cl 6.5.2(c).

We consider that the relevant level of risk is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia. Therefore, in constructing comparator datasets for the purposes of estimating a rate of return that is commensurate with efficient financing costs of a BEE, these datasets should include entities that face a similar degree of risk to that faced in the provision of electricity distribution services. That is, they should not be restricted to regulated entities. For example, as will be discussed below:

- in estimating the equity beta for a BEE facing a similar degree of risk as that which applies to the DNSP in respect of the provision of standard control services, businesses in other sectors and other countries facing a similar degree of risk should be included in the dataset;

- in estimating the return on debt, yields are measured using benchmark indices for the relevant credit rating band, with those indices reflecting bond yields across a wide range of businesses within that credit rating band (i.e. a range of different businesses facing a similar degree of risk, including businesses operating in competitive markets).

If UE is incorrect that the relevant level of risk is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia, but rather, the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NEL, we submit that the reference to 'efficient financing costs' in the ARORO is to costs incurred (and therefore financing practices adopted) in a workably competitive market to finance an investment with that risk profile.

Moreover, even if the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NER / NGL, in many cases it will be necessary to look beyond just those businesses that supply regulated energy network services within Australia in order to produce sufficiently large datasets for the estimation of risk parameters. Specifically in the context of equity beta, given that the sample of Australian energy network businesses is too small, the dataset for estimating risk parameters needs to be enlarged by adding other businesses facing a *similar* degree of risk.

Once the relevant degree of risk is established, the task is then to estimate the efficient financing costs of a BEE facing a similar degree of risk. As noted above, regardless of what the relevant degree of risk is, once this risk benchmark is established, the assessment of efficient financing costs requires consideration of what financing practices would be engaged in by businesses operating in a workably competitive market, facing the relevant degree of risk. Such an interpretation of the term 'efficient financing costs' in the ARORO is consistent with the object of regulation itself—which is to simulate competitive market outcomes. This is because it is ultimately competition that drives efficient behaviour.

The rationale of economic regulation of network assets is to, insofar as possible, mimic the operation of, and replicate the outcomes in, a workably competitive market. This is because, by reason of the adjustments to quantity and pricing that occur in response to changes in these markets, it is in such markets that economic efficiency is achieved. For example, the Expert Panel on Energy Access Pricing has noted:[23]

> *The central objective of price control is to constrain the exercise of market power by firms that do not face effective competition for their services. Regulation and, specifically, the periodic determination of maximum prices or revenue is directed at achieving outcomes that could otherwise be expected from effective competition.*

The Expert Panel noted that regulatory regimes typically set prices by reference to costs because costs associated with supply are a central element of pricing outcomes in competitive markets.[24]

> *Virtually all regulatory regimes set controlled prices by reference to an assessment of costs. The reason is that the cost of supply – in conjunction with the role of consumer preferences in determining*

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[23] Expert Panel on Energy Access Pricing, *Report to the Ministerial Council on Energy*, April 2006, p 118.

[24] Expert Panel on Energy Access Pricing, *Report to the Ministerial Council on Energy*, April 2006, p 98.

the appropriate service and product mix – is a primary driver of price outcomes in effectively competitive markets.

The AEMC has commented on the objective of regulation in similar terms to the Expert Panel.[25]

The role of incentives in regulation can be traced to the fundamental objective of regulation. That is, to reproduce, to the extent possible, the production and pricing outcomes that would occur in a workably competitive market in circumstances where the development of a competitive market is not economically feasible.

The AEMC has also noted that regulatory arrangements attempt to mimic competitive markets given that economic efficiency is achieved in those markets. In the context of electricity transmission, which is subject to a similar regulatory framework to electricity distribution, the AEMC stated:[26]

TNSPs, like most businesses, operate in an uncertain environment. Uncontrollable, external events as diverse as changes in economic growth, climate and regulatory obligations can alter the quantity and nature of the services required to be provided by TNSPs. In a normal competitive market, production and pricing behaviour adjusts in response these changes. In these markets, efficient producers are able to recover their costs and should generally earn at least a normal return on their investments. As highlighted above, the regulatory arrangements need to mimic the operation of a competitive market as closely as possible.

The term "workably competitive market" refers to a market in which no firm has a substantial degree of market power and in which market forces increase efficiency beyond that which could be achieved in a non-competitive market, even if perfect competition is not attained. These concepts were explored by the Western Australian Supreme Court in the context of section 8.1 of the Gas Code that set out general principles applying to reference tariffs, which included that reference tariffs should be designed with a view to achieving the objective of replicating the outcome of a competitive market.[27]

Workable competition is said originally to have been developed over half a century ago by anti-trust economists. In simple terms it indicates a market in which no firm has a substantial degree of market power…I am left with the clear impression that in the field of competition policy, especially market regulation, the prevailing view and usage among economists is that a reference to a competitive market is to a workably competitive market. In the particular context of the promotion of a competitive market for natural gas it would be surprising if what was contemplated was a theoretical concept of perfect competition, as the subject matter involves very real-life commercial situations. Workable competition seems far more obviously to be what is contemplated. This is clearly consistent with the approach of the Hilmer Report…

The Court went on to set out its interpretation of the requirement to replicate the outcome of a competitive market in the context of a regulatory framework applying to monopoly infrastructure.[28]

What is in contemplation in s 8.1(b) is a competitive market in the field of gas transportation. The objective is to replicate what would be the outcome if there was competition for the transportation of gas by the pipeline in question, even though it is the premise of the Act and the Code that the pipeline is in a monopoly situation and it would be uneconomic to construct another. The objective seems to necessitate the application of economic methods and theory, albeit to replicate the outcome of a workably competitive market, because the achievement of competition in fact is not possible.

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[25] AEMC, *Draft National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006*, Rule Determination, 16 November 2006, p 96.

[26] See for example: AEMC, *National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006*, Rule Determination, 16 November 2006, p 54; and AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p 182.

[27] *Re Dr Ken Michael AM; Ex parte Epic Energy (WA) Nominees Pty Ltd* [2002] WASCA 231, [124].

[28] *Re Dr Ken Michael AM; Ex parte Epic Energy (WA) Nominees Pty Ltd* [2002] WASCA 231, [127].

The Court then discussed the relationship between efficiency and the outcomes of a workably competitive market, noting that the revenues earned from the provision of services in a workably competitive market would approximate efficient costs.[29]

> *Section 8.1(b) provides that a reference tariff should be designed with a view to replicating the outcome of a competitive market, ie as indicated earlier, a workably competitive market. The discussion of the concept of a competitive market earlier in these reasons, especially the close interrelationship recognised by economists between the role of a competitive market and the achievement of economic efficiency, suggests that s 8.1(b) and s 8.1(a) are more complementary than antithetical, although they need not always be in harmony. As far as the expert evidence discloses, a competitive market in the sense of a workably competitive market appears to be viewed by the general body of economic opinion as likely, over time, to lead to economic efficiency or at least to greater economic efficiency. As the Hilmer Report puts it, the promotion of effective competition is generally consistent with maximising economic efficiency. This would suggest that, over time, the revenue earned by a service provider from a reference service, if that service was provided in a workably competitive market, would approximate the efficient costs of delivering the service. That also helps to confirm that the concept of efficient costs, like the outcome of a workably competitive market, is not capable of precise or certain calculation and at best, can only be approximated. Both are based on many assumptions. How best to determine the efficient level of costs or the outcome of a competitive market are matters of economic theory and practice which, on the evidence, are in the course of constant revision, development and refinement.*

In the context of gas regulation by the NGL and NGR, the objective of which is similar to electricity regulation, the AER has also drawn the connection between the efficiency objective and the recovery of costs that would be incurred in a workably competitive market.[30]

> *The AER submitted that rule 91 requires the AER to permit service providers a reasonable opportunity to recover what the AER considers "legitimate costs". Legitimacy, according to the AER is informed by the NGO [National Gas Objective] and, in particular, means costs that would be incurred in a "workably competitive market". The requirement for replication of a workably competitive market outcome is said to be derived from the intent of the regulatory framework.*

The Tribunal has confirmed that the NEL and the NER "seek to ensure that an NSP operates and invests efficiently in the manner of a firm in a competitive environment".[31] It is implicit in the Tribunal's observations that the Tribunal accepted the notion that "efficient costs" are those that would be incurred by the hypothetical business in a workably competitive market.

The term "efficient" in the ARORO is to be interpreted consistently with how that term is used elsewhere in the regulatory regime. Most relevantly the term "efficient" appears in the NEO and the revenue and pricing principles.

The second reading speech made on the introduction of the Bill which contained the NEL with the current NEO noted the following with respect to the NEO :[32]

> *The national electricity market objective in the new National Electricity Law is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity, and the safety, reliability and security of the national electricity system.*
>
> *The market objective is an economic concept and should be interpreted as such. For example, investment in and use of electricity services will be efficient when services are supplied in the long run*

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[29] *Re Dr Ken Michael AM; Ex parte Epic Energy (WA) Nominees Pty Ltd* [2002] WASCA 231, [143]. Section 8.1(a) of the Code referred to the objective of providing the service provider with the opportunity to earn a stream of revenue that recovers the efficient costs of delivering the reference service over the expected life of the assets used in delivering that service.

[30] *Application by Envestra Ltd (No 2)* [2012] ACompT 3, [183].

[31] *Application by EnergyAustralia and Others* [2009] ACompT 8, [106].

[32] South Australia, *Parliamentary Debates*, House of Assembly, 9 February 2005, 1452 (John David Hill).

at least cost, resources including infrastructure are used to deliver the greatest possible benefit and there is innovation and investment in response to changes in consumer needs and productive opportunities.

The long term interest of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised. If the National Electricity Market is efficient in an economic sense the long term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised.

…

It is important to note that all participating jurisdictions remain committed to the goals expressed in the current market objectives set out in the old Code, even though they are not expressly referred to in the new single market objectives. Applying an objective of economic efficiency recognises that, in a general sense, the national electricity market should be competitive…

The AER has previously referred to this text of the second reading speech, noting that the NEO is fundamentally an efficiency objective and that the NEO seeks to emulate effectively competitive market outcomes.[33]

In a competitive market, a firm has a continuous incentive to respond to consumer needs at the lowest cost (that is, operate efficiently) because competition may force it to exit the market if it does not. In addition, the firm has an incentive to improve its efficiency because it will enjoy greater market share if it can provide the best service at the lowest cost to the consumer. Essentially, the NEO imposes the pressures of competition on natural monopolies.

In its report on energy access pricing the Expert Panel also referred to the second reading speech text extracted above and noted that "the elements of productive, allocative and dynamic efficiency, neatly encapsulated in the first paragraph of the extract, are at the core of the objective".[34]

The term "efficient" is also used in other provisions of the NER, including clauses 6.5.6 and 6.5.7 relating to forecast operating and capital expenditure. The AER has interpreted "efficient costs" in the context of the expenditure provisions of the NER as being "those expected costs based on outcomes in a workably competitive market".[35]

It is a principle of statutory interpretation that where a word is used consistently in legislation it should be given the same meaning.[36] Further, the NEL provides that words and expressions used in the NER have the same meaning as they have in the NEL.[37] Therefore, the term "efficient" in the ARORO is to be given the same meaning as "efficient" in the NEO. Further, in construing the term "efficient costs" where it appears in the NER, the interpretation that will best achieve the purpose of object of the NEL is to be preferred to any other interpretation.[38] As such, the term "efficient costs" is to be construed consistently with the economic concept of efficiency with which, as set out in detail above, it is well accepted the NEO is concerned.

An interpretation of the term "efficient costs" in the ARORO as being the costs that would be incurred in a workably competitive market is consistent with the intent of the AEMC, as stated in its final position paper accompanying the 2012 Rule Amendment. As noted above in the context of the return on debt, the AEMC made clear that the NEO would be best served by adoption of a return on debt estimation methodology that

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[33] AER, *Expenditure Forecast Assessment Guideline: Explanatory Statement*, November 2013, p 17.

[34] Expert Panel on Energy Access Pricing, *Report to the Ministerial Council on Energy*, April 2006, p 37.

[35] AER, *Expenditure Forecast Assessment Guideline: Explanatory Statement*, November 2013, p 47.

[36] See discussion in: D Pearce and R Geddes, *Statutory Interpretation in Australia* (LexisNexis Butterworths, 2014), pp 150-151.

[37] NEL sch 2, cl 13(1). See also NEL, s 3 and sch 2, cl 41.

[38] NEL. See also NEL, s 3 and sch 2, cl 41.

reflects the efficient financing and risk management practices that might be expected in the absence of regulation.[39]

In this connection it may also be observed that what is relevant to the estimation of the return on debt is the return required by debt investors. This return is largely (or wholly) unaffected by the methodology adopted by the regulator to estimate the return on debt allowance. As such, it should be clear that efficient financing costs are those that would be incurred absent regulation and cannot be defined by reference to how a regulated entity might respond to any particular methodology adopted by the regulator to estimate the return on debt.

It may also be observed from the AEMC material that the intention of the 2012 Rule Amendment is to align the regulatory estimate with the return that investors of debt capital would require from a benchmark efficient service provider.[40] The regulatory methodology does not determine those costs. Rather, it must be responsive to such costs – they have existence independent of the regulatory methodology and the regulatory methodology must be designed to capture them.

Consistent with the statements of the AEMC set out in section 2.1, the long term interests of consumers are best served by ensuring that the methodology used to estimate the return on debt reflects, to the extent possible, the efficient financing and risk management practices that might be expected in the absence of regulation. Specifically with regard to the determination of the characteristics of the BEE, the AEMC stated that the most appropriate benchmark to use in the regulatory framework for all service providers is the efficient private sector service provider.[41]

The AER itself appears to recognise that in estimating the financing costs of a regulated business under the NER, these should be consistent with what would be expected in the context of unregulated efficient businesses.[42]

> *The allowed rate of return objective requires us to set a rate of return commensurate with the efficient financing costs of the benchmark efficient entity. We do not consider this to be only a theoretical proposition. Rather, it should be consistent with observable good practice in efficient businesses. We consider that, in practice, businesses make financing and investment decisions using widely accepted economic and financial models of the efficient cost and allocation of capital. To the extent that we use models for estimating the rate of return that are consistent with those widely used in practice, we are more likely to achieve the allowed rate of return objective.*

Identifying efficient financing practices by reference to the incentives created by a particular regulatory approach avoids the very object of the regulatory regime—being to, insofar as possible, create an environment in which the costs incurred (and ultimately allowed to be recovered) are efficient costs. The correct enquiry starts with an identification of what are efficient costs, and then a methodology is designed that, insofar as possible, permits those efficient costs to be recovered.

A paper published by the ACCC and AER's Regulatory Development Branch summarises the point accurately:[43]

> *…when determining a new regulatory cost of debt approach, debt practices which are a product of the regulatory environment should be ignored. This is because these practices will change if the regulatory environment changes. If in setting a new regulatory framework, a regulator considers debt*

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[39] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 76.

[40] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p. 73.

[41] AEMC, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper*, 29 November 2012, p 72.

[42] AER, *Rate of Return Guideline: Explanatory Statement*, December 2013, p 28.

[43] Regulatory Development Branch, Australian Competition and Consumer Commission (H Smyczynski and I Popovic), *Estimating the Cost of Debt: A Possible Way Forward*, April 2013, p 11.

practices that are a result of businesses reacting to the existing regulatory framework, it may create a self fulfilling method that may not necessarily be efficient…

The use of swap contracts to lock in the cost of debt for the access arrangement is a consequence of the regulatory framework, and their use by regulated businesses would change if the regulatory framework were to change. Ideally the regulatory framework for the cost of debt should reflect the efficient debt practices that occur in a competitive market. This would align competitive incentives with regulatory incentives.

In short, the ARORO requires the formulation of methodologies to be used to estimate the rate of return, including the return on debt, that, insofar as possible, provide a return that is commensurate with forward-looking efficient costs, being the costs that would be incurred in a workably competitive market. Any other approach would lead to the absurd and circular result that any cost incurred is efficient where the regulatory approach provides an incentive for it to be incurred, even though it would not be incurred in a workably competitive market. Such an approach is inconsistent with the objective of the regulatory regime.

2.3   Matters that the AER must have regard to in estimating the rate of return

Regard must be had to several relevant matters in estimating the rate of return, including:[44]

- relevant estimation methods, financial models, market data and other evidence;

- the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and

- any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

This requirement reflects the view of the AEMC, referred to above, that no one model or method can be said to provide the 'right' answer, and that estimates are more robust and reliable if they are based on a range of estimation methods, financial models, market data and other evidence.

In estimating the return on equity, regard must also be had to the prevailing conditions in the market for equity funds.[45]

In estimating the return on debt, the NER also require that regard be had to the following four factors:[46]

- the desirability of minimising any difference between the allowed return on debt and the return on debt of a BEE referred to in the ARORO;

- any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt;

- the incentives that the return on debt may provide in relation to capital expenditure over the regulatory period, including as to the timing of any capital expenditure; and

- any impacts (including in relation to the costs of servicing debt across regulatory periods) on a BEE referred to in the ARORO that could arise as a result of changing the method that is used to estimate the return on debt from one regulatory period to the next.

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[44] NER, cl 6.5.2(e).

[45] NER cl 6.5.2(g).

[46] NER, cl 6.5.2(k)

2.4 Gamma – the value of imputation credits

In relation to gamma, the NER now require an estimate of "*the value of imputation credits*".

Importantly, clause 6.5.3 of the NER was amended in November 2012 to change the definition of gamma from "*the assumed utilisation of imputation credits*" to "*the value of imputation credits*".   The change to the NER was entirely appropriate, given that the estimate of gamma determines an amount to deduct from allowed revenue to reflect the value that investors obtain from imputation credits.[47]

It is important that gamma be accurately estimated, since if the value of imputation credits is over-estimated this deduction will be too large and the overall return will be too low.

2.5 The importance of an accurate inflation forecast

Forecast inflation impacts on the overall return through its inclusion in the annual revenue requirement building blocks of a negative building block for RAB indexation in the second and subsequent regulatory years (which is applied in practice as a deduction to the depreciation building block).[48] This deduction is made in order to maintain a real rate of return framework (i.e. because under the NER, a nominal rate of return[49] is applied to an inflation-adjusted asset base[50]). In order to ensure an appropriate overall return, the inflation forecast used to make this adjustment to cash flows needs to be as accurate as possible, and consistent with the forecast of inflation implied in the nominal rate of return.

2.6 Achieving the NEO

Providing for an overall return that is consistent with the ARORO is necessary to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers, consistent with the NEO.

If the level of return is set too low, UE may not be able to attract sufficient funds to make the required investments in the network and reliability and service standards may decline.

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[47] NER, cl 6.5.3

[48] NER, cl 6.4.3(a)(1) & (b)(1)

[49] NER, cl 6.5.2(d)(2)

[50] NER, cl S6.2.3(c)(3)

3.   Return on debt

3.1   Introduction

The AER's preliminary decision in relation to the return on debt is to maintain the return on debt methodology proposed in the rate of return guideline.[51]   That is, applied to UE's regulatory period, the AER's preliminary decision on the return on debt is to:

- estimate the return on debt using an on-the-day rate in the first regulatory year (2016) of the 2016 regulatory period, and

- transition this rate into a trailing average approach over 10 years by updating 10% of the return on debt each year to reflect prevailing interest rates.[52]

The AER's preliminary decision on implementing the return on debt approach involves using:

- a benchmark credit rating of BBB+

- a benchmark term of debt of 10 years

- a simple average of the broad BBB rated debt data series published by the Reserve Bank of Australia (**RBA**) and Bloomberg, adjusted to reflect a 10 year estimate and other adjustments, and

- an averaging period for each regulatory year of between 10 business days and 12 months (nominated by the service provider) prior to 25 days before submission of the annual pricing proposal or reference tariff variation proposal.[53]

We submit that in making a new distribution determination in substitution for the revoked preliminary decision, the return on debt should be estimated using the trailing average approach. UE agrees that the trailing average approach should be adopted to estimate the return on debt because infrastructure businesses operating in workably competitive markets would be expected to hold a staggered portfolio of fixed rate debt and the costs of holding such a portfolio are best approximated by the trailing average approach to estimating the return on debt.

However, we do not agree that the AER's proposed 10-year transition to the trailing average approach should be adopted. Rather, UE submits that there should be no transition to the trailing average approach. The reference to "efficient financing costs" in clause 6.5.2(c) can only be understood to be the costs that would be incurred in a workably competitive market—this is what efficient financing costs are. As the debt financing practice that would be expected absent regulation is to hold a staggered portfolio of fixed-rate debt, and the trailing average approach provides an estimate of the return on debt that is commensurate with this practice, the NER require the immediate adoption of the trailing average approach.

If UE is incorrect that the efficient financing costs of a BEE are to be estimated by reference to the costs that would be incurred in a workably competitive market, and the AER is correct to estimate the return on debt by reference to efficient financing costs incurred by a BEE subject to economic regulation under the NER, we submit that the AER should adopt a "hybrid" transitional approach. The hybrid approach involves:

- for the base rate component of the return on debt, adopting:

  - a 10 year transition to a trailing average for the proportion of the debt portfolio assumed to have been hedged by the BEE using interest rate swaps, and

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[51] Preliminary Decision, p 3-143.

[52] Preliminary Decision, p 3-144.

[53] Preliminary Decision, pp 3-148 – 3-149.

– no transition for the proportion of the debt portfolio assumed <u>not</u> to have been hedged by the BEE (that is, moving immediately to the trailing average approach), and

- for the debt margin (or DRP) component, applying no transition by moving immediately to the trailing average approach from the first year of the 2016 regulatory period.

In respect of the implementation issues, UE submits that in making a new distribution determination in substitution for the revoked preliminary decision, the AER should:

- Adopt a benchmark credit rating of BBB, as per our original proposal

- Continue to adopt a benchmark term of 10 years;

- Follow the procedures set out in section 5 of the report that we submitted with our Regulatory Proposal entitled "Rate of Return on Debt: Proposal for the 2016 to 2020 Regulatory Period - Attachment to UE Regulatory Proposal" (dated 30 April 2015). In support of this we have submitted a revised report from Esquant with this RRP entitled "Estimating the yield on a benchmark corporate Nov/Dec 2015: Analysis to support the hybrid form of the transition to a trailing average rate of return on debt"; and

- Include a new issue premium of 27 basis points in the estimate of the return on debt for each regulatory year if the AER does not adopt the immediate transition approach.

Our position on each of the above issues is addressed in detail below.

3.2   Trailing average approach

In the Rate of Return Guideline, the AER proposed to estimate the allowed return on debt using:

- a trailing average approach with the length of the trailing average being 10 years

- equal weights to be applied to all the elements of the trailing average

- the trailing average to be automatically updated every regulatory year within the regulatory control period.[54]

We agree with the proposed approach in the Rate of Return Guideline to estimate the return on debt using a trailing average approach. We also agree with the AER that the trailing average approach is likely to contribute to the achievement of the ARORO and recognises the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the ARORO.[55] This includes because, as noted by the AER, the trailing average approach allows a service provider to manage both interest rate risk and refinancing risk, without the use of interest rate swaps, which are a product of the on-the-day approach.[56] As discussed below, the trailing average approach will provide an estimate of the return on debt that is commensurate with the financing costs that would be incurred by a firm operating in the manner of a firm in a competitive environment.

However, and as discussed in detail below, UE does not agree with the proposed approach in the Rate of Return Guideline, and as adopted in the Preliminary Decision, to implement the trailing average approach after a period of transition.[57] That is, we submit that the AER should immediately apply the trailing average approach without a transition.

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[54] AER, *Rate of Return Guideline*, December 2013, p 19.

[55] AER, *Rate of Return Guideline*, December 2013, p 19.

[56] AER, *Rate of Return Guideline: Explanatory Statement*, December 2013, p 108.

[57] AER, *Rate of Return Guideline*, December 2013, p 19.

3.3 The AER's decision to impose a 10 year transition to the trailing average approach

(a) The AER's view of efficient financing costs

In the Preliminary Decision the AER adopts the conceptual definition of the BEE as set out in the rate of return guideline, namely: "*a pure play, regulated energy network business operating within Australia*".[58] In relation to the "regulated" aspect of this definition, the AER states: "*A regulated entity for the purposes of our benchmark is one which is subject to economic regulation (that is, price cap regulation) under the National Electricity Rules and/or the National Gas Rules*".[59]

The AER describes the efficient debt financing costs of a BEE in the following way:[60]

> *…those which are expected to minimise its debt financing costs over the life of its assets, while managing refinancing risk and interest rate risk:*

- Refinancing risk—the risk that a benchmark efficient entity would not be able to refinance its debt when it matures.

- Interest rate risk—the risk associated with a mismatch between the allowed return on debt and a benchmark efficient entity's actual return on debt.

Having defined the BEE and the efficient debt financing costs of a BEE, the AER concludes that the efficient debt financing practices of the BEE under the previous on-the-day approach to estimating the return on debt would have involved the following:[61]

- borrowing long term (10 year) debt and staggering the borrowing so only a small proportion (around 10 per cent) of the debt matured each year

- borrowing using floating rate debt, or borrowing fixed rate debt and converting it to floating rate debt using fixed-to-floating interest rate swaps at the time of the debt issue, which extended for the term of the debt (10 years), and

- entering floating-to-fixed interest rate swaps at, or around, the time of the service provider's averaging period, which extended for the term of the regulatory period (typically five years).

The AER concludes that, under the financing practice described above, the base rate component of the AER's BEE's actual return on debt would have broadly matched the on-the-day rate, while the debt risk premium component each year would have reflected the average of the previous 10 years.[62]

Critical to the AER's findings as to efficient financing practices (and, in turn, efficient financing costs), is that such practices involve the BEE hedging the base rate component. It is uncontroversial that the financing practice as described above would only be engaged in under the on-the-day approach. However, efficient financing costs (achieved through the adoption of efficient financing practices) under the NER should not be identified by reference to what a regulated entity might do in response to a particular methodology adopted by a regulator to calculate the return on debt allowance. Rather, as elaborated below, efficient financing costs are properly identified by reference to financing practices that would be adopted in workably competitive markets.

(b) Efficient financing costs referred to in the ARORO

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[58] Preliminary Decision, p 3-24.

[59] Preliminary Decision, p 3-25.

[60] Preliminary Decision, p 3-166.

[61] Preliminary Decision, p 3-186.

[62] Preliminary Decision, p 3-186.

As noted in section 2.2 above, the term "efficient financing costs" in the ARORO is properly understood as referring to the costs that would be expected to be incurred in a workably competitive market.

A firm operating in the manner of a firm in a competitive environment would have a conventional debt portfolio of the type held by privately-owned entities in unregulated markets, namely a staggered portfolio of fixed rate debt.

This is confirmed by the AER's consultant, Chairmont, who states:[63]

> The decision to adopt a strategy of gradual staggered issuance of fixed rate debt is consistent with behaviour where the regulatory cost of debt framework does not apply.

Similarly, CEG has found that unregulated businesses typically raise debt in a staggered manner.[64]

> In reality, almost all businesses, including regulated infrastructure businesses, raise debt in a staggered fashion over time. Moreover, for infrastructure businesses with very long lived assets, the average maturity of this debt at the time of issue tends to be long term (10 years or more). It is very likely that this is a response to a desire to minimise transaction costs, in particular insolvency/bankruptcy costs, that are heightened if too much debt must be refinanced in a short period of time. Consequently, a business's cost of debt at any given time will reflect the costs incurred when issuing debt over the last decade (i.e., not just over the last 20 days).
>
> …
>
> A 10 year trailing average approach would largely mimic the debt management strategy employed by infrastructure businesses (regulated and unregulated) around the world.

The debt financing costs of a staggered fixed rate debt portfolio match the debt costs calculated under the AER's trailing average approach. Put another way, the efficient financing costs of a BEE (being an unregulated entity operating in a workably competitive market) are the costs produced by application of the trailing average approach. Therefore, on a correct construction of the term 'efficient financing costs' in the ARORO, there is no basis for the imposition of a transition.

Having identified in the Rate of Return Guideline that the trailing average approach promotes the productive, allocative and dynamic efficiency of debt financing practices, and specifically provides incentives for service providers to seek the lowest debt financing costs,[65] and therefore, is consistent with the outcomes of a workably competitive market, the AER should have adopted the trailing average approach as the methodology to estimate the return on debt, without any transition.

Adoption of the AER's proposed transition would be inconsistent with the NEO and the revenue and pricing principles in providing an allowance for costs associated with financing practices adopted in response to a prior regulatory regime and would not impose an appropriate pricing signal for investment. That is, rather than sending a pricing signal that mimics the pricing signal that would be sent as a result of competition in a workably competitive market, the pricing signal sent under the AER's approach would be that arising from the idiosyncratic application of a prior regulatory methodology to estimating the return on debt.

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[63] Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, p 38. At page 38, Chairmont references UBS' statement that: 'The 'trailing average' approach used by Networks NSW was consistent with debt management strategies adopted by non-regulated entities in the infrastructure sector – ports, airports, road and railways': UBS, *UBS Response to the TransGrid Request for Interest Rate Risk Analysis following the AER Draft Decision of November 2014*, undated, p 5. See also: Frontier Economics, *Cost of Debt Transition for NSW Distribution Networks*, January 2015, pp 8-9.

[64] CEG, *Efficiency of Staggered Debt Issuance*, February 2013, [92] and [97].

[65] AER, *Draft Rate of Return Guideline: Explanatory Statement*, August 2013, pp 83-84.

In the Preliminary Decision, the AER states that it is not satisfied that immediate application of the trailing average approach is reasonable or would contribute to the achievement of the ARORO.[66] The reasons given by the AER are that:

- it has the potential to create a bias in regulatory decision making that can arise from the selection of historical data after the results of that data are already known

- it would exaggerate a mismatch between the allowed rate of return and the efficient financing costs of a BEE over the life of its assets, with the consequence that over the life of the assets, a BEE is likely to materially either over- or under-recover its efficient financing costs; and

- it does not approximately match the allowed return on debt with the efficient financing costs of a BEE over the 2016 period as it transitions its financing practices to the trailing average approach.[67]

If UE is correct that the term "efficient costs" is to be interpreted as the costs that would be incurred in a workably competitive market, immediate adoption of the trailing average approach will approximately match the allowed return on debt with the efficient financing costs of a BEE. Therefore, the last point in the list above is not a reason to delay the immediate application of the trailing average approach.

In relation to the first two points in the list above, being the introduction of bias into regulatory decision making and violations of the NPV=0 principle, we submit that these policy issues are not relevant under the NEL and the NER decision-making framework, and that even if they were, they do not support the AER's transition. These points are discussed below in the context of the hybrid approach.

If UE is incorrect and efficient financing practices (and, in turn, efficient financing costs under the ARORO) are to be determined by reference to what a benchmark entity would be expected to do in response to the regulatory framework, there is no sound basis upon which a transition should be applied to the DRP component of the return on debt. This issue is discussed below.

(c) Even if the AER's view of efficient financing costs is correct, it has adopted the wrong transition

As the AER acknowledges, the DRP component of the return on debt cannot be—and thus in and prior to the 2011 regulatory period could not have been—hedged.[68]

> *For the debt risk premium component, we consider the allowed and actual return of a benchmark efficient entity would have usually differed in each access arrangement period [sic]. This is because the DRP component could not have been efficiently hedged to the allowed debt risk premium. So, in some access arrangement periods [sic], the allowed debt risk premium would have exceeded the actual debt risk premium of a benchmark efficient entity. In other access arrangement periods [sic], the allowed debt risk premium would have been less than the actual debt risk premium.*

Therefore, even if hedging strategies under the previous regulatory approach were relevant, it logically follows from the fact that the DRP component could not have been hedged that no transition should be applied to the DRP component and a trailing average approach should be immediately adopted. This is the advice given by Chairmont to the AER in Chairmont's April 2015 report.

> *The DRP does not need to be transitioned because the NSP already has a staggered floating rate debt portfolio.[69]*
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> …
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> *A [benchmark efficient entity] will already have a staggered DRP in its portfolio, but not evenly distributed, i.e. not smooth. Therefore, to match this situation the AER should not transition the*

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[66] Preliminary Decision, p 3-165.

[67] Preliminary Decision, p 3-165.

[68] Preliminary Decision, p 3-175.

[69] Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, pp 8-9.

DRP, but instead move immediately to a 'trailing average' for this element. As there is no standard methodology to account for the non-smooth portfolio, AER should adopt a smooth 'trailing average' for the DRP. It is acknowledged that the measurement of historical DRP is difficult, because it is accurate only at the time of debt issuance; however it is likely that a reasonable estimate could be determined...[70]

The October 2015 Chairmont report reiterated that, if the AER's identified efficient financing practice was to be adopted, consistency required that a trailing average DRP be applied. The report stated that as a consequence of the efficient financing practice adopted by the AER, "the allowed return on debt should be calculated in line with the Basic Approach, i.e. a trailing average DRP".[71]

Chairmont concludes that the AER's "Basic Approach" to efficient financing practices, which involves entities hedging the base rate component of the return on debt and having a trailing average DRP, minimises differences between the regulated return on debt and the actual cost of debt faced by a BEE in the transition phase.[72]

The Basic Approach to EFP [efficient financing practices], i.e. the trailing average DRP plus the average 1-10 year swap rates, minimises any discrepancy between the allowed and actual cost of debt in the transition phase for a BEE [benchmark efficient entity], whereas the Guideline Allowance does not.

In the preliminary decision, the AER agreed with Chairmont that the hybrid approach would provide a good match over the 10 year transition period to the costs of the AER's BEE.[73] However, the AER determined that it would not adopt the hybrid approach in calculating the return on debt.[74]

We agree with Chairmont that the hybrid approach will provide a good match over the 10 year transition period to the costs of a benchmark efficient entity entering the transition from the 'on-the-day' regime. However, having regard to wider policy issues, we have maintained the Guideline approach. In particular we consider that proposal and adoption of the hybrid approach on the basis of changes in prevailing rates would introduce bias into regulatory decision making and violate the NPV=0 principle.

There is no scope in the NEL and the NER for regard to be had to these "wider policy" issues as they have been formulated by the AER. Even if these matters as formulated by the AER were properly to be considered in making a decision on the return on debt, neither the purported introduction of "bias" into regulatory decision making, nor alleged "violations" of the NPV=0 principle, provide a logical or reasoned basis to apply a transition to the DRP component of the return on debt.

(i) Bias

In the preliminary decision, the AER states that the use of data from earlier periods—which is necessary under the trailing average approach—results in biased estimates and that use of unbiased estimates promotes the ARORO.[75]

We consider the use of an unbiased estimate is of significant importance in achieving the allowed rate of return objective. This provides for the rate of return to be commensurate with the efficient financing costs of a benchmark efficient entity.

We do not consider the practice of selecting averaging periods after they have occurred is an effective mechanism for achieving the allowed rate of return objective. This is because choosing the averaging

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[70] Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, p 47.

[71] Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 14.

[72] Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 13.

[73] Preliminary Decision, p 3-164.

[74] Preliminary Decision, p 3-164.

[75] Preliminary Decision, pp 3-190- 3-191.

period in advance is important for obtaining an unbiased estimate. By bias, here we mean that at the time the averaging period is selected, it is not known with certainty whether it will result in a higher or lower estimate than the estimate from a different potential averaging period.

If an averaging period is chosen after the nominated period has occurred, the knowledge of the return on debt at any past point of time may influence the choice. It would not matter if the period were chosen by the AER, the service provider, a user or consumer, the Australian Competition Tribunal or another stakeholder. We made this clear in the Guideline when we specified the importance of determining an averaging period in advance. In particular, we specified that if a service provider could select an averaging period by looking at historical yields, it could introduce an upwards bias.

In the above extract from the preliminary decision, the AER misunderstands the relevance of the concept of bias in connection with the decision that it is required to make under the NEL and the NER. An estimate of the return on debt will be "unbiased" in a relevant sense when it has a value that is commensurate with expected efficient debt financing costs over the relevant regulatory period.

To the extent the AER's identification of the efficient financing costs of a BEE is correct, it is common ground that the outcome of the efficient financing practice adopted by that entity is that it will face a trailing average DRP over the regulatory period. In the prevailing market conditions, the adoption of a methodology to estimate the return on debt that does not calculate the DRP component using a trailing average approach results in a return on debt below that which is commensurate with expected efficient financing costs. This much is accepted by the AER as it notes in respect of its transition:[76]

Whether the allowed DRP matches, or is higher or lower than, a benchmark efficient entity's financing cashflows with respect to the DRP component depends on whether the prevailing and historical average DRP is higher, lower, or around the same level as each other.

In the case of the distribution determination to be made for UE, the preliminary decision notes that prevailing interest rates are currently lower than the historical average of interest rates over the past 10 years,[77] and therefore the AER's transition results in a DRP that is lower than the AER's BEE's financing cash flows. The AER goes on to state in its preliminary determination that the fact that prevailing interest rates are lower than the historical average of interest rates over the past 10 years is simply a consequence of the particular timing of the decision,[78] suggesting that the issue of under-compensation relative to efficient financing costs is an irrelevant matter. However, not only is the AER able to deal with that issue under the NER and the NEL, it is in fact required to deal with it in making its decision; the NER provide that compensation of the provider for efficient financing costs is determinative in selecting the methodology for estimation of the return on debt.

The AER's decision must be in accordance with the NEL, and more specifically, with the NEO and the revenue and pricing principles.[79] The revenue and pricing principles are consistent with and designed to promote the NEO.[80] In discussing the revenue and pricing principles, the Tribunal has previously noted the importance of providing for the recovery of at least efficient costs in the context of efficiency objectives.[81]

It is well accepted in the literature of regulatory economics and in regulatory practice that all these efficiency objectives [efficient investment, efficient provision of services, efficient use of system] are in principle met by setting prices for services that allow the recovery of efficient costs, including the cost of capital commensurate with the riskiness of the investment in the assets (infrastructure or 'system', as the term is used in the NEL) used to provide services.

It might be asked why the NEL principles require that the regulated NSP be provided with the opportunity to recover at least its efficient costs. Why 'at least'? The issue of opportunity is critical to

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[76] Preliminary Decision, p 3-189.

[77] Preliminary Decision, p 3-147.

[78] Preliminary Decision, p 3-147.

[79] NEL, s 16.

[80] *Application by EnergyAustralia and Others* [2009] ACompT 8, [75].

[81] *Application by EnergyAustralia and Others* [2009] ACompT 8, [76]–[78].

the answer. The regulatory framework does not guarantee recovery of costs, efficient or otherwise. Many events and circumstances, all characterised by various uncertainties, intervene between the ex ante regulatory setting of prices and the ex post assessment of whether costs were recovered. But if, as it were, the dice are loaded against the NSP at the outset by the regulator not providing the opportunity for it to recover its efficient costs (eg, by making insufficient provision for its operating costs or its cost of capital), then the NSP will not have the incentives to achieve the efficiency objectives, the achievement of which is the purpose of the regulatory regime.

Thus, given that the regulatory setting of prices is determined prior to ascertaining the actual operating environment that will prevail during the regulatory control period, the regulatory framework may be said to err on the side of allowing at least the recovery of efficient costs. This is in the context of no adjustment generally being made after the event for changed circumstances.

Given the benchmark efficient financing practices the AER considers its BEE would have adopted, which would result in the BEE facing a trailing average DRP over the 2016 regulatory period, the only basis upon which the AER could permissibly calculate the DRP component of the return on debt otherwise than using a trailing average approach is if the use of that approach would generate a return on debt that is inappropriate, in the sense of being too high or too low having regard to the period in which it is to be applied (being the 2016 regulatory period).

As noted in the extract from the Preliminary Decision above, the AER uses the concept of avoiding 'bias' as meaning that at the time the averaging period is selected, it is not known with certainty whether it will result in a higher or lower estimate than the estimate from a different potential averaging period.[82] However, the relevant task under the NER is to estimate the return on debt that contributes to the ARORO. Use of the trailing average approach to estimate the DRP component will not introduce bias because the use of that approach is required by the NER, as opposed to any foreknowledge of the outcome of selecting that approach on the part of the AER or the service provider. Further, the cost of debt under existing facilities – i.e. facilities on foot for some time – is a known quantity. The fact that it is known does not give rise to 'bias' in any relevant sense.

In any case, to the extent there is foreknowledge of the outcome of selecting the trailing average approach to estimate the DRP component, there is equal foreknowledge of the outcome of selecting the AER's approach. That is, the comparative result of selecting between different approaches to estimating the DRP component was known to (or at least to be expected by) the service provider and the AER at the time the first debt averaging period for the 2016 regulatory period was selected, despite the fact that that averaging period was yet to occur because prevailing interest rates are currently lower than the historical average of interest rates over the past 10 years, as is acknowledged by the AER in the Preliminary Decision. [83] The only thing that is unknown is the precise amount by which the AER approach to estimating the DRP component will deliver a lower return on debt than the trailing average approach to estimating the DRP. As such, the foreknowledge of relevance to the AER's concern about bias in choosing an approach to estimation of the DRP component being as to the outcome of selecting between different methods for use in estimating the DRP component, cannot be remedied by applying the AER's transition to the DRP component.

However, it is in fact the application of the AER's transition approach that results in a biased (in the relevant sense) estimate of the return on debt. Given the AER's assumptions as to a BEE's efficient financing practices in and prior to the 2011 regulatory period, the BEE will face a cost of debt reflecting a 10-year trailing average DRP component. The AER's approach therefore produces a biased estimate of the return on debt insofar as it undercompensates the benchmark efficient operator. It is in this context that the concept of "bias" has any relevance, not in the sense that the AER has used that concept. To use the words of the Tribunal above, the approach of the AER in the preliminary decision is to "load the dice" against UE at the outset by not providing the opportunity for UE to recover its efficient costs by making insufficient provision for the return on debt.

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[82] Preliminary Decision, pp 3-190- 3-191.

[83] Preliminary Decision, p 3-147.

The hybrid transition avoids the bias associated with the AER's transition. As noted in the preliminary decision, the hybrid transition:[84]

> *…provides a good match between the allowed return on debt and a benchmark efficient entity's financing costs over the period it takes a benchmark efficient entity to transition its financing practices to the trailing average approach.*

Once it is accepted that a trailing average approach to the DRP should be taken, there also can be no concerns as to bias or opportunistic behaviour as to selection of averaging periods in light of our submission that the trailing average DRP is calculated by reference to full calendar year averaging periods.

Relevant to the issue of bias, is the AER's criticism that the hybrid transition (AER Option 3) and immediate adoption of the trailing average approach (AER Option 4) are "backwards" looking.[85] However, contrary to the suggestion of the AER that starting with the on the day approach and transitioning to the trailing average approach (AER Option 2) is forward-looking in that each addition to the average occurs at the prevailing rate in an averaging period nominated in advance,[86] a trailing average cost of debt is forward-looking because it is the cost of debt that an entity, which had historically adopted a fixed-rate staggered approach to its debt portfolio, would face now and in the future. An entity in a competitive market would have facilities currently on foot at different interest rates (reflecting the different years in which they were entered into). For example, a DNSP might have a facility at 7%, a facility at 8%, a facility at 9%, a facility at 6.5%, and so on. The interest payable on these facilities constitute current interest costs and they will continue to be applicable in subsequent years in the regulatory period (until those facilities expire). These interest costs are in no sense "backwards looking". The trailing average approach calculates the cost of debt now, and as it will change over the five year regulatory period. It is not possible to know at present precisely what the future costs of debt will be—they will be determined in future regulatory years. This is a forward-looking approach.

In regulatory terms, a "backwards-looking" approach is one that involves the regulator looking back over previous regulatory years to see whether the regulatory allowance matched the actual costs of the regulated entity. This is what the AER does in the preliminary decision in appearing to rely on Dr Lally's conclusion that there are some "accumulated differences" between the return on debt estimate and the actual return on debt of a BEE arising from prior periods (this issue is discussed further below).[87] Therefore, it is the AER that uses a backwards-looking analysis by seeking to determine if there was some "windfall gain" arising from the previous regulatory period and then using that to reduce the forward-looking return on debt calculated over the forthcoming period.

The ARORO in clause 6.5.2(c) of the NER is that the rate of return for a DNSP is to be 'commensurate with the efficient financing costs of a BEE'. A methodology that estimates the return on debt using a trailing average approach will provide for a return that is commensurate with the financing costs that a BEE will face over the 2016 regulatory period. It is forward-looking in precisely the manner that is relevant under clause 6.5.2(c).

The AER's debt transition is not forward-looking in the relevant sense required by clause 6.5.2(c). Even in respect of the AER's own BEE, being one that would have entered into swaps to hedge the base rate component of its cost of debt, the AER's transition does not provide for a return on debt that is commensurate with the costs that entity will face over a regulatory period. This is because this entity would face a trailing average of the DRP component of its cost of debt. The AER's transition is designed to provide a lower allowance in respect of the notional DRP component of the cost of debt over the 2016 regulatory period (and beyond). There are two fundamental difficulties with the AER's approach, which are discussed below under the "NPV= 0" topic. These are:

- First, the AER considers that its approach is authorised by the NPV=0 approach to account for assumed positive "accumulated differences" arising from previous regulatory periods. However, the regulatory regime does not permit "true-ups" of this kind based on an ex post review of the

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[84] Preliminary Decision, p 3-164.

[85] Preliminary Decision, p 3-191.

[86] Preliminary Decision, p 3-191.

[87] Preliminary Decision, p 3-180.

regulatory allowance provided for a particular component of a building block and the costs that were actually incurred by the service provider in respect of that component.

- Secondly, there is no reasoned basis upon which a view can be formed as to whether there has been over-recovery and if so, the quantum of this over-recovery.[88]

(ii) NPV = 0

The second drawback that the AER concluded arises under a hybrid transition is that it can create a mismatch between the allowed return on debt and the efficient financing costs of a BEE over the life of its assets. The AER stated:[89]

> *Transitioning from the on-the-day approach using the hybrid transition can create a mismatch between the allowed return on debt and the efficient financing costs of a benchmark efficient entity over the life of its assets. The change in the regulatory regime can therefore create windfall gains or losses to service providers or consumers. Windfall gains or losses do not result from a service provider's efficient or inefficient decisions. In effect, they are a side effect of changing the methodology for estimating the return on debt at a particular point in time. They should be avoided, so that economic regulatory decisions deliver outcomes based on efficiency considerations, rather than timing or chance.*

In the preliminary decision the AER notes that the NEL requires the AER to take into account that a regulated service provider should be provided with a reasonable opportunity to recover at least its efficient costs.[90] Based on advice from Dr Lally, the AER considers that the principle that a service provider be provided with a reasonable opportunity to recover at least its efficient costs is equivalent to the NPV principle.[91] The AER explains that the NPV principle is that the expected present value of a BEE's regulated revenue should reflect the expected present value of its expenditure, plus or minus any efficiency incentive rewards or penalties.[92]

In his advice to the AER, Dr Lally stated that the requirement in the NER that the return on debt be commensurate with the efficient financing costs of a BEE is "not sufficiently precise to be readily implemented and therefore requires formalizing".[93] However, it is unclear why Dr Lally considers the requirement as stated in the NER to be imprecise. The requirement is simply stated and does not require any overlay or 'formalisation' in order for it to be implemented. What is required is to ascertain efficient financing costs (which as stated above are the costs that would be expected in a workably competitive market or, if that position is incorrect, the costs that would be incurred having regard to the AER's assumptions about the financing practices of a BEE under the on-the-day approach to estimating the return on debt) and to design a methodology for estimating the return on debt which, insofar as possible, matches those costs.

The AER speaks very generally about NPV "over the life of the assets", but does not actually identify what life and what assets, and how any particular debt instrument relates to the life of any particular asset. The relevant asset here is the regulatory asset base of the regulated entity. The asset base is made up of thousands of assets, with lives ranging from five or fewer years to 60 years. The regulatory regime, as applied by the AER, assumes that for a benchmark entity 60 per cent of the regulatory asset base is funded by debt. Debt is not raised in respect of particular assets. Debt instruments do not attach to specific assets. Rather, in respect of the BEE it is assumed that there is simply a portion of the asset base that is funded by debt, and, in accordance with the debt / equity ratio assumed under the regulatory regime, the BEE takes out debt instruments to fund the relevant proportion of its asset base. In this way it is nonsensical to talk about NPV over the life of the

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[88] See Preliminary Decision, p 3-183, where the AER states: "due to the unavailability of reliable older data, we are unable to draw reliable conclusions about accumulated windfall gains or losses in preceding regulatory periods". Also: Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 38, where Chairmont says: "it is concluded that there is insufficient history of relevant BBB bond data to measure over and under compensation for an adequate time period to come to any definitive conclusion about the net result over the life of energy assets".

[89] Preliminary Decision, p 3-165.

[90] Preliminary Decision, p 3-173.

[91] Preliminary Decision, p 3-173.

[92] Preliminary Decision, p 3-173.

[93] M Lally, *Review of Submissions on the Cost of Debt*, April 2015, p 19.

assets. To the extent there is a relevant "asset" in a NPV = 0 context, it is the asset base, the life of which, for all practical purposes, is indeterminate and indefinite.

The NPV principle cannot be used to override the requirements in the NEL and the NER, in particular:

- the revenue and pricing principles—which require that a service provider should be provided with a reasonable opportunity to recover at least the efficient costs it incurs in providing direct control services, and

- the ARORO (clause 6.5.2(c))—which requires that the rate of return for a DNSP is to be commensurate with efficient financing costs.

These requirements apply to the decision that the AER is required to make for the 2016 regulatory period. That is, the service provider is to be provided with a reasonable opportunity to recover at least the efficient costs it incurs in providing direct control services in the 2016 regulatory period and the rate of return is to be commensurate with efficient financing costs the service provider will incur in the 2016 regulatory period. As set out below, this follows as a matter of statutory construction.

Section 16(1) of the NEL requires the AER to make a distribution determination in a manner that will or is likely to contribute to the achievement of the NEO. Section 16(2) requires the AER to take into account the revenue and pricing principles when exercising a discretion in making those parts of a distribution determination relating to direct control network services. The AER is bound to do these things in respect of each individual distribution determination it makes. That is, section 16 of the NEL does not require the AER to make determinations for a service provider over some indefinite period of time that collectively or overall contribute to the achievement of the NEO, and take into account the revenue and pricing principles. Such an interpretation would be absurd, including because it would purport to authorise the AER to provide a service provider with less than efficient costs in some periods, and more than efficient costs in other periods, which is clearly inconsistent with the regulatory framework established by the NEL and the NER. Yet this is how the AER seeks to apply the NPV=0 principle in applying its transition to the DRP component of the return on debt.

Various provisions in the NER also make clear that the distribution determination is in respect of a regulatory control period and that the forecasts and estimates used to determine allowed revenues are based on the best estimate of forecast costs over the regulatory period. For example, the provisions relating to the making of the building block determination refer to determining the annual revenue required for each year of the regulatory control period.[94] Specifically in connection with the rate of return, clause 6.5.2(a) refers to the return on capital for each regulatory year being calculated by applying a rate of return for that regulatory year which is determined in accordance with clause 6.5.2. This last provision indicates that the task is to determine a rate of return for each regulatory year of the regulatory period that satisfies the requirements of the NER (including the ARORO), not determining a rate of return that satisfies those requirements over some other, unspecified, period.

In the Preliminary Decision, the AER concludes that its transition provides a BEE with a reasonable opportunity to recover efficient financing costs over the life of its assets, whereas the hybrid transition does not. It is unclear from the Preliminary Decision precisely what finding underpins this conclusion.[95] In particular:

- the AER explicitly concludes that it has "not relied on the historical balance of over or under recoveries" in making its decision[96]—which suggests that this conclusion does not rest upon a finding as to the existence of any accumulated windfall gains or losses

- yet, at the same time, under the heading 'fairness of returns in expectation' the AER also appears to rely on analysis conducted by Dr Lally which Dr Lally claimed demonstrated that the AER's transition

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[94] NER, cl 6.4.3(a).

[95] This conclusion is set out in Table 3.23 on page 3-184 of the Preliminary Decision.

[96] Preliminary Decision, p 3-183.

"allows the regulatory regime to account for accumulated differences between the return on debt estimate and the actual return on debt of a benchmark efficient entity".[97]

UE submits that it is impermissible for the AER to take into account differences between the allowed return on debt and the actual return on debt faced by a benchmark service provider in previous regulatory periods in calculating the return on debt for the 2016 regulatory period (for the reasons discussed below). However, even assuming it was permissible for the AER to do so, in order for the AER to find that the application of its transition to the DRP component of the return on debt provides a BEE with a reasonable opportunity to recover efficient financing costs over the life of its assets, the AER must find that the benchmark service provider enters into the 2016 regulatory period with a positive accumulated difference between the allowed return on debt and the actual return on debt faced by the benchmark service provider in previous regulatory periods. The AER has not done this.

The AER states that it can conclude with a "reasonably high degree of confidence" that the benchmark operator would have been overcompensated over the previous regulatory period.[98] However, the material referred to by the AER does not support such a conclusion for UE.

The AER ultimately concedes that it is "unable to draw reliable conclusions about accumulated windfall gains or losses in preceding regulatory periods".[99] This finding is supported by Chairmont's October 2015 report.[100] Therefore, in circumstances where it is common ground that the application of the AER's transition to the DRP component of the return on debt will result in the AER's benchmark efficient entity being under-compensated in the 2016 regulatory period, it cannot be concluded that the AER's transition provides a BEE with a reasonable opportunity to recover efficient financing costs over the life of its assets. Assuming any such "look back" was permissible, such a conclusion could only be drawn if the benchmark service provider has "accumulated" gains (i.e. has been "overcompensated" for the return on debt in previous regulatory periods) at the commencement of the 2016 regulatory period and that the gains over prior periods are precisely offset by the anticipated shortfall in the return on debt during the 2016 regulatory period.

In any case, as a matter of construction, the statutory regime does not permit the AER to seek to 'clawback' differences between the allowed return on debt and the actual return on debt faced by a benchmark service provider in a prior regulatory period. A fundamental principle of the regulatory regime is that it embodies incentive regulation. Under incentive regulation, regulated revenues are set ex-ante and firms have an incentive to reduce costs to outperform regulated revenues such that over time regulated revenues are expected to converge to the efficient level. Once the regulatory allowance has been set, ex post adjustments are not made to that regulatory allowance based on differences between forecasts and actual costs, other than for the impact of inflation.[101]

Consistent with the incentive regulation basis of the regime established by the NER, the task of setting a regulatory allowance for a regulatory period prescribed by the NER is a forward-looking one. Pursuant to the building blocks approach set out in clause 6.4.3(a) of the NER, there are only a few specified matters that may have occurred in a prior regulatory period that have any relevance to the calculation of the regulatory allowance in the subsequent regulatory period. There are two discrete matters:

• the value of the regulatory asset base; and

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[97] Preliminary Decision, p 3-180.

[98] Preliminary Decision, p 3-182.

[99] Preliminary Decision, p 3-183.

[100] Chairmont, *Financing Practices Under Regulation: Past and Transitional*, October 2015, pp 38–39.

[101] Even where the NER permit ex post review of actual expenditure, they do not permit any ex-post adjustment to be made to the regulatory allowance that was set in the distribution determination. See NER, cl S6.2.2A which permits reductions to the amount of capital expenditure that would otherwise be added to the regulatory asset base where the AER has found that the expenditure does not reasonably reflect the capital expenditure criteria. The threshold to be passed before any such reduction can be made is that the sum of all capital expenditure incurred during the relevant review period exceeds the sum of the forecast capital expenditure accepted or substituted by the AER for the review period, and any reduction cannot be greater than this amount (cl S6.2.2A(g)). .

- revenue increments and decrements arising from the application of any relevant incentive scheme, or from the application of a control mechanism in the previous regulatory period.[102]

With the exception of these two matters, the regulatory framework does not operate in a manner that looks back at what has happened in a previous regulatory period in order to calculate the annual revenue requirement for a service provider for each regulatory year of a period in an attempt to capture some prior difference between allowable revenues and costs. Rather, the regulatory framework is designed and operated in such a way that once regulated allowances are set, they are taken to be the efficient allowance for the BEE and there can be no retrospective adjustments for departures from this allowance.

As regulated entities could not match the DRP component of their debt costs to the regulatory allowance for the return on debt under the on-the-day approach, it was inevitable that there would be a mismatch between any debt costs incurred by a benchmark regulated entity and the return on debt allowance for that entity. However, that was simply a consequence of the regulatory approach—the allowance was the allowance and regulated entities were required to manage their operations in accordance with that allowance. This much is accepted by the AER:[103]

> *Incentive based regulation uses the combination of financial rewards and penalties to promote efficient behaviour. In particular, it means that where a service provider:*

- matches the efficient regulatory benchmark—it recovers its efficient costs. We consider this would be the outcome for the benchmark efficient entity. As it operates efficiently, it would recover its efficient costs.

- does not match the regulatory benchmark—it keeps the financial benefits or financial detriments that flow from its actions. An example of this would be where a service provider is able to source debt at rates cheaper than the allowed return on debt it is able to keep the difference.

- adopts a risk position which is either higher or lower risk than that embedded in the regulatory process—it keeps the financial benefits or wears the financial detriments that flow from its actions.

The NER require that the rate of return for a regulatory period is commensurate with the efficient financing costs of a BEE. As noted by Professor Gray:[104]

> *The new Rules state that for each determination the allowed rate of return must be commensurate with the efficient financing costs of a benchmark efficient entity. The Rules do not provide for an exception in cases where the regulator considers that it should set the allowed return to be different from the efficient financing costs of a benchmark efficient entity in order to square up the regulator's assessment of any windfall gains or losses from prior regulatory periods.*

Professor Gray notes the following further problems with the AER's decision to seek to erode the perceived windfall gain:

- The amount of any gain to be eroded or 'clawed back' will depend on how many prior regulatory periods are included in the regulator's mental accounting. It is possible that any perceived windfall gain that may have been accrued in the prior regulatory period has already been squared up by shortfalls in prior regulatory periods preceding the prior regulatory period.[105]

- The perceived windfall gains may have been balanced out by other features of the prior regulatory determination. In periods where investors are requiring higher risk premiums on debt investments in the benchmark firm, for example, they will also be requiring higher equity risk premiums in the same

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[102] NER, clauses 6.5.1(e), and 6.4.3(a)(5) and (6).

[103] Preliminary Decision, p 3-170.

[104] SFG, *Return on Debt Transition Arrangements under the NGR and NER: Report for Jemena Gas Networks, Jemena Electricity Networks, Citipower, Powercor and United Energy*, 27 February 2015, p 4.

[105] SFG, *Return on Debt Transition Arrangements under the NGR and NER: Report for Jemena Gas Networks, Jemena Electricity Networks, Citipower, Powercor and United Energy*, 27 February 2015, p 26.

benchmark firm. However, the AER's approach has been to use an essentially fixed MRP in its allowed return on equity.[106]

The imposition of the AER's transition is also at odds with the 2012 Rule Amendment, which is directed at better matching the regulated return on debt (and the overall rate of return) with costs that would be incurred pursuant to efficient financing practices. As noted by the AER's consultants, with respect to the DRP component of the return on debt, there is no mismatch between the cost incurred by the benchmark efficient firm and that allowed by a trailing average approach after the regime change. As such, no transitional method appears to be warranted and, if one was used, Lally notes, it would introduce a mismatch that would not otherwise arise.[107]

In summary, the AER's NPV=0 justification:

- is inconsistent with the ARORO which, as noted above, requires that the allowed rate of return for each regulatory year reflects the efficient financing costs of a BEE for that year

- is inconsistent with the NEO and the revenue and principles which demand that a service provider be provided with a reasonable opportunity to recover at least the efficient costs incurred in providing regulated services, and

- introduces regulatory risk and is inconsistent with incentive-based regulation in that it introduces an ex post adjustment mechanism after a regulated firm has benefited from operating in a way that the regulator itself considers to be efficient.

In any event, there is no evidence that adopting a hybrid transition would violate the NPV=0 principle, as claimed by the AER. This is because, as acknowledged by the AER and as advised by Chairmont, it cannot be ascertained with any certainty the extent to which there are accumulated windfall gains or losses from prior periods.

In short, imposing a transition for the DRP component of the return on debt where that component cannot be hedged under the on-the-day approach is inconsistent with the NEO, the revenue and pricing principles, and the requirements of the NER. In particular, it will not provide a BEE with a return on debt that is commensurate with efficient financing costs or provide a reasonable opportunity to recover at least the efficient costs the BEE incurs in providing direct control services.

(d) Other matters relied on by the AER in support of its transition

The AER finds that its transition has two further positive attributes, in addition to providing a service provider with a reasonable opportunity to recover its efficient financing costs over the life of its assets and being unbiased. These are that:

- the transition maintains the outcomes of the service provider's past financing decisions, consistent with the principles of incentive regulation; and

- avoids practical problems with the use of historical data "as estimating the return on debt during the GFC is a difficult and contentious exercise".[108]

Dealing with the second point first, the AER itself notes that it is satisfied that "this is a relatively minor issue".[109] The only issue with respect to historical data needed to estimate the trailing average approach relates to the DRP component of the return on debt, and only relates to the selection of which data source to use, as opposed to the data not being available at all.[110] The AER's consultant Chairmont does not note any particular difficulty

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[106] SFG, *Return on Debt Transition Arrangements under the NGR and NER: Report for Jemena Gas Networks, Jemena Electricity Networks, Citipower, Powercor and United Energy*, 27 February 2015, pp 25–26.

[107] Lally, *Transitional Arrangements for the Cost of Debt*, 24 November 2014, p. 7.

[108] Preliminary Decision, p 3-163.

[109] Preliminary Decision, p 3-163.

[110] Lally, *Transitional Arrangements for the Cost of Debt*, 24 November 2014, p 15.

with the use of historical data to estimate a return on debt using the trailing average approach and states that it is likely that a reasonable estimate could be determined.[111]

The AER's finding that maintaining the on-the-day approach is consistent with incentive regulation is illogical. The AER states that effective ex ante incentive regulation relies on service providers understanding and accepting the financial consequences of their decisions at the time they make their decision.[112] However, the AER acknowledges that service providers have limited control over the DRP component of the cost of debt. As such, as a general matter, there is no relevant incentive with respect to this component that service providers could be said to have 'understood and accepted the financial consequences of their decisions'. Therefore, to the extent maintenance of outcomes of past financing decisions consistent with principles of incentive regulation is relevant, it does not support either the continuation of the on-the-day approach or the AER's transition. It does however support the hybrid transition because, as noted by the AER, application of the hybrid transition would maintain the incentive that service providers should reduce risks that are within their control.[113]

(e)   Conclusion

For the above reasons, we consider that the trailing average approach should be implemented immediately, with no transition.

Alternatively, if the AER's approach of estimating efficient financing costs by reference to the financing practices that would emerge under regulation were correct, the appropriate approach would be to adopt a hybrid form of transition where only the hedged base rate component of the return on debt is subject to a transition. This is because the AER has concluded that under the on-the-day approach, an efficient financing practice would have been to engage in hedging of the base rate. By contrast, the AER has conceded that the DRP component cannot be—and could not have been in the past—hedged, with the result that there is no reason for a transition to be applied to it.

If a transition is applied to the base rate, then it is necessary to consider to what degree hedging would be efficient. A transition can only apply to the base rate component to the extent that the BEE used hedging to match the previous on-the-day approach to setting the allowed return on debt, and one cannot simply assume that 100% of that component was hedged under that approach without evidence to support it.

The evidence demonstrates that the efficient level of hedging under the previous on-the-day approach was significantly less than 100%. Empirical analysis by CEG demonstrates a hedging ratio of approximately one third would have minimised interest rate risk.[114] In a further expert report accompanying this submission, CEG considers and responds to criticisms made by Chairmont and Professor Lally of this analysis. Following this review of the Chairmont and Lally reports, CEG's view as to the optimal hedging ratio under the previous on-the-day approach is unchanged.[115]

Therefore, if a hybrid transition is to be adopted (i.e. if the AER's view of efficient financing costs were correct), the transition should only apply to one third of the base rate, reflecting the extent to which a BEE would have been expected to hedge the base rate component.

3.4   Benchmark credit rating and term

(a)   Credit rating

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[111] Chairmont, *Cost of Debt: Transitional Analysis*, April 2015, p 47.

[112] Preliminary Decision, p 3-171.

[113] Preliminary Decision, p 3-172.

[114] CEG, *Efficient Use of Interest Rate Swaps to Manage Interest Rate Risk*, June 2015; CEG, *Critique of the AER's approach to transition*, December 2015, section 5.

[115] CEG, *Critique of the AER's approach to transition*,

UE considers that adopting a BBB+ credit rating assumption is highly conservative, in the sense that it is likely to understate the degree of risk faced by us in the supply of standard control services.

The empirical evidence referred to by AER in support of a BBB+ rating, when correctly applied and interpreted, supports a BBB to BBB+ rating. As noted by the AER, the median credit rating over the past ten years (2006-2015) across all businesses in the AER's sample is BBB to BBB+.[116] A credit rating of BBB to BBB+ is also consistent with the advice from Professor Lally to the AER.[117]

Therefore, adoption of a BBB+ credit rating assumption is likely to lead to under-estimation of the efficient financing costs of a BEE facing a similar degree of risk as that which applies to UE in respect of the supply of standard control services. In short, UE may be inadequately compensated for efficient financing costs, creating a risk that we cannot attract the capital required to undertake efficient investment.

UE notes that if a broad BBB band data series is available and is used to estimate the return on debt, then whether a BBB or BBB+ credit rating assumption is adopted is of little practical consequence. However if the AER were to start using a BBB+-specific data series (should one become available), it is likely that this would lead to under-estimation of the efficient financing costs of a BEE facing a similar degree of risk as that which applies to us in respect of the supply of standard control services. This is because a BBB+-specific data series is likely to over-estimate the cost of debt for businesses with a risk profile in the BBB to BBB+ band.

For the same reasons, continuing to use a broad BBB band data series to estimate the return on debt is not materially 'favourable' to UE, as suggested by the AER.[118] Rather, given that the evidence supports a credit rating of BBB to BBB+, use of a broad BBB band data series is entirely appropriate.

(b) Term

Empirical evidence continues to support a benchmark term of debt of 10 years. This includes evidence for Australian energy network businesses, and for businesses operating in other sectors and jurisdictions facing a similar degree of risk.[119]

UE does not agree with the statement in the Preliminary Decision that a 10 year term assumption is more likely to overstate than understate the debt term (and therefore, the efficient financing costs) of a BEE.[120] A 10 year term assumption properly reflects the efficient financing practices of a BEE facing a similar degree of risk to that faced by UE in the provision of standard control services.

3.5 Estimation of the prevailing return on debt for the placeholder / first measurement period

For our Regulatory Proposal we proposed using a third-party published yield estimate that is extrapolated using either: the methodology recently proposed by SA Power Networks (SAPN); or the AER's extrapolation methodology as set out in its recent draft decisions for the NSW DNSPs, ActewAGL and JGN. We proposed using a five step method for selecting the appropriate third-party data source and extrapolation method in each year of the regulatory period:

a) Identify all relevant third party return on debt data series (e.g., Bloomberg (FVC or BVAL) and the RBA corporate debt estimates);

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[116] Preliminary Decision, p 3-591 (Table 3-70).

[117] Lally, *Implementation issues for the cost of debt*, November 2014, p. 4.

[118] Preliminary Decision, p 50.

[119] PwC, *Energy Networks Association: Benchmark term of debt assumption*, June 2013. Based on a sample including Australian, UK and US businesses operating in the energy and water sectors, PwC concluded that such businesses issued debt with a weighted average term in the range of 10 to 21 years.

[120] Preliminary Decision, p 3-212.

b) Estimate the 10 year BBB return on debt for each independent third party data series, using the SAPN and AER extrapolation methodology for the averaging period;

c) Identify all relevant bonds that meet predetermined objective criteria[34], and compare the yields on these bonds to each third party estimate over the averaging period;

d) Estimate yield curves, using yield to maturity data, and par yield curves, using bond prices in order to obtain the highest quality estimates of the contemporaneous cost of debt. These estimates will permit a comparison with the results from the third party indicator series; and

e) Select the return on debt estimate (or combination of estimates) that best fits the sample of bonds identified in step (c).

For this Revised Proposal we apply the immediate transition approach. Our calculation for the return on debt and calculate this amount to be per the table below:

	2016	2017	2018	2019	2020
Cost of debt	7.804%	7.700%	7.508%	7.103%	6.708%

3.6   Annual updating of the return on debt

We have written a confidential letter to the AER with our proposal and dates to be used for our annual updates.

3.7   New issue premium

As noted in our initial proposal, the third party data series that are used to estimate the return on debt are based on observations in the secondary debt market. These data sources therefore do not reflect any premium required for new debt issues.

Our initial proposal and the supporting expert report from CEG set out the economic rationale and empirical evidence for a new issue premium. CEG's analysis indicates that the best estimate of the new issue premium that is relevant to a benchmark debt management strategy of issuing 10 year BBB rated debt is 27 basis points.[121]

In the Preliminary Decision, the AER states that "the empirical evidence on the new issue premium is inconclusive" and that "there does not appear to be a consensus among experts on how the new issue premium should be measured".[122] The AER also states that it has some specific concerns with CEG's methodology.

We do not agree with the concerns expressed by the AER in relation to CEG's methodology. CEG has responded to the AER's concerns in an attached report entitled "Critique of AER analysis of New Issue Premium" submitted with this Revised Proposal.

UE considers that CEG's analysis provides clear evidence of a positive and significant new issue premium. At a minimum, this evidence demonstrates that making no allowance for a new issue premium (as UE does) is highly conservative, in the sense that it is likely to lead to under-estimation of the efficient financing costs of a BEE – in particular when applying the Guideline method.

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[121] CEG, *New Issue Premium*, October 2014, p. 54.

[122] Preliminary Decision, p 3-206.

4.   Return on equity

4.1   Introduction

The AER's Preliminary Decision in relation to the return on equity is based on the following reasoning:

1   The AER considers that the SLCAPM should be used as the foundation model to estimate the return on equity. We understand that the AER's reasons for adopting this approach are as follows:

    (a)   the SLCAPM model is the current standard asset pricing model of modern finance both in theory and in practice;[123]

    (b)   the SLCAPM is superior to all other models considered by the AER, in terms of estimating the return on equity of the BEE;[124]

    (c)   use of the SLCAPM as the foundation model, at least as applied by the AER, will not result in a downward biased estimate of the cost of equity capital;[125] and

    (d)   use of alternative models will not lead to an outcome which better achieves the ARORO.[126] The AER expresses a number of concerns in relation to these alternative models.

2   An equity beta of 0.7, when applied in the SLCAPM, will deliver a return on equity that contributes to achievement of the ARORO. The AER considers that:[127]

    (a)   a reasonable range for the equity beta based on evidence from samples of domestic energy network businesses is 0.4 to 0.7; and

    (b)   additional information taken into account by the AER – specifically empirical estimates for international energy networks and the theoretical principles underpinning the Black CAPM – indicate that an equity beta at the top of this range is appropriate.

3   An MRP of 6.5% reflects prevailing market conditions and contributes to achievement of the ARORO.[128]

The AER determines a "baseline" estimate of the MRP of 6.0 per cent based on historical data, and then uses DGM analysis and other evidence to determine whether its estimate should be above or below that baseline. The AER considered that DGM evidence could justify a point estimate above the 6.0 per cent baseline, but did not support a point estimate above the top of the range implied by historical excess returns (6.5 per cent).

The AER adopts a different interpretation of some of the empirical evidence to UE, including:

    (a)   the AER adopts a different interpretation of the historical excess returns data;

    (b)   the AER does not agree that the Wright approach should be used to estimate the MRP. This is because the AER considers that the Wright approach is an alternative implementation of the CAPM, designed to produce information at the return on equity level;

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[123] Preliminary Decision, p 3-32.

[124] Preliminary Decision, p 3-32.

[125] Preliminary Decision, p 3-62.

[126] Preliminary Decision, pp 3-32 – 3-33.

[127] Preliminary Decision, pp 3-36 – 3-37.

[128] Preliminary Decision, pp 3-34 – 3-35.

(c)   the AER does not agree that independent valuation reports should inform MRP estimation (only the overall return on equity); and

(d)   the AER does not agree with SFG's construction of the DGM.

4   The return on equity estimate from the SLCAPM is broadly supported by:[129]

(a)   estimates using the Wright approach;

(b)   estimates from other market participants, including practitioners and regulators, particularly estimates used in Grant Samuel's recent report for Envestra;

(c)   the fact that it is above the prevailing return on debt; and

(d)   the fact that the regulatory regime to date has been supportive of investment.

This reasoning is based on a number of errors of fact and logic, which are described in detail below. As a consequence of these errors, the return on equity determined by the AER will not contribute to the achievement of the ARORO and does not reflect prevailing conditions in the market for equity funds. For reasons discussed below, the return on equity derived from the AER's approach will be below what is required to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers.

We continue to believe that the ARORO is best achieved through an approach that properly has regard to estimates from all relevant return on equity models. In its initial proposal, we proposed that each of the SL CAPM, the Black CAPM, the FFM and DGM be estimated, and that these estimates each be given a weighting in deriving a return on equity estimate. UE maintains its view that this approach (applying an equal weighting) would best achieve the ARORO. This approach leads to an estimate of the prevailing return on equity of 9.89 per cent.

However, if the AER proposes to continue relying solely on the SL CAPM to estimate the return on equity, the AER must change the way it implements this model. The way in which the SL CAPM is applied in the Preliminary Decision leads to a return on equity that is not consistent with the ARORO and does not reflect prevailing market conditions. The AER does not properly recognise the weaknesses of the SL CAPM, nor does it account for these weaknesses in its application of the model. Further, the AER's practice of applying an effectively fixed risk premium to a variable risk-free rate is not appropriate in current market conditions, since it leads to the return on equity moving in lock-step with changes in the risk-free rate.

This submission outlines an alternative approach that involves properly adjusting SL CAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:

•   making a transparent and empirically based adjustment to the equity beta estimate to account for the known shortcomings of the SL CAPM, particularly low beta bias and book-to market bias; and

•   deriving the MRP in a way that gives appropriate weight to measures of the prevailing (current) MRP.

This leads to an estimate of the prevailing return on equity of 10.05 per cent.

4.2   The AER's return on equity estimate is below what is required by the market

The Preliminary Decision does not point to any genuine consideration of whether the AER's estimate of the return on equity of 7.3% contributes to the ARORO and is commensurate with prevailing market conditions.

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[129] Preliminary Decision, pp 3-39 – 3-40.

The AER has rigidly applied its foundation model without proper consideration of whether the output of this model is consistent with the requirements of the NER.

This is despite evidence, including from the AER's own "cross-checks", that its return on equity estimate is below the efficient equity financing costs of the BEE and not commensurate with prevailing market conditions.

In particular, the evidence presented in the Preliminary Decision indicates that:

- the AER's estimate of the return on equity is below any comparable recent estimate from market practitioners. Specifically:

    – the AER's estimate is below the lower end of the range of imputation-adjusted estimates of the return on equity from independent expert reports surveyed by the AER (a range of 8.98 – 14.67 per cent);[130] and

    – the AER's estimate is at the bottom of the range of imputation-adjusted estimates of the return on equity from recent broker reports (a range of 7.3 – 9.3 per cent);[131]

- the AER's estimate of the return on equity is below the range indicated by the 'Wright approach'. If properly applied (i.e. with an equity beta that reflects the AER's estimate of this parameter), the Wright approach indicates a range for the return on equity of 7.8 to 9.7 per cent;[132]

- the AER's estimate of the return on equity is below that indicated by current market prices for traded equities and the AER's DGM market-wide analysis. The AER's DGM-based estimates of the MRP implied a range for the market return of 10.26 to 11.36 per cent,[133] which is significantly higher than the AER's implied estimate of the market return of 9.26 per cent;[134] and

- the AER estimate based on its implementation of the SL CAPM is below estimates from all other relevant return on equity models. Frontier estimates a return on equity of 9.8 per cent using the Black CAPM, 9.8 per cent using the FFM and 10.2 per cent using the DGM, and 9.2 per cent based on its own parameters for the SL CAPM. [135]

The above evidence is summarised in Figure 1 below.

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[130] Preliminary Decision, p 3-518.

[131] Preliminary Decision, p 3-521.

[132] Preliminary Decision, p 3-513.

[133] The AER's DGM estimates of the MRP range from 7.5 to 8.6 per cent (Preliminary Decision, p 3-362). These are added to the risk-free rate of 2.76 per cent to derive estimates of the market return from the AER's DGM.

[134] This is calculated as the sum of the risk-free rate (2.76 per cent) and the AER's estimate of the MRP (6.5 per cent).

[135] Frontier Economics, *The required return on equity under a foundation model approach*, January 2016, p 7.

Figure 1: Comparison of AER return on equity estimate with other available estimates
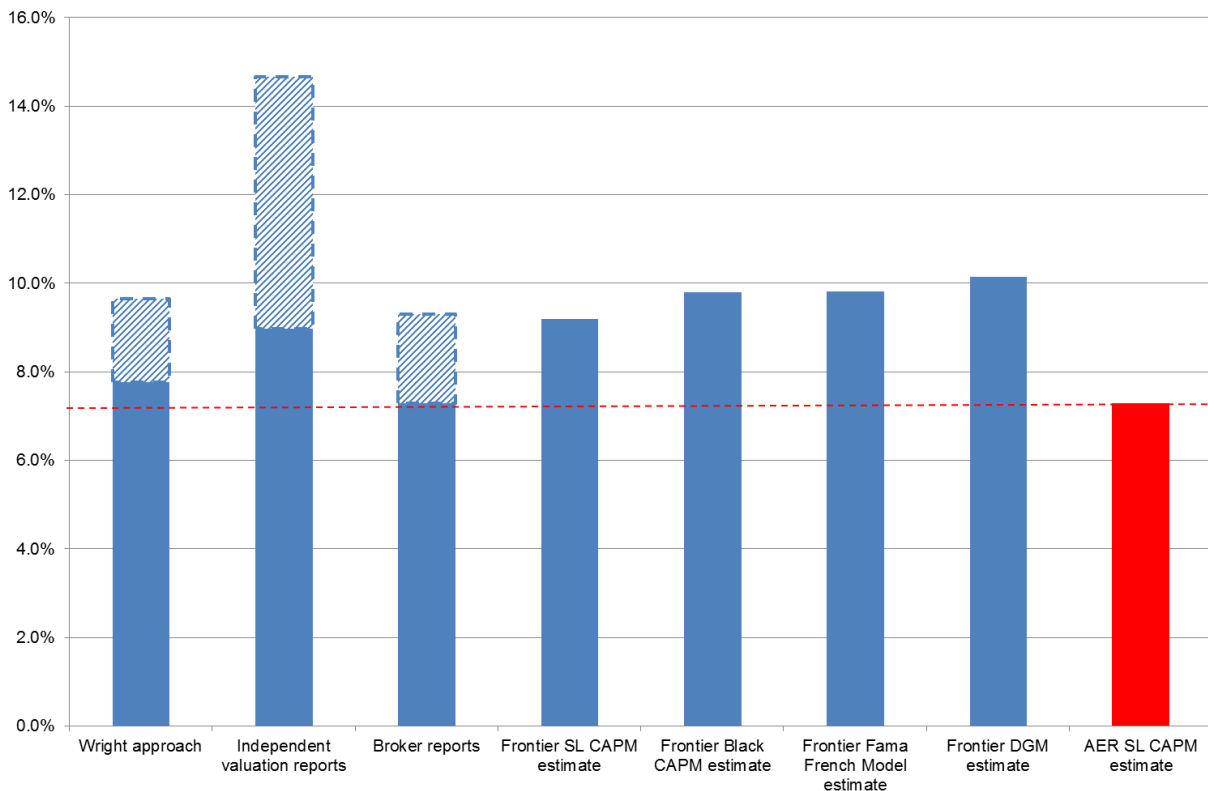
Note: Shaded bars indicate ranges of estimates from broker reports, independent expert reports and the Wright approach.

The outcome observed above is due to the AER mechanistically applying the foundation model approach developed in the Rate of Return Guidelines, without any meaningful consideration of whether such an approach leads to an estimate of the return on equity that is consistent with the ARORO and commensurate with prevailing market conditions.

More specifically, this is the result of the AER:

- relying solely on the output of a model that is known to produce biased estimates, without properly correcting for that bias;

- applying this model in a way that does not reflect market practice and which results in the return on equity simply tracking movements in the risk-free rate; and

- making errors in the interpretation of key evidence.

Each of these errors in the AER's approach is addressed in the following sections.

4.3   The AER's reliance on the SL CAPM

The AER concluded that the output of its application of the SL-CAPM should be used as its estimate of the cost of equity, including because:

- the SL-CAPM is the superior model;

- the SL-CAPM, at least as applied by the AER, does not produce biased estimates of the required return on equity; and

- other proposed models are not fit for purpose, including because these other models are focussed on explaining historical market outcomes, rather estimating the required return on equity, consistent with the ARORO.

We consider that each of these critical findings is not consistent with the evidence before the AER.

(a) The AER has erred in finding that the SL-CAPM is the clearly superior model

The AER remains of the view that "the SLCAPM is the clearly superior model to use as the foundation model".[136] However no evidence is cited in support of this statement, and UE is not aware of any evidence that supports this view.

The evidence before the AER in fact shows that the SLCAPM has known weaknesses. In particular, as discussed below, the SLCAPM is known to produce downwardly biased estimates of the required return on equity for low-beta stocks.

We note that none of the expert reports commissioned by the AER state that the SLCAPM is superior to other models. UE is not aware of any expert report before the AER which expresses this view.

Indeed McKenzie & Partington observe:[137]

> …the [SLCAPM] has its weaknesses, but these are well documented and in many cases can either be diagnosed or perhaps compensated for in empirical practice.

As discussed below, it is not clear whether the AER has sought to compensate for the known weaknesses of the SLCAPM, as suggested by McKenzie & Partington, or whether it has simply ignored them. To the extent that the AER has sought to compensate for these weaknesses, by taking the upper bound of its equity beta range, it cannot reasonably be satisfied it has adequately compensated for their effect, because it does not seek to analyse or quantify this effect.

McKenzie & Partington also state:[138]

> The final estimate of the expected return on equity may have regard to a broad range of relevant material including a range of multifactor models such as the Fama and French (1993) and the APT of Ross (1976), inter alia. Many of these competing models nest this foundation model and so potentially make more use of available information.

Certainly McKenzie and Partington do not appear to view the SLCAPM as superior to all other models. Rather they acknowledge the weaknesses of the model and recommend that any estimate of the return on equity may take into account a wider range of models, including the FFM.

Associate Professor Handley also acknowledges the critical weakness of the SLCAPM, noting:[139]

> An apparent weakness of the Sharpe-CAPM is the empirical finding, for example by Black, Jensen and Scholes (1972) and Fama and French (2004), that the relation between beta and average stock returns is too flat compared to what would otherwise be predicted by the Sharpe-CAPM – a result often referred to as the low beta bias.

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[136] Preliminary Decision, p 3-533.

[137] Michael McKenzie and Graham Partington, *Report to the AER – Part A: Return on Equity*, October 2014, p 9.

[138] Michael McKenzie and Graham Partington, *Report to the AER – Part A: Return on Equity*, October 2014, p 9.

[139] John C Handley, *Advice on the Return on Equity: Report prepared for the Australian Energy Regulator*, 16 October 2014, p 5.

The weaknesses and limitations of the SL CAPM were identified in our Regulatory Proposal and the supporting expert reports. In particular, SFG referred to the large body of empirical evidence which shows that the SL CAPM will tend to produce biased estimates of the required return on a low-beta or value stock, and may not fully capture all factors affecting stock returns.[140] SFG's reports also explained how other models such as the Black CAPM and FFM were developed specifically to overcome these known weaknesses in the SLCAPM design.

Some of the key empirical evidence demonstrating weakness in the SLCAPM is summarised in Table 4.1 below.

Table 4.1: Summary of key empirical evidence in relation to SLCAPM performance

Study	Key conclusions
Black, Jensen and Scholes (1972)[141]	Black, Jensen and Scholes (1972) tested the SLCAPM theory against empirical data. Their results indicated that the empirical relationship between systematic risk exposure and returns was not consistent with SL CAPM theory. The relationship in the empirical data indicated a higher intercept and flatter slope than that indicated by the SL CAPM.
	The authors conclude that their results appeared to be strong evidence favouring rejection of the traditional form of the asset pricing model (i.e. the SLCAPM).
Friend and Blume (1970)[142]	The empirical analysis by Friend and Blume (1970) indicates that low-beta stocks generate higher returns than the SL CAPM would suggest and high-beta stocks tend to generate lower returns than the SL CAPM predicts.
Fama and Macbeth (1973)[143]	Fama and Macbeth (1973) empirically test the assumption of the SL CAPM that the return on a zero-beta asset will be equal to the risk-free rate. Consistent with the earlier findings of Black, Jensen and Scholes (1972), they conclude that this assumption is not supported by the empirical data.
Rosenberg, Reid and Landstein (1985)[144]	The study by Rosenberg, Reid and Landstein, as well as other studies identified a number of SL CAPM anomalies, where stock-specific characteristics seemed related to differences in returns. In particular, the book equity value divided by the market equity value (book-to-market ratio) appeared to be related to variation in returns.

[140] SFG, *The required return on equity for regulated gas and electricity network businesses*, June 2014, [46]–[60].

[141] Black, F., M.C. Jensen, and M. Scholes, 1972, "The Capital Asset Pricing Model: Some empirical tests," in *Studies in the Theory of Capital Markets*, Michael C. Jensen, ed., New York: Praeger, 79–121, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, pp 20-22.

[142] Friend, I., M. Blume, 1970, "Measurement of Portfolio Performance under Uncertainty," *American Economic Review*, 60, 561–75, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, pp 22-23.

[143] Fama, E.F., J.D. MacBeth, 1973, "Risk, return, and equilibrium: Empirical tests," *Journal of Political Economy*, 81, 607–636, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, pp 23-24.

[144] Rosenberg, B., K. Reid, and R. Lanstein (1985), "Persuasive evidence of market inefficiency," *Journal of Portfolio Management* 11, 9–17, referred to in : SFG, *The Fama-French model: Report for Jemena Gas Networks, ActewAGL, Transend, TransGrid, and SA PowerNetworks*, 13 May 2014, p 15.

Study	Key conclusions
Fama and French (1992)[145]	Fama and French (1992) demonstrated relationships between returns and book-to-market and size factors which are not accounted for in the SL CAPM.
Brealey, Myers and Allen (2011)[146]	A recent study by Brealey, Myers and Allen confirms the findings of earlier studies, such as the study by Black, Jensen and Scholes (1972), that the pattern of empirical data is not consistent with what the SL CAPM would predict.
Brailsford, Gaunt and O'Brien (2012)[147]	Brailsford, Gaunt and O'Brien (2012) provide evidence, using Australian data, that value stocks tend to earn higher returns than the SL CAPM predicts should be the case and growth stocks tend to earn less than the SL CAPM predicts should be the case. The evidence that Brailsford, Gaunt and O'Brien (2012) provide indicates that the SL CAPM underestimates the returns required on value stocks and overestimates the returns to growth stocks.
NERA (2015)[148]	**Based on Australian data, and using both in-sample and out-of-sample tests, NERA conclude that there is evidence of bias in the SL CAPM. NERA states that the evidence indicates that the SL CAPM significantly underestimates the returns generated by low-beta portfolios and overestimates the returns generated by high-beta portfolios. In other words, the model has a low-beta bias. The extent to which the SL CAPM underestimates the returns to low-beta portfolios is both statistically and economically significant.**

The body of empirical literature relating to identified weaknesses in the SL CAPM, and the development of alternative models to overcome the well-recognised deficiencies in this model, is discussed at some length by the Nobel Prize Committee, in the explanatory material accompanying the award of the Nobel Prize for contributions to this field.[149] The Committee observes that by the end of the 1970s, the empirical support for the SL CAPM was increasingly being questioned in a number of studies, including those referred to above.

In light of the above evidence, the AER cannot rationally conclude that the SL CAPM is superior to all other models. The evidence clearly shows that the SL CAPM has weaknesses and that there are alternative models available, some of which have been designed to address such weaknesses.

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[145] Fama, E.F. and K.R. French (1992), "The cross-section of expected stock returns," *Journal of Finance* 47, 427-466, referred to in : SFG, *The Fama-French model: Report for Jemena Gas Networks, ActewAGL, Transend, TransGrid, and SA PowerNetworks*, 13 May 2014.

[146] Brealey, R.A., S.C. Myers, and F. Allen, 2011, *Principles of Corporate Finance*, 10th ed., McGraw-Hill Irwin, New York, NY, USA, referred to in : SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, p 24.

[147] Brailsford, T., C. Gaunt and M. O'Brien, 'Size and book-to-market factors in Australia', *Australian Journal of Management*, 2012, pages 261-281, referred to in: NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model,* March 2015.

[148] NERA, *Empirical Performance of Sharpe-Lintner and Black CAPMs*, February 2015.

[149] Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences, *Understanding Asset Prices: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2013*, 14 October 2013, section 7.

(b) **The AER has erred in finding that its implementation of the SL CAPM will produce unbiased estimates**

The AER considers the issue of potential bias in the SL CAPM in the Preliminary Decision, but concludes:[150]

> *We do not consider the use of the SLCAPM as the foundation model will result in a downward biased estimate of the cost of equity capital.*

Elsewhere in the Preliminary Decision the AER states that:[151]

> *There is no compelling evidence that the return on equity estimate from the SLCAPM will be downward biased given our selection of input parameters.*

It is not entirely clear from these statements whether the AER has found that:

1   in general, the SLCAPM will produced unbiased estimates of the required return on equity (**Finding 1**); or

2   to the extent that the SLCAPM may produce biased estimates, the AER's selection of input parameters adequately corrects for any bias (**Finding 2**).

It must be that the AER has made either Finding 1 or Finding 2, in order for it to be satisfied that its approach will deliver a return on equity which contributes to achievement of the ARORO.

(i)   Empirical evidence does not support Finding 1

We consider that Finding 1 would involve a critical error of fact. Empirical evidence clearly demonstrates that the SLCAPM will lead to downwardly biased estimates of the return on equity for low-beta stocks. This empirical evidence is referred to in a number of the expert reports supporting our Regulatory Proposal, including:

- expert reports from SFG, referring to the early empirical analysis of SL CAPM performance which laid the foundations for the development of alternative models such as the Black CAPM and FFM. This included the work of Black, Jensen and Scholes (1972), Friend and Blume (1970) and Fama and Macbeth (1973) referred to above;[152] and

- NERA's comprehensive review of the empirical literature on the performance of the SL CAPM and alternative models. NERA concludes from its review of the SL CAPM literature:[153]

> *It has been known for well over 40 years that empirical versions of the SL CAPM tend to underestimate the returns to low-beta assets and overestimate the returns to high-beta assets…*
>
> *These early results have been confirmed in many, more recent studies. These studies have also shown that the SL CAPM tends to underestimate the returns to value stocks and low-cap stocks.*

Further evidence of bias in SL CAPM estimates of the return on equity is provided by the recent analysis of NERA, using Australian data.[154] NERA concludes that the evidence indicates that the SL CAPM significantly underestimates the returns generated by low-beta portfolios and overestimates the returns generated by high-

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[150] Preliminary Decision, p 3-130.

[151] Preliminary Decision, p 3-62.

[152] SFG, *The required return on equity for regulated gas and electricity network businesses*, June 2014, [46]–[60].

[153] NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model,* March 2015, p iii.

[154] NERA, *Empirical Performance of Sharpe-Lintner and Black CAPMs*, February 2015.

beta portfolios. In other words, the model has a low-beta bias. The extent to which the SL CAPM underestimates the returns to low-beta portfolios is both statistically and economically significant.

The AER's only response to this in the Preliminary Decisions was to observe that the results of NERA's analysis 'appear counterintuitive'.[155] This is not a proper basis for simply dismissing this very important piece of analysis. The fact that NERA's results were contrary to the AER's prior intuition is unsurprising, given that the AER may have expected the empirical relationship between beta and stock returns to reflect what is predicted by the SL CAPM. The fact that the empirical results were not consistent with the predictions of the SL CAPM is not a reason to dismiss the empirical analysis. Rather, this ought to have confirmed for the AER what the previous studies had indicated – that there is a significant weakness in the SL CAPM, in terms of its performance against the empirical data – or at least put the AER on notice that further genuine investigation is needed.

In dismissing the NERA analysis and earlier studies, the AER also refers to advice from Partington, which it considers supports a finding that the SL CAPM will not produce downwardly biased estimates. However the Partington advice referred to by the AER does not address the empirical evidence of *low-beta bias* in the SL CAPM (i.e. evidence that the SL CAPM underestimates the return on equity for stocks with a beta below one). Rather, in the passage referred to by the AER, Partington addresses an entirely separate issue of whether there may be a theoretical or statistical justification for adjusting equity beta estimates to account for *statistical* bias. The AER has misinterpreted the advice of its expert on this point.

(ii) There is no basis for Finding 2

The AER has not sought to advance any reasoned or principled basis for Finding 2 and, in any event there can be no reasonable basis for such a finding. The AER does not seek to quantify the effect of such bias, nor does it make any transparent adjustment to its SLCAPM parameter estimates to correct for bias.

The AER does make an adjustment to its equity beta estimate, from what it refers to as "the best empirical estimate" of this parameter. However it is not clear whether this adjustment is intended to correct for bias in the SLCAPM. In any event, given that the AER does not seek to quantify the effect of SLCAPM bias, it cannot reasonably be satisfied that this adjustment adequately corrects for such bias.

Indeed the AER appears to acknowledge that its equity beta estimate should be adjusted upwards to correct for bias in the SLCAPM, but says it cannot ascertain by how much it needs to adjust its estimate because it does not empirically estimate the Black CAPM. The AER does not calculate a specific uplift to its beta to correct for SLCAPM bias, but instead makes an arbitrary upward adjustment in the hope that this will adequately account for the issue that it has identified. The AER states:[156]

> *We consider the theoretical principles underpinning the Black CAPM demonstrate that market imperfections could cause the true (unobservable) expected return on equity to vary from the SLCAPM estimate. For firms with an equity beta below 1.0, the Black CAPM may predict a higher expected return on equity than the SLCAPM. We use this theory to inform our equity beta point estimate, and consider it supports an equity beta above the best empirical estimate implied from Henry's 2014 report. However, while the direction of this effect may be known, the magnitude is much more difficult to ascertain. We do not consider this theory can be used to calculate a specific uplift to the equity beta estimate to be used in the SLCAPM. This would require an empirical implementation of the Black CAPM, and we do not give empirical evidence from the Black CAPM a role in determining the equity beta for a benchmark efficient entity.*

Ultimately, the AER adopts the top of its selected range for the SLCAPM equity beta – in effect, the AER makes an upward adjustment to the equity beta, from what it refers to as the "best empirical estimate" to the upper limit of its range. However given that the AER has not sought to quantify the effect of SL CAPM bias, it cannot reasonably be satisfied that choosing the top of its equity beta range will adequately correct for such bias.

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[155] Preliminary Decision, p 3-285.

[156] Preliminary Decision, p 3-497.

We consider that selecting the top of the AER's equity beta range will not adequately correct for the bias in the SL CAPM indicated by Black CAPM theory. If the AER's parameter estimates are used in the Black CAPM along with the best available estimate of the zero-beta premium,[157] the return on equity estimated by the Black CAPM is above the return on equity estimated by the AER using the SLCAPM (and adopting the upper limit of its equity beta range).

Table 4.2 below shows that even if the AER's lower bound beta value is used in the Black CAPM, the resulting return on equity estimate is still above the AER's SL CAPM estimate using the upper bound beta value. If the AER's "best empirical estimate" of beta is used in the Black CAPM, the resulting return on equity estimate is significantly above the AER's SL CAPM estimate. This indicates that if the AER were to properly adjust its SLCAPM beta estimate to account for the bias in the SLCAPM indicated by Black CAPM theory, the resulting beta would need to be higher than 0.7.

Table 4.2: Comparison of SLCAPM and Black CAPM return on equity estimates[158]

Model	Return on equity estimate
SLCAPM – equity beta 0.7; MRP 6.5%	7.3%
Black CAPM – equity beta 0.4 (AER lower bound); MRP 6.5%	7.4%
Black CAPM – equity beta 0.5 (AER "best estimate"); MRP 6.5%	7.7%
Black CAPM – equity beta 0.7 (AER upper bound); MRP 6.5%	**8.3%**

UE agrees that, if the SL CAPM is to be used alone to estimate the return on equity, some adjustment needs to be made to its input parameters to account for the known weaknesses of the model. If the SL CAPM is used without any adjustment, the empirical evidence shows that the return on equity for low-beta stocks will be significantly under-estimated.

Our concern is that the AER's adjustment to the equity beta is not sufficient to account for the known weaknesses of the SL CAPM. As shown above, even if the AER's view as to the "best empirical estimate" of equity beta were to be accepted (UE does not agree with this, for reasons set out in section 4.4(c) below), it is clear that adjusting the equity beta upwards to 0.7 does not account for the bias in the SL CAPM.

In this submission, we put forward an alternative method for estimating the return on equity using the SL CAPM alone, with an empirically based adjustment to account for the known weaknesses of this model. This alternative method is explained in section 4.6 below and the accompanying expert report from Frontier Economics.

(c) The AER has erred in its findings in relation other available models

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[157] Zero-beta premium of 3.34%, as estimated by SFG (SFG, *Cost of equity in the Black Capital Asset Pricing Model*, 22 May 2014, section 4).

[158] All calculations are based on a risk-free rate of 2.76% (as used in the Preliminary Decision) and a Black CAPM zero-beta premium of 3.34% (as estimated by SFG – see: SFG, *Cost of equity in the Black Capital Asset Pricing Model*, 22 May 2014, section 4).

The AER raises a number of concerns with the other available return on equity models. Given these concerns, the AER decides to give these alternative models either no role in its determination of the return on equity, or a very limited role.

The key concerns raised by the AER are:

- alternative models are sensitive to input assumptions and choices around estimation periods and methodologies;

- some alternative models are not empirically reliable;

- some alternative models are not designed to estimate ex ante returns;

- some alternative models (particularly the FFM) lack theoretical foundation;

- some alternative models (particularly the Black CAPM) are not widely used by market practitioners, academics or regulators; and

- some alternative models produce return on equity estimates that appear "very high".

For reasons discussed below, UE considers that each of these concerns is unfounded. In several cases, the AER's method and reasons for rejecting this other evidence (or relegating it to an indirect role) are illogical and unreasonable and/or apply equally to the SL CAPM.

(i) Complexity and sensitivity of models to assumptions

A key concern raised by the AER in relation to alternative return on equity models is that they are sensitive to inputs assumptions and methodological choices. For example the AER considers that the DGM is highly sensitive to assumptions around the growth rate of dividends.[159] In relation to the FFM, the AER identifies a range of different methodological choices which might lead to different results.[160]

Simply observing that a return on equity model is sensitive to input assumptions and methodological choices does not provide a basis for rejecting that model or giving it a very limited role. All return on equity models— including the SL CAPM—are sensitive to input assumptions. This is why it is important to estimate all model parameters as accurately as possible.

The same concern could be expressed in relation to the SLCAPM. Clearly the results produced by the SLCAPM could vary widely depending on one's choice of input parameters and the methodologies used to estimate those parameters. Just based on the AER's ranges for the equity beta and MRP set out in the Preliminary Decision (and holding the risk-free rate constant), the return on equity produced by the SLCAPM could range from 4.8% to 11.4%.[161] This wide range of values arises due to different approaches that could be taken to estimating the MRP, and different methodological and data choices which could be made in estimating the MRP or beta.

Grant Samuel, in its submission in response to the NSW draft decisions, expresses concern at the AER's unbalanced treatment of the DGM and SL CAPM in this regard. Grant Samuel notes:[162]

> *The DGM, in its simplest form, has only two components to estimate – current dividend yield and the long term growth rate for dividends. The current yield is a parameter that can be estimated with a reasonably high level of accuracy, particularly in industries such as infrastructure and utilities. We accept that the question of the long term dividend growth rate becomes the central issue and is*

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[159] Preliminary Decision, p 3-79.

[160] Preliminary Decision, p 3-73.

[161] That is, adopting a range for the MRP of 5.0% - 8.6% and a range for the equity beta of 0.4 – 0.7.

[162] Grant Samuel, *Australian Energy Regulator – Draft Decision*, letter to the directors of TransGrid, 12 January 2015, p 3.

subject to a much higher level of uncertainty (including potential bias from sources such as analysts) and we do not dispute the comments by Handley on page 3-61.

However, there is no way in which the issues, uncertainties and sensitivity of outcome are any greater for the DGM than they are with the CAPM which involves two variables subject to significant measurement issues (beta and MRP).

Dr Robert Malko, a regulatory expert in the United States (where the DGM is frequently used) similarly notes:[163]

Certainly the DGM is sensitive to its input assumptions and if it would be inappropriately implemented, it could deliver implausible results. In this regard, I see no difference between this and other models. If inappropriate inputs are used, any of the models can produce implausible results.

It is common in United States regulatory determination processes for there to be debate between businesses, customers and the regulators concerning which inputs to use but these debates occur with a context in which expert testimony has regard to whether the inputs used deliver plausible results and decision making is guided by a body of court and regulatory precedent.

Over-all, the wide acceptance and use of the DGM in the United States demonstrates that this model is sufficiently robust for it to be useful in economic regulatory decision making.

For the reasons expressed by Dr Malko, we consider that the sensitivity of a model to input assumptions should not be a reason for dismissing it.

(ii) Reliability of empirical estimates

A particular concern raised by the AER in relation to the Black CAPM is that estimates of the return on equity will be unreliable, because there is no reliable method to obtain an estimate of the zero-beta premium.

The AER's concern appears to be that, because different estimation techniques have produced varying estimates of the zero-beta premium, it cannot rely on any empirical estimates of this parameter. The AER states:[164]

We consider SFG's latest estimate of the zero beta premium appears more plausible. However, we remain of the view that the large range of zero beta estimates by consultants indicates that the model is unsuitable for estimating the return on equity for the benchmark efficient entity.

Besides noting that it is 'plausible', the AER has not sought to test the robustness or reliability of SFG's proposed value for the zero-beta premium. Instead, the AER has dismissed SFG's estimate on the basis that there are other differing estimates, some of which are 'implausible'.

UE considers that this is an illogical and unreasonable approach to assessment of the proposed Black CAPM parameter values and return on equity estimate. The AER cannot reasonably conclude that *all* estimates of the zero-beta premium are unreliable, just because *some* estimates of this parameter appear implausible. The same logic could be used to dismiss just about any return on equity model, including the SLCAPM, to the extent that some estimates of the MRP or equity beta are considered unreliable.

This is particularly so given that detailed and compelling explanations have been provided as to why SFG's estimate differs from other estimates of the zero-beta premium. As explained by SFG, recent empirical studies have demonstrated the significance of the book-to-market factor in explaining variation in stock returns in Australia. It is for this reason that the SFG study, unlike earlier studies of the zero-beta premium, controls for this factor in the estimation estimates. SFG controls for this by forming portfolios that have approximately the same composition in terms of book-to-market ratio and other relevant firm characteristics.[165] As is clear from

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[163] Statement of Dr J Robert Malko, 16 June 2015, p 5.

[164] Preliminary Decision, p 3-312.

[165] SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [65]; SFG, *Cost of equity in the Black Capital Asset Pricing Model,* 22 May 2014, section 4.

SFG's explanations, the difference between their estimates of the Black CAPM zero-beta premium and earlier estimates does not indicate that the model is empirically unreliable – rather, it reflects a development in the methodology for estimating this parameter.

UE has proposed to use SFG's estimates of the zero-beta premium and required return on equity from the Black CAPM in estimating the return on equity. If the AER is to reject this proposal, it must first consider SFG's estimates and assess whether adopting these estimates would (either alone or in combination with other models or methods) contribute to the achievement of the ARORO. The AER cannot simply reject our proposal on the basis that there are other estimates of Black CAPM parameters (which UE has not sought to rely on) which the AER considers to be implausible.

Instead of seeking a reliable estimate of the Black CAPM zero-beta premium, the AER has effectively assumed this to be zero (by relying solely on the SLCAPM to estimate the return on equity). We consider that this is an unreasonable approach, in circumstances where the AER has identified the Black CAPM to be a relevant model. Given that the Black CAPM is clearly a relevant model, a proper examination should be undertaken of what the best estimate for the zero-beta premium is and this value should be used unless it is so unreliable that assuming a value known to be incorrect (a zero value) is a preferable outcome.

(iii) Lack of theoretical foundation

The AER has again raised a concern in relation to the theoretical foundation for the FFM.

This concern has been addressed in our Regulatory Proposal and the supporting expert reports of SFG and NERA.[166]

As explained by SFG, the basis for development of the FFM was in studies documenting the empirical failings of the SL CAPM.[167] These studies documented that when the stock market index is used as the only factor (as in the SL CAPM), the model does not fit the data, but when the additional FFM factors (size and book-to-market ratio) are included the model does fit the data better. These early findings have been confirmed by more recent analysis using Australian data. A recent study shows that while the size in not significant in the Australian data, the book-to-market factor is.[168]

The general theoretical foundation for the FFM is the same as for the SL CAPM, in that both models posit that there is a linear relationship between the expected return of a particular stock and the expected return of a mean-variance efficient portfolio.[169]

Where the theory of the FFM differs from SL CAPM theory is that in the FFM non-diversifiable risk is proxied by three factors, rather than one factor as implied by SL CAPM theory. The three factors posited by FFM theory are:[170]

- the excess return to the market portfolio;

- the difference between the return to a portfolio of high book-to-market stocks and the return to a portfolio of low book-to-market stocks (HML); and

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[166] SFG, *The Fama-French model*, 13 May 2014, pp 27-30; SFG, *Using the Fama-French model to estimate the required return on equity,* February 2015; NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model*, March 2015, section 2.3.

[167] SFG, *The Fama-French model*, 13 May 2014, pp 27-30; SFG, *Using the Fama-French model to estimate the required return on equity,* 13 February 2015.

[168] Brailsford, T., C. Gaunt, and M. O'Brien (2012), 'Size and book-to-market factors in Australia', *Australian Journal of Management*, 37, 261–281.

[169] SFG, *The Fama-French model*, 13 May 2014, p 27.

[170] NERA, *Review of the Literature in Support of the Sharpe-Lintner CAPM, the Black CAPM and the Fama-French Three-Factor Model*, March 2015, p 17.

- the difference between the return to a portfolio of small-cap stocks and the return to a portfolio of large-cap stocks (SMB).

The theoretical and empirical foundation for the FFM is discussed at some length by the Nobel Prize Committee, in the explanatory material accompanying the award of the Nobel Prize to Eugene Fama for contributions to this field.[171]

(iv) Models not designed to estimate ex ante returns

The AER expresses a concern in relation to the FFM that the model "*is not clearly estimating ex ante required returns*".[172]

It is curious that this criticism is only levelled at the FFM, given that theoretical foundation for the FFM is the same as for other asset pricing models, including the SLCAPM and Black CAPM. The key objective of all asset pricing models is to explain the cross section of stock returns, based on explanatory factors (such as market risk in the case of the SL CAPM) that have been observed to correlate with stock returns in the past. The basis for development of the FFM (and also the Black CAPM) was in studies documenting the failure of the SLCAPM to adequately explain variations in returns.

The reason for using any asset pricing model is that the historically observed relationships between returns, risk and other factors may be expected to continue in future. In this regard, the rationale for using the FFM is no different to the rationale for using the SLCAPM or Black CAPM.

As noted above, empirical analysis using Australian data shows that there is a statistically and economically significant relationship between returns and book-to-market ratios. Given the significance of this relationship in the historic data, and thus its explanatory power, there is no reason to expect that it would not continue in future. The AER's position on this topic is akin to saying that a prediction that the sun will rise tomorrow is not an "ex ante analysis of expected behaviour" if it is based on observations that the sun has always risen in the past. Inductive reasoning is neither weak nor, of itself, lacking in predictive power.

(v) Models not widely used

The AER's concern that alternative models are not widely used was also addressed in UE's Regulatory Proposal and supporting expert reports. UE observed that while some of these models are yet to gain acceptance among Australian regulators, it is clear that they are widely used by academics, market practitioners and overseas regulators and that they are market respected.

Our position on this issue is further reinforced by recent evidence, including evidence of the use of models other than the SL CAPM in the United States.

Dr Robert Malko states, in relation to regulatory practice in the United States:[173]

> *I have observed that in the United States regulators and expert financial witnesses generally use multiple methods, at least two, when determining a reasonable range and reasonable point estimate for the cost of common equity for a regulated energy utility.*

Specifically in relation to the Black CAPM, Dr Malko states:[174]

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[171] Economic Sciences Prize Committee of the Royal Swedish Academy of Sciences, *Understanding Asset Prices: Scientific Background on the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2013*, 14 October 2013, section 7.

[172] Preliminary Decision, p 3-70.

[173] Statement of Dr J Robert Malko, 16 June 2015, p 10.

[174] Statement of Dr J Robert Malko, 16 June 2015, p 8.

> *… although there is little explicit reference to the Black CAPM, in practice the use in the U.S. of the Empirical CAPM by financial analysts both within and outside energy regulatory processes is essentially to the same effect.*

Dr Malko explains that the 'Empirical CAPM', as referred to in US practice, involves a higher intercept and flatter relationship between returns and beta than under the SL CAPM.[175] Thus, the Empirical CAPM as used in US practice is consistent with the theory of the Black CAPM.

This is consistent with evidence from SFG that both the Black CAPM and DGM are commonly used in rate of return regulation cases in other jurisdictions.[176] SFG also notes that the FFM, while not as widely used in regulatory practice, is widely used by market practitioners and is well recognised in academic literature.[177]

(vi) "Very high" return on equity estimates

A further concern raised by the AER in relation to the DGM is that:[178]

> *The very high return on equity estimates from SFG's DGM model, equating to an equity beta of 0.94 in the SLCAPM, appear inconsistent with the results in Professor Olan Henry's 2014 report.*

The AER appears to be suggesting that, because the return on equity estimates produced by the DGM are higher than those produced by the SL CAPM (with the AER's preferred parameter values), the DGM estimates cannot be relied on.

This is an irrational and illogical approach to assessing the reliability of DGM estimates of the return on equity. This approach assumes that the SL CAPM estimates are accurate and reliable, and thus can be used as the benchmark to test the plausibility or reliability of estimates from other models. Adopting similar logic, one could conclude that the SL CAPM is unreliable because it produces estimates that are "very low" when compared to the DGM and any other models that produce higher estimates.

Alternatively, it may be that the AER considers that an implied equity beta of 0.94 would be "too high", because it is above its own estimate of that parameter. However there are two problems with such reasoning:

- first, this assumes that the AER's equity beta analysis is correct, and that any estimate which differs from its estimate of 0.7 (or falls outside its determined range of 0.4 – 0.7) must be incorrect. The AER appears to consider that its estimate is more likely to be correct, because it accords with its assumption that energy businesses are in general "low risk".

  However simply asserting that energy businesses are generally "low risk" does not provide a basis for preferring one equity beta estimate over another, particularly where both of these estimates are less than one. If the AER believes that energy network businesses are "low risk", all this would indicate is that the equity beta is likely to be less than one.

  In any event, we do not agree that low elasticity of demand for energy services indicates that network businesses are "low risk"—which is the AER's key reason for arguing that they are. It is well recognised that the relevant risks to a business include both operating and financial risks. Even if the AER considers the operating risk of energy networks to be relatively low (compared to the average firm), it must be recognised that financial risk is relatively high, due to high leverage when compared to the average firm in the market. Therefore the AER cannot reasonably conclude that overall, energy network businesses are "low risk".[179] One would need to test empirically the relative importance of operating and financial risks when assessing overall risk.

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[175] Statement of Dr J Robert Malko, 16 June 2015, p 8.

[176] SFG, *The required return on equity for regulated gas and electricity network businesses*, 6 June 2014, p 40.

[177] SFG, *The Fama-French model*, 13 May 2014, pp 17-22.

[178] Preliminary Decision, p 3-321.

[179] This issue is discussed further in the ENA's submission to the AER equity beta issues paper (ENA, *Response to the Equity Beta Issues Paper of the Australian Energy Regulator*, 28 October 2013, pp 14-20) and in a recent report from Frontier Economics (Frontier, *Review of the AER's conceptual analysis for equity beta*, June 2015).

- more fundamentally, there is an implicit assumption that the SLCAPM will deliver unbiased estimates of the return on equity. If the SLCAPM is in fact delivering downwardly biased estimates (as indicated by the empirical evidence referred to above) then the implied equity beta needed to deliver a DGM-equivalent result must include an uplift to account for this bias. In other words, if there is a bias in the SLCAPM that is not accounted for in the AER's equity beta of 0.7, this will contribute to a higher equity beta being needed to deliver a DGM-equivalent result.

The AER is required to have regard to all relevant estimation methods, financial models, market data and other evidence.[180] The AER cannot reject relevant financial models simply on the basis that the results they produce are inconsistent with the results of the AER's preferred model. Where two or more relevant models produce conflicting results, it is incumbent on the AER to assess each of the models on their merits and on that basis decide how their results are to be taken into account in determining the return on equity.

When faced with two models which produce differing results there are three possible hypotheses:

1   The model producing the lower estimate is accurate and unbiased, while the other model is upwardly biased or has been incorrectly applied;

2   The model producing the higher estimate is accurate and unbiased, while the other model is downwardly biased or has been incorrectly applied; or

3   There is a degree of error or imperfection in both models, and the correct outcome lies somewhere between or outside the two.

The AER has clearly not tested these possible hypotheses. Rather, the AER appears to have assumed that the first hypothesis is correct – i.e. that the SLCAPM is reliable and the DGM is not – without any rational basis. This is despite other evidence that suggests that either the second or third hypothesis is more likely to be correct. As noted above, there is empirical evidence that the SL CAPM will produce downwardly biased estimates of the SLCAPM for low-beta stocks.

In any event, it is not clear that the DGM return on equity estimate is "very high", when compared to the results of other relevant models and the AER's cross-checks. When comparing the outputs of the four relevant models, it could rather be said that the SLCAPM estimate appears "very low" when compared to the results of the other three models (see Figure 1 above).

4.4   The AER's application of the SL CAPM

(a)   The AER's mechanistic application of the SL CAPM

The AER continues to apply the SL CAPM in a largely mechanistic manner, by adding an effectively fixed equity risk premium (**ERP**) to a variable risk-free rate. The result is that over the past two years the AER's return on equity estimate has moved in lock-step with the risk-free rate.

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[180] NER, cl 6.5.2(e)(1).

Figure 2: Movement in the allowed return on equity under AER application of the SL CAPM
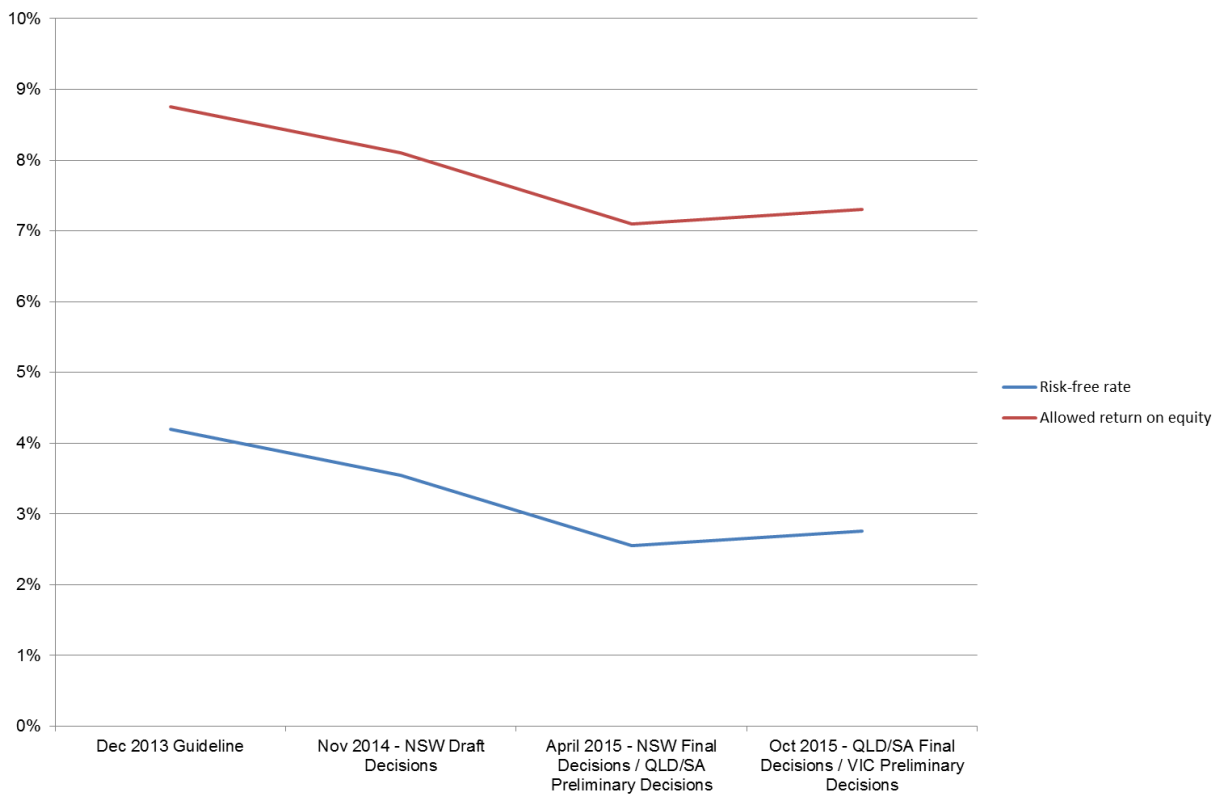
This approach is at odds with evidence that the MRP has increased as the risk-free rate has fallen, including the evidence from the AER's own DGM. This evidence is discussed further below.

It is also at odds with how the SL CAPM is applied by market practitioners.

In an expert report that was submitted with our initial proposal, Incenta explained that as the risk-free rate has fallen over the past 18 months, the vast majority of independent expert reports have adjusted either the risk-free rate and/or MRP upwards.[181] The AER's approach of maintaining the same MRP estimate and combining this with a falling risk free rate is inconsistent with this observed market practice.

This market evidence is consistent with that presented by the AER in the Preliminary Decision.[182] The AER's analysis of independent expert reports (Figure 3-33 of the Preliminary Decision) indicates that as the risk-free rate has fallen over the past two years, estimates of the market return in independent expert reports have remained relatively steady. This can be contrasted with the AER's assumption (as illustrated by the blue line in Figure 3-33) that over this period the market return has fallen in lock-step with the risk-free rate.

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[181] Incenta, *Further update on the required return on equity from independent expert reports*, February 2015.

[182] Preliminary Decision, p 3-535.

Figure 3-33 Market return from valuation reports
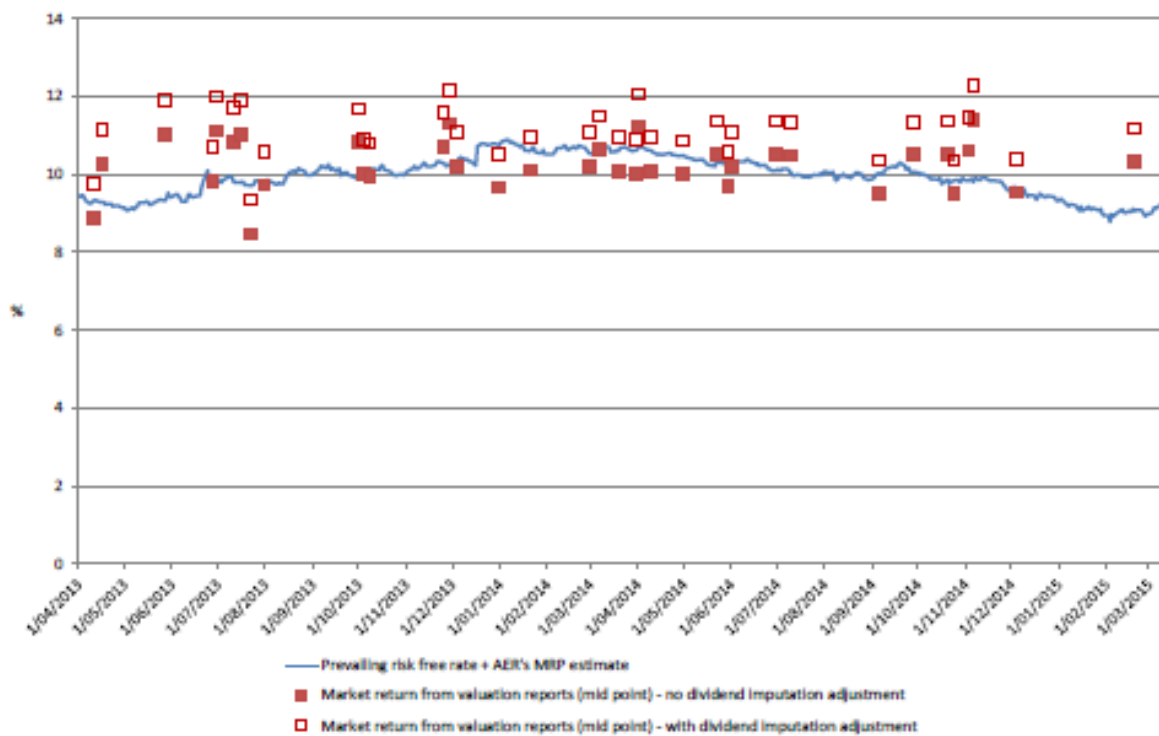
Source: AER analysis of data sourced from the Thomson Reuters Connect 4 database.

The AER's analysis also indicates that independent experts have tended to increase their estimates of the ERP when the risk-free rate is low. Figure 3-32 in the Preliminary Decision indicates that, based on the AER's review of independent expert reports:[183]

- independent experts estimated the ERP to be in the range of 4 – 6 per cent (not adjusted for imputation credits) when the risk-free rate is in excess of 5 per cent; and

- independent experts estimated the ERP to be in the range of 9.5 – 11.5 per cent (not adjusted for imputation credits) when the risk-free rate is below 3 per cent.

The AER's analysis of independent expert reports is confirmed by more recent analysis from HoustonKemp. As noted above, HoustonKemp observes that in recent times a number of independent experts have used risk-free rates above the prevailing CGS yield, leading to more stability in their estimates of the prevailing market return (and implicitly higher MRP assumptions) than under the AER's approach.[184] This is shown in Figure 1 below. This evidence suggests that market practitioners do not believe that the return on equity has simply been moving in lock-step with the risk free rate in recent years.

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[183] Preliminary Decision, Figure 3-32, p 3-534.

[184] HoustonKemp, The Cost of Equity: Response to the AER's Draft Decisions for the Victorian Electricity Distributors, ActewAGL Distribution and Australian Gas Networks, January 2016, p 43 and Figure 7.

Figure 3: Risk-Free Rates chosen by independent experts and 10-year CGS Yield over time
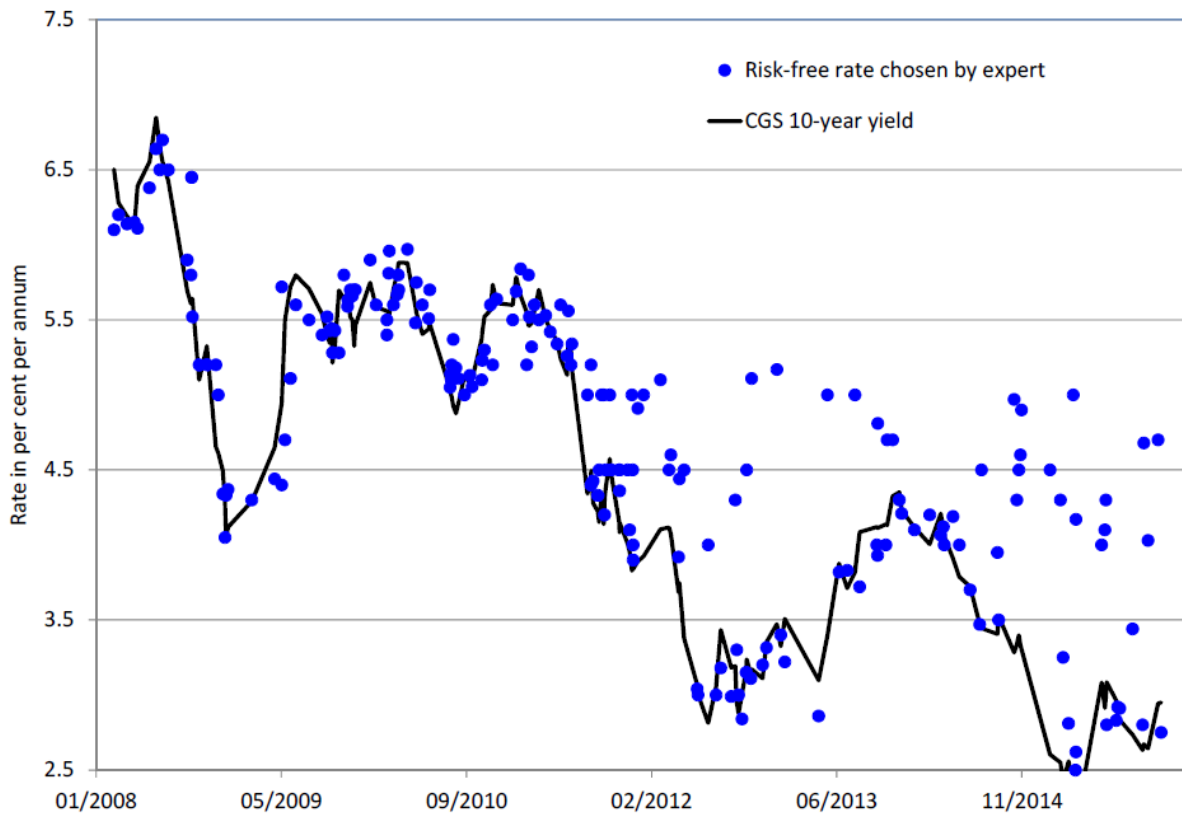
Note: Data are from the Connect-4 database, the ASX and the RBA. The 10-year CGS yields are interpolated from the RBA files f16.xls, f16hist.xls and f16hist2013.xls.

An assumption that the return on equity moves in lock step with CGS yields is inappropriate in current market conditions. Further evidence provided with this submission demonstrates that the recent decline in CGS yields has been driven by factors which would not be expected to affect the return on equity to the same extent.

CEG points to evidence from numerous Australian and international authorities that yields on AAA rated sovereign government debt (including CGS) have been forced down in recent years by global forces, including:[185]

- shrinking supply of AAA rated Sovereign debt globally and shrinking supply of substitutes in the form of safe private sector debt;

- heightened relative risk aversion and increased levels of perceived relative risk for equity vis-à-vis government debt; and

- heightened demand for liquid assets post GFC - including due to changes to banking regulations.

CEG explains that none of these factors that have lowering CGS yields would be expected to also lower the return on equity. CEG concludes:[186]

None of these factors can be expected to lower the cost of equity for private corporations. Consequently, to the extent that these factors do explain, at least in part, unprecedented low government bond yields then it follows that the cost of equity will not have fallen in line with falling government bond yields. This

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[185] CEG, *Measuring risk free rates and expected inflation*, April 2015, p 1.

[186] CEG, *Measuring risk free rates and expected inflation*, April 2015, p 2.

is just another way of saying that the risk premium, measured relative to government bond yields, will have risen.

Frontier Economics similarly notes that declines in CGS yields have been attributed to unprecedented monetary easing by central banks and a shortage of risk-free assets as demand for these assets has increased. Frontier notes that at least some of these factors appear to be unique to the government bond market and therefore would not be expected to affect the return on private equity – for example, tighter banking regulations have increased the demand for government bonds but not equity, and the demand from foreign investors has been much more pronounced in the government bond market than the equity market.[187] Further, Frontier points to empirical evidence that the return on equity has not fallen in lockstep with the decline in government bond yields.[188]

(b) Determination of the MRP

(i) The AER's decision on the MRP

In the Preliminary Decision, the AER adopted a three-step approach to estimating the MRP:[189]

- In step one, the AER determined a 'baseline' estimate for the MRP, based on estimates of historical excess returns. The AER considered that the information on historical excess returns indicated a baseline estimate for the MRP of 6.0 per cent. This baseline estimate was taken from a range of estimates of historical excess returns of 5.0 per cent to 6.5 per cent.[190]

- In step two, the AER had regard to DGM evidence in order to determine whether it should select an MRP point estimate above or below the baseline estimate of 6.0 per cent. The AER's DGM estimates of the MRP ranged from 7.5 to 8.6 per cent and its preferred three-stage estimates ranged from 7.7 to 8.6 per cent.[191] The AER considered that this information could justify a point estimate above the 6.0 per cent baseline, but did not support a point estimate above the top of the range implied by historical excess returns (6.5 per cent).[192]

- In step three, the AER placed some reliance on survey evidence and conditioning variables. The AER considered that this information, in conjunction with DGM evidence, helps to indicate how far above or below the baseline estimate the MRP point estimate should be.

The effect of adopting this three-step approach is that critical evidence as to the prevailing MRP, from the AER's DGM model, has very little influence on the determination of the point estimate. This evidence is only used to indicate whether the prevailing MRP is likely to lie above or below the AER's "baseline" estimate of 6.0 per cent, which reflects the AER's view of the historical average MRP. The estimates from the AER's DGM model do not appear to otherwise influence the AER's determination of the MRP. Ultimately, the AER's estimate of the prevailing MRP is based on historical average measures, and evidence as to the prevailing MRP is only used to determine which of the historical average measures is used.

UE is concerned that the MRP estimate resulting from this approach will not reflect prevailing market conditions. The evidence before the AER (including from the AER's own DGM analysis) indicates that the prevailing MRP is not in line with the historical average. Despite this, the AER has tied its estimate of the MRP to the range of historical average measures. Measures of the prevailing MRP are only used to determine which historical average measure is to be used.

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[187] Frontier Economics, *The relationship between government bond yields and the market risk premium*, January 2016, pp 28-29.

[188] Frontier Economics, *The relationship between government bond yields and the market risk premium*, January 2016, pp 30-31.

[189] Preliminary Decision, p 3-432.

[190] Preliminary Decision, p 3-430.

[191] Preliminary Decision, p 3-362.

[192] Preliminary Decision, p 3-434.

The AER's DGM estimates do not merely indicate that the MRP is somewhere above 6.0 per cent. Rather, the AER's DGM estimates indicate that the current MRP is somewhere in the range of 7.5 to 8.6 per cent. This evidence in no way confirms or supports the AER's estimate of 6.5 per cent.

It appears that the AER has incorrectly analysed the range for the historical average MRP as suggesting that the prevailing MRP could be found in this range, whereas all that this range indicates is that the MRP in _average_ market conditions (i.e., the average of the market conditions over the historical period that was used) had a range of somewhere between 5.0 to 6.5 per cent. Consequently, the AER fails to appreciate that the best estimate of the _prevailing_ MRP need not fall within the statistical range of estimates for the historical average excess return – for example, if the contemporaneous market conditions differed from the historical average conditions because the risk-free rate was at unprecedented lows.

The AER also appears to have constrained its consideration of the appropriate MRP through this three-step approach. Through its consideration of historical excess return estimates in step one, the AER appears to have constrained the range of possible MRP outcomes to that indicated by its range of estimates for the historical average excess returns (5.0 to 6.5 per cent). Consequently, the evidence considered under step two (the AER's DGM estimates) could only have an effect on the determination of the MRP to the extent that it confirmed an estimate within the range determined under step one. To the extent that this evidence indicated an estimate outside this range, it was given no weight, or its role was limited to taking the AER to the top of the range defined by step one.

(ii) Rigidity of the AER's MRP estimate, despite evidence of changes in market conditions

We note that the AER's estimate of the MRP has not changed since publication of its Rate of Return Guideline, despite apparent changes in prevailing market conditions. The AER adopted an estimate for the MRP of 6.5 per cent in its Rate of Return Guideline (December 2013), and has maintained the same MRP estimate in the draft and final decisions for the NSW electricity businesses (November 2014 and April 2015) and in its Preliminary Decision (October 2015). The AER's view appears to be that there has been no change to the MRP between December 2013 and October 2015.

However the evidence before the AER indicates that there has been a significant change in market conditions over the past two years. In particular:

- Indicators of the forward-looking MRP – including the AER's own DGM results – indicate that the MRP has increased significantly. Whereas at the time of the Rate of Return Guidelines the AER's MRP estimate sat within the AER's range of DGM estimates, by the time of the Preliminary Decision, the AER's MRP estimate was well outside its range of DGM estimates. In December 2013 the AER estimated a range for the MRP of 6.1 – 7.5 per cent from its DGM.[193] However, in the Preliminary Decision, this range is 7.5 to 8.6 per cent.[194]

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[193] AER, _Better Regulation: Explanatory Statement – Rate of Return Guideline_, December 2013, p 93.

[194] Preliminary Decision, p 3-362.

Figure 4: Movement in AER DGM estimates since Rate of Return Guideline
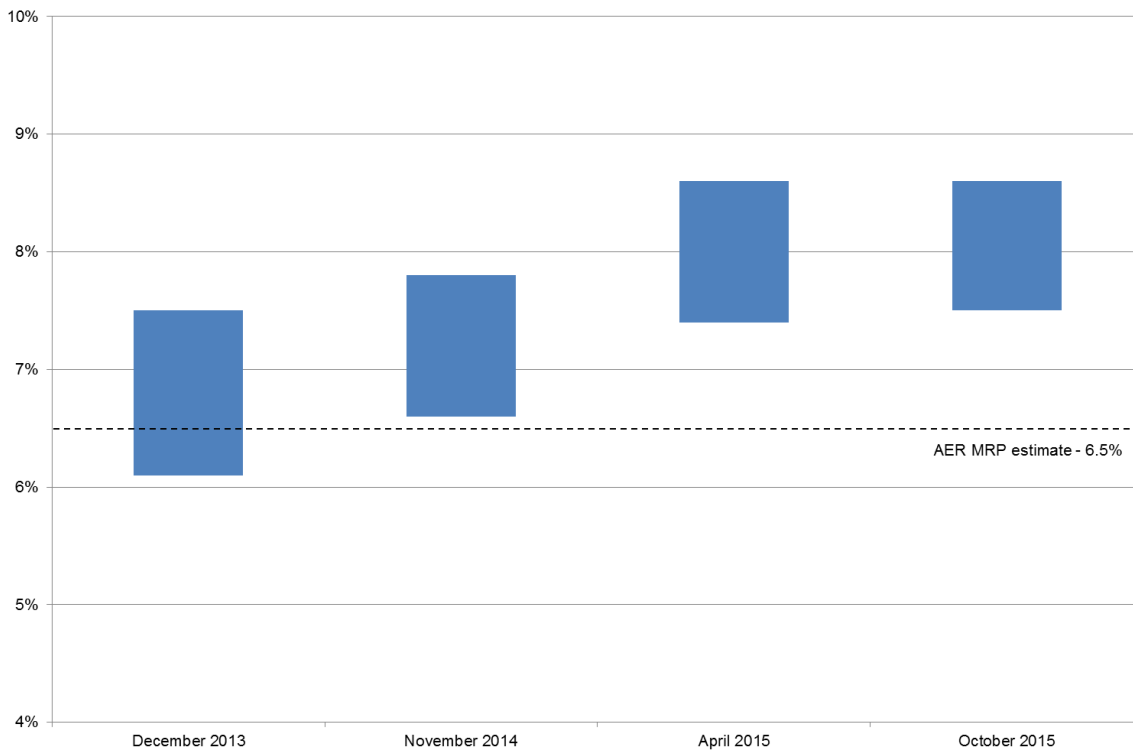
The fact that the AER's MRP has not changed despite significant increases in its DGM estimates suggests that either the AER is placing no real weight on DGM results, or the AER has placed declining weight on these results as the MRP estimate has increased. Giving either no weight or declining weight to DGM results would be unreasonable in circumstances where DGM results provide the best indicator of the *current* (prevailing) MRP. This implies that the AER is giving increasing weight to historical average measures of the MRP, which will not reflect prevailing market conditions except perhaps by chance (i.e. if, by chance, current market conditions reflect historical average conditions).

- There has been a precipitous fall in the risk-free rate – from around 4.2 per cent at the time of the Rate of Return Guidelines, to around 2.76 per cent at the time of the Preliminary Decision. By holding the MRP constant, the AER implicitly assumes that the market conditions driving this reduction in CGS yields are:

    – not affecting the MRP at all; and

    – leading to a corresponding one-for-one reduction in the return on equity.

    – As noted above, the evidence does not support such an assumption. Rather, the evidence from the AER's own DGM analysis indicates that the MRP has been increasing as the risk-free rate has been falling, and that as a result, the return on equity has not fallen in lock-step with the risk-free rate.

- As discussed below (section 4.5), evidence from the AER's cross-check analysis and conditioning variables points to an increase in the MRP.

- It has been recognised by market practitioners and regulatory authorities that current market conditions are not average market conditions, and that the MRP is likely deviating from a fixed range based on historical average measures.

For example, as noted in our initial proposal, the United States Federal Energy Regulatory Commission has noted:[195]

> *Given the recent trends of near-historic low yields for long-term U.S. Treasury bond rates, the CAPM's input for the "risk-free" rate, we find that it is a reasonable assumption that the current equity risk premium (which is added to the risk-free rate to calculate the cost of equity data point that determines the slope of the CAPM curve) exceeds the 86-year historical average used as the consultants' CAPM input. The current low treasury bond rate environment creates a need to adjust the CAPM results, consistent with the financial theory that the equity risk premium exceeds the long-term average when long-term U.S. Treasury bond rates are lower than average, and vice-versa.*

Similarly in the UK, Ofgem has recognised that as the risk-free has fallen to historic lows, it is not appropriate to simply add a prevailing risk-free rate measure to a fixed ERP. Ofgem has instead used a risk-free rate range above the prevailing rate, resulting in more stability in estimates of the overall return on equity. Ofgem explains its approach as follows:[196]

> *Market measures of the real risk-free rate, such as the yield on ILGs, have risen slightly since the data cut-off point for EE's December report. However, they remain near historical lows, partly due to the Bank of England's official interest rate being held at 0.5 per cent and the impact of Quantitative Easing. We, therefore, do not consider it appropriate to rely on spot rates or short-term averages to set the risk-free rate.*

> *Our revised range for the risk-free rate is, therefore, 1.7-2.0 per cent. The lower bound matches the 10-year average yield on 10-year ILGs, while the upper bound corresponds to regulatory precedent in the UK.*

The Reserve Bank of Australia has observed that the ERP appears to have risen as the risk-free has fallen in recent years. The RBA Governor observed in a recent speech:[197]

> *…another feature that catches one's eye is that, post-crisis, the earnings yield on listed companies seems to have remained where it has historically been for a long time, even as the return on safe assets has collapsed to be close to zero... This seems to imply that the equity risk premium observed ex post has risen even as the risk-free rate has fallen and by about an offsetting amount.*

In an Australian regulatory context, the Economic Regulation Authority in WA (**ERA**) has recognised that the MRP will fluctuate over time, and that it is therefore not appropriate to fix a range for the MRP. The ERA noted in a recent decision:[198]

> *…the Authority has now concluded that it is not reasonable to constrain the MRP to a fixed range over time. The erratic behaviour of the risk free rate in Australia to date, and more particularly, its pronounced decline in the current economic environment, leads to a situation where the combination of a fixed range for the MRP and prevailing risk free rate may not result in an outcome which is consistent with the achievement of the average market return on equity over the long run.*

> *Specifically, the estimate of the upper bound for the forward looking MRP of 7.5 per cent that was based on the DGM will fluctuate in line with the risk free rate. So for example, at times when the risk free rate is low, as it currently is, the upper bound for the MRP should be higher.*

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[195] Federal Energy Regulatory Commission, Order accepting tariff filing subject to condition and denying waiver, Docket No. ER14-500-000, 28 January 2014, p. 36.

[196] Ofgem (2011), *Decision on strategy for the next transmission and gas distribution price controls – RIIO-T1 and GD1 Financial issues*, p 33. See also: Oxera, *Agenda – Advancing economics in business - What WACC for a crisis?* February 2013, for a review of recent UK regulatory decisions on this issue.

[197] Glenn Stevens, 'The World Economy and Australia', Address to The American Australian Association luncheon, hosted by Goldman Sachs, New York, USA, 21 April 2015.

[198] ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems submitted by ATCO Gas Australia Pty Ltd*, 30 June 2015 (as amended on 10 September 2015), p 251.

> *There will be times – such as during the GFC – when the Authority would be more likely to select a point estimate of the MRP which is close to the upper bound. The resulting required return on the market in that type of situation could possibly exceed the long run average return on equity indicated by the historical data.*
>
> *For this reason the Authority considers it appropriate to determine a range for the MRP at the time of each decision.*

The approach taken in our proposal to estimating the MRP takes into account changes in prevailing market conditions. Each of the estimation methodologies can be updated for recent data in order to derive a current estimate of the MRP.

However we are concerned that the AER's methodology is not similarly responsive to changes in market conditions. This is likely to be due to the fact that, as discussed below, the AER's approach fails to take into account a number of relevant estimation methodologies which will provide an indication of current market conditions, such as the Wright approach and evidence from independent expert reports.

(iii) Errors in interpretation of key evidence

The AER's conclusion on the MRP is also affected by errors in the interpretation of key evidence.

(A) Historical excess returns

The AER refers to a range for the historical average MRP of 5.0 – 6.5 per cent, based on a combination of geometric and arithmetic average measures.

There are two problems with the AER's interpretation of the historical data:

- first, the AER has mixed geometric average measures with arithmetic averages, in addition to mixing estimates for different time periods. Expert advice, including advice from NERA and Lally, explains why geometric averages are not an appropriate measure in this case. As explained by NERA, since estimates of the MRP are not compounded, arithmetic mean measures should be used;[199]

- secondly, the AER has relied on estimates from Brailsford, Handley and Maheswaran which rely on an historical dataset that has been inappropriately adjusted to take account of perceived deficiencies in the original dataset. These adjustments have been investigated by NERA and the adjustments to the original dataset corrected. This issue was addressed at length in our initial proposal, and in the accompanying expert reports from NERA. The key issue is that the adjustment originally made to the historical data appears to have had no logical basis. It follows that an examination of earlier data extracted from original sources (as has been done by NERA) will almost surely lead to an adjustment that is more accurate than the one contained in the data that Brailsford, Handley and Maheswaran employ.[200]

Based on a correct interpretation of the historical data and with appropriate adjustments for imputation, the historical average MRP based on the longest available dataset is 6.56 per cent (based on a theta of 0.35).[201] UE notes that, if the AER's theta estimate of approximately 0.6 were to be adopted, this MRP estimate would increase slightly, to 6.65 per cent.[202]

(B) The AER has incorrectly used the Wright approach

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[199] NERA, *Historical Estimates of the Market Risk Premium*, February 2015, section 2.

[200] NERA, *Historical Estimates of the Market Risk Premium*, February 2015; NERA, *Further Assessment of the Historical MRP: Response to the AER's Final Decisions for the NSW and ACT Electricity Distributors*, June 2015.

[201] NERA, *Historical Estimates of the Market Risk Premium*, February 2015, p 42.

[202] NERA, *Historical Estimates of the Market Risk Premium*, February 2015, p 43.

The AER does not take into account the Wright approach when estimating the MRP, because it considers that the Wright approach should inform the overall return on equity only. The AER refers to the Wright approach as an alternative implementation of the SLCAPM designed to provide information at the return on equity level.[203]

This is an incorrect interpretation of Wright's work. Wright did not develop an alternative implementation of the SLCAPM. Wright simply proposed an alternative method of estimating the MRP for use in the SLCAPM – as the difference between the historical average market return and the current risk free rate – on the basis that market returns may be more stable over time than excess returns.[204]

Associate Professor Handley, in a passage referred to in the Preliminary Decision, clearly describes the Wright approach as an alternative method of estimating the MRP, rather than as an alternative return on equity model. Handley describes the Wright approach as follows:[205]

> *Wright adopts an alternative non-standard approach to estimating the MRP. Rather than treating the MRP as a distinct variable he suggests estimating the return on the market – by estimating the real return on equity and combining this with a current forecast of inflation to give an estimated nominal return on equity – and the risk free rate separately.*

In the Preliminary Decision, the AER sets out a formula, which it says represents the Wright approach to implementing the SLCAPM (referred to as the 'Wright SLCAPM').[206] However the formula set out by the AER is simply the standard SLCAPM, as originally specified by Sharpe and Lintner[207] It is clear from this that the Wright approach does not involve an alternative model for estimating the overall return on equity. Rather, the Wright approach represents an alternative method for estimating the MRP parameter.

In fact, the Wright approach to estimating the MRP would appear to be more aligned with the conventional SLCAPM specification, because it seeks to estimate the MRP as the difference between two distinct parameters (the market return and risk-free rate). This is in contrast to other methods which seek to estimate the MRP as a parameter in its own right.

It is therefore incorrect for the AER to reject the Wright approach on the basis that it is not a measure of the MRP. The Wright approach clearly provides relevant information in relation to the required market return and the MRP, and it would be an error for the AER to disregard it when estimating the MRP.

(C) Use of independent valuation reports

The AER considers independent valuation reports to be relevant, but only to assessing the overall return on equity. Further, due to perceived limitations, the AER considers that only "limited reliance" should be placed on this material, and that it should be used in a "directional role" only.[208]

Ultimately it is not clear what practical effect, if any, independent valuation reports have on the AER's decision on the return on equity. As a consequence of their relegation to an overall return on equity "check" role, they appear to have little or no practical impact on the final estimate. The AER retains its original parameter estimates and model choice once it completes its cross-check against the results of independent expert reports.

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[203] Preliminary Decision, p 3-33.

[204] Wright, S., *Review of Risk Free Rate and Cost of Equity Estimates: A Comparison of U.K. Approaches with the AER*, 25 October 2012.

[205] John C Handley, *Advice on the Return on Equity*, 16 October 2014, p 17; Preliminary Decision, p 3-88.

[206] Preliminary Decision, pp 3-84 – 3-85.

[207] Sharpe, W., 1964, "Capital asset prices: A theory of market equilibrium under conditions of risk," *Journal of Finance*, 19, 425–442.

[208] Preliminary Decision, p 3-95.

UE considers that independent valuation reports provide relevant evidence of the required market return and MRP applied by market practitioners. Therefore, evidence from these reports as to the MRP applied by market practitioners should be given a direct role in estimating the MRP.

Incenta's February 2015 analysis of independent expert reports indicates that the market rate of return estimated by independent experts has remained relatively constant in recent times, notwithstanding declines in the 'spot' risk free rate.[209] This implies that the MRP used in these reports, and/or the uplifts used by independent experts, has increased as the risk-free rate has declined.

This is consistent with evidence presented by the AER in the Preliminary Decision.[210] As noted above, the AER's analysis of independent expert reports (Figure 3-33 of the Preliminary Decision) indicates that as the risk-free rate has fallen over the past two years, estimates of the market return in independent expert reports has remained relatively steady at around 11 per cent (adjusted for imputation). This can be contrasted with the AER's estimate of the market return, which has declined to around 9 per cent, moving in lock-step with changes in the risk-free rate.

These findings are supported by more recent analysis from HoustonKemp. As noted above, HoustonKemp observes that in recent times a number of independent experts have used risk-free rates above the prevailing CGS yield, leading to more stability in their estimates of the prevailing market return (and implicitly higher MRP assumptions) than under the AER's approach. [211]

HoustonKemp identifies a statistically significant negative relationship between the implied MRP estimated by experts (their implied estimate of the market return, less the prevailing CGS yield) and the prevailing CGS yield.

Based on their analysis of recent independent expert reports, HoustonKemp estimates an implied MRP from these reports of 7.58 per cent.[212]

(D) Use of DGM estimates

The AER adopts a different construction of the DGM to that used by SFG / Frontier Economics, and as a result derives a wider range of estimates for the market return and MRP.

SFG / Frontier has clearly explained each of the points of difference between its approach and the AER's, and explains why it has taken the approach that it has.[213] In particular, SFG / Frontier clearly explains the reasons for its choice of long term growth assumption, its estimation approach and dataset. For the reasons set out in SFG's report, we consider that the SFG / Frontier approach to implementing the DGM is clearly preferable to the AER's.

However even adopting the AER's preferred construction of the DGM, it is clear that the MRP has increased significantly over the past two years. Table 4.3 shows the change in the MRP from the AER's DGM between the Rate of Return Guideline (December 2013) and the Preliminary Decision (October 2015).

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[209] Incenta, *Further update on the required return on equity from independent expert reports*, February 2015.

[210] Preliminary Decision, p 3-535.

[211] HoustonKemp, *The Cost of Equity: Response to the AER's Draft Decisions for the Victorian Electricity Distributors, ActewAGL Distribution and Australian Gas Networks*, January 2016, p 43 and Figure 7.

[212] HoustonKemp, *The Cost of Equity: Response to the AER's Draft Decisions for the Victorian Electricity Distributors, ActewAGL Distribution and Australian Gas Networks*, January 2016, p 48. This estimate is inclusive of a value assigned to imputation credits distributed, where it is assumed that theta is 0.35. HoustonKemp notes that if a higher theta value were to be assumed, its estimate of the MRP based on this analysis would be higher (assuming theta of 0.6 leads to an estimate of 8.02%). HoustonKemp's estimate of 7.58% is exclusive of any final revisions or adjustments made by independent experts. If revisions / adjustments are included, the estimate would be higher (HoustonKemp's estimate increases to 7.94%, if these revisions / adjustments are included).

[213] SFG, *Share prices, the dividend discount model and the cost of equity for the market and a benchmark energy network*, February 2015.

Table 4.3: AER dividend growth model estimates of the required return on the market

	Growth rate (%)	Two stage model (%)	Three stage model (%)
Guideline	4.0	6.1	6.7
	4.6	6.7	7.1
	5.1	7.1	7.5
Preliminary Decision	4.0	7.5	7.7
	4.6	8.1	8.2
	5.1	**8.5**	**8.6**

Source: AER Rate of Return Guideline Appendices, p. 87; Preliminary Decision, p 3-362.

Frontier's estimate of the prevailing MRP (discussed below) uses the AER's DGM estimate based on its preferred three-stage model and the mid-point of its range of growth rate assumptions. This estimate is currently 8.2 per cent, as shown in the table above.

(iv) Conclusion on the MRP

For the above reasons, we do not agree with the AER's estimate for the MRP of 6.5%. This estimate does not reflect prevailing conditions in the market for equity funds and will not contribute to the achievement of the ARORO. The AER's decision on the MRP is affected by a number of errors, as described above.

UE considers that a preferable approach is that set out by Frontier Economics. This approach takes into account all relevant evidence on the MRP and applies a transparent weighting to each estimate based on the relative strengths and weaknesses of each estimation approach. The reasons for Frontier's weighting approach are set out in an expert report by SFG submitted with our Regulatory Proposal.[214]

Importantly, Frontier's approach gives greatest weight to measures of the prevailing (current) MRP. This is in contrast to the AER's approach which leads to an MRP estimate that reflects an historical average measure.

Frontier has now updated its estimate of the MRP based on current data. Frontier's revised estimate is set out in Table 4.4 below.

[214] SFG, *The required return on equity for regulated gas and electricity network businesses*, June 2014.

Table 4.4: Frontier estimates of market risk premium (per cent)[215]

Estimation method	Market return	MRP	Weighting
Historical excess returns (Ibbotson)	9.3	6,5	20
Historical real market returns (Wright)	11.4	8.6	20
Dividend discount model	11.0	8.2	50
Independent expert reports	10.3	7.6	10
Weighted average	**10.6**	**7.9**	**100**

(c) Equity beta estimate

The AER concludes that an equity beta of 0.7, when applied in the SL-CAPM, will deliver a return on equity that contributes to achievement of the ARORO. The AER finds that:

- the primary range for the equity beta should be based on analysis of Australian regulated energy businesses only;

- based on analysis of this sample, a reasonable range for the equity beta is 0.4 to 0.7;

- "the best empirical estimate" of the equity beta is 0.5; and

- additional information taken into account by the AER – specifically empirical estimates for international energy networks and the theoretical principles underpinning the Black CAPM – indicate that an equity beta at the top of this range is appropriate, and will overcome any bias in the SL-CAPM.

This section addresses each of these findings.

(i) The AER has erred in confining the sample to Australian regulated businesses

The AER's primary range for the equity beta is based on analysis of a very small data sample comprising listed Australian energy network businesses only. This sample includes nine businesses, of which just four are currently trading.

It is neither necessary nor appropriate to confine the sample used for estimating equity beta to regulated energy network businesses only. As discussed in section 2.2 above, the relevant degree of risk under the ARORO is that faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia. Therefore, in constructing comparator datasets for the purposes of estimating a return on equity that is commensurate with efficient financing costs of a BEE, these datasets should include entities operating in workably competitive markets that face a similar degree of risk to

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[215] Frontier Economics, *The required return on equity under a foundation model approach*, December 2015, Table 4. The risk-free rate assumed in these calculations is a placeholder estimate, based on a September averaging period.

that faced in the provision of electricity distribution services. That is, they should not be restricted to regulated entities.

Even if the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NER / NGL, in many cases it will be necessary to look beyond just those businesses that supply regulated energy network services within Australia in order to produce sufficiently large datasets for robust estimation of risk parameters. For reasons discussed below, this is most clearly the case in relation to the equity beta.

A sample of nine regulated energy network businesses is very small. However the fact that five of these businesses are no longer trading creates further problems, since the data for these non-trading businesses becomes 'stale' over time. The equity beta estimates for these non-trading businesses will reflect the risks faced by those businesses in the past, not the risks currently faced by a BEE. As noted in our initial proposal, the level of risk faced in the supply of energy network services is changing, with businesses facing new operational risks arising from disruptive technologies.   This change in risk profile is discussed in the accompanying expert report of Frontier Economics.[216]

The expert evidence before the AER demonstrates that the sample used by the AER is too small to provide statistically reliable estimates. Analysis by SFG demonstrates that:[217]

- Professor Henry's estimates based exclusively on the small sample of domestic energy network businesses are statistically unreliable.[218] SFG and Frontier note that the estimates are imprecise with wide standard errors, the estimates span a wide range, and that the results were sensitive to the choices of estimation method, sampling frequency and time period.[219] Figure 5 below shows the wide confidence intervals around Professor Henry's estimates, and the wide range of individual company estimates based on just one methodology and sampling technique. Professor Henry reports some evidence of instability in his study based on Australian data only, possibly due to the small sample size;[220]

- increasing sample size significantly reduces the dispersion of estimates. Previous analysis by SFG (2013) and Brooks, Diamond, Gray and Hall (2013) demonstrated that increasing sample size from nine to 18 firms is likely to reduce the dispersion of risk estimates by about one-third, and increasing sample size further to 27 firms is likely to reduce this estimation error by half.[221]

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[216] Frontier Economics, *Review of the AER's conceptual analysis for equity beta*, June 2015, section 3.

[217] SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013.

[218] SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [31].

[219] SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [31]; Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, pp 12-15.

[220] Olan T Henry, *Estimating β: An update*, April 2014, p 62.

[221] SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013, p 9; Brooks, R., N. Diamond, S. Gray and J. Hall, *Assessing the reliability of regression-based estimates of risk*, 17 June 2013.

Figure 5: Confidence intervals around Henry (2014) estimates (OLS estimates based on monthly sampling over the longest available time period)
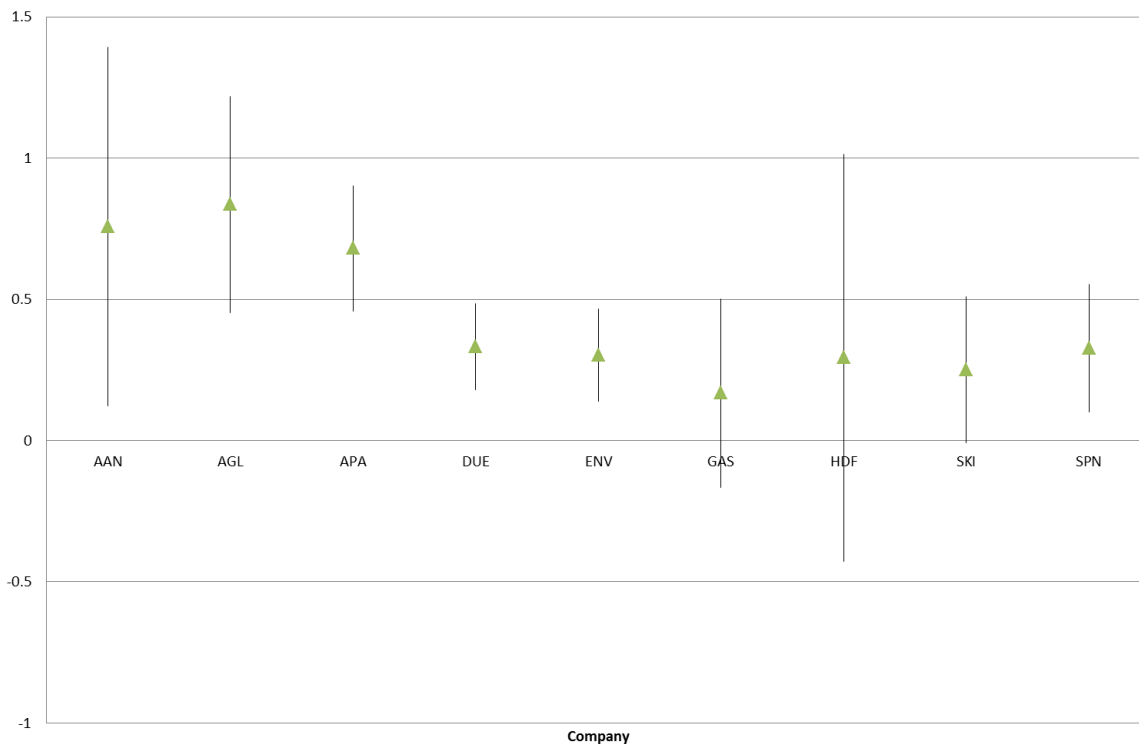
UE notes that there is no expert evidence recommending or supporting the use of such a limited sample. Professor Henry does not recommend use of the limited sample, but rather was instructed by the AER to use it.[222] The only expert evidence on this point is that of SFG and Frontier recommending a broader sample.[223]

We have previously urged the AER to adopt a broader sample for estimating equity beta, based on expert advice from SFG. In its initial proposal, we adopted an equity beta estimate based on a sample including both Australian and US energy network businesses. In compiling this broader sample, due consideration had been given by CEG[224] (who constructed the international sample used by SFG) and SFG to the comparability of international businesses. SFG concluded that the businesses included in its sample are sufficiently comparable to the BEE such that they can be appropriately used as part of the dataset to estimate the equity beta range.[225] Further analysis by Frontier, in a report accompanying this proposal, shows that the Australian and US samples are sufficiently similar that they can be grouped together for the purposes of statistical analysis.[226] Frontier also shows that, due to the larger size of the US sample and greater stability in its composition, there is greater congruency between mean and portfolio estimates from this sample, as well as lower standard errors and tighter confidence intervals.[227]

An alternative (or additional) way to expand the data sample would be to include other comparable Australian businesses outside the energy network sector. The sample could be expanded to include businesses

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[222] Olan T Henry, *Estimating β: An update*, April 2014, p 4.

[223] SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013; SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015; Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016

[224] CEG, *Information on equity beta from US companies*, June 2013.

[225] SFG, *Regression-based estimates of risk parameters for the benchmark firm*, 24 June 2013, p 10.

[226] Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 30.

[227] Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 31.

operating in other sectors that face a similar degree of risk to energy network businesses, such as telecommunications and transport businesses.

Expanding the sample to include businesses outside the energy sector would be consistent with UE's interpretation of the ARORO, as set out above. Inclusion of businesses from the telecommunications and transport sectors would ensure that the equity beta reflects the degree of risk faced by entities operating in a workably competitive market providing services similar to electricity distribution services within Australia.

Such an approach would also be consistent with a narrower definition of the BEE, such as that adopted by the AER. Even if the relevant level of risk is that of a regulated energy network business subject to economic regulation under the NEL, in this case it is clearly necessary to look beyond just those businesses that supply regulated energy network services within Australia in order to produce a sufficiently large datasets for robust estimation of the equity beta. Thus, it is necessary to expand the data sample to include businesses in other sectors that face a similar degree of risk to that faced by energy network business subject to economic regulation under the NEL.

In the accompanying expert report from Frontier Economics, analysis in conducted on a broader sample of listed Australian infrastructure businesses. The businesses included by Frontier include listed transport and logistics businesses (e.g. Aurizon, Asciano and Sydney Airport) and telecommunications businesses (e.g. Telstra). Frontier's statistical tests confirm that these listed infrastructure businesses are sufficiently comparable to the AER's sample of energy network businesses, such that it is appropriate to group this broader set of Australian infrastructure firms together.[228]

Frontier notes that expanding the sample to include other listed Australian infrastructure businesses improves the statistical properties of the resulting equity beta estimates – the estimates based on the broader domestic sample are more stable and more precise.[229] However, Frontier conclude that the expanded set of domestic firms should not be relied upon alone, given the ready availability of international comparators. It is Frontier's recommendation that the equity beta estimate be based on a broader dataset that includes both relevant domestic comparators and international businesses.[230]

It is common practice for regulators to use samples that include businesses outside of the sector and/or country that the regulated business operates in, in recognition of the fact that samples confined to that business' sector and/or country may be too small. For example:

- in estimating the equity beta for Telstra, the ACCC uses a sample of 22 international telecommunications businesses, including US, European and Asian businesses;[231]

- in estimating the equity beta for rail operator Aurizon Network, the QCA relies on analysis of a sample of 70 energy and water businesses, including a large number of international businesses;[232] and

- in estimating the equity beta for electricity distribution businesses the Commerce Commission in New Zealand relies on a sample of firm that includes a number of international utilities.[233]

In this case, given the paucity of data for Australian energy network businesses, the sample *must* be expanded to include US energy network businesses and/or other Australian infrastructure businesses. Without the

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[228] Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, pp 23-24.

[229] Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 34.

[230] Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 34.

[231] ACCC, *Public inquiry into final access determinations for fixed line services: Final Decision*, October 2015, pp 80-83.

[232] QCA, *Draft Decision: Aurizon Network 2014 Draft Access Undertaking – Maximum Allowable Revenue*, September 2014, pp 248-249; Incenta, *Review of Regulatory Capital Structure and Asset / Equity Beta for Aurizon Network: Report to the Queensland Competition Authority,* 9 December 2013.

[233] See, for example: Commerce Commission, *Input Methodologies (Electricity Distribution and Gas Pipeline Services): Reasons Paper*, December 2010, section 6.5 and Appendix H8.

inclusion of these additional comparators, estimates of the equity beta for the BEE will be statistically unreliable.

(ii) The AER has erred in its determination of the equity beta range

The AER considers that "*the equity beta estimates presented in Henry's empirical analysis support a range of 0.4 to 0.7*" and that other empirical studies show "*an extensive pattern of support*" for an equity beta within a range of 0.4 to 0.7.[234]

However Professor Henry, in his report for the AER, does not recommend a range for the equity beta of 0.4 to 0.7. Rather, Professor Henry concludes, based on his analysis of Australian energy network data only, that the point estimate for beta is likely to lie in the range of 0.3 to 0.8.[235]

The AER's conclusion is based on the fixed weight portfolio estimates and the average of individual firm estimates in Professor Henry's report.[236] However relying on these measures alone is likely to be misleading as to the precision of Professor Henry's estimates, including because:

- first, the AER's conclusion from the individual firm estimates is based on a simple average of the estimates for each firm, with the AER's range from this measure (0.46 – 0.56) simply reflecting the dispersion of average measures based on different time periods.[237] Thus, what the AER relies on is not an empirical estimate, but rather an average of estimates for individual firms. These individual firm estimates vary widely, from 0.2 to 1.0[238], and thus a simple average is largely meaningless; and

- secondly, the AER places significant weight on Professor Henry's portfolio estimates. However Professor Henry was not asked to provide expert advice on the rationale for preparing the portfolios, and it is not clear what the basis for formation of these portfolios was.[239]

Professor Henry's report in fact produces a very wide range of estimates for the equity beta, with some individual firm estimates in the range of 0.8 – 1.0 and confidence intervals around these estimates even wider, from -0.4 to 1.4 (at the 95% confidence level). As noted by SFG, the estimates vary widely depending on the chosen estimation method, sampling frequency and time period.[240]

Further, as explained above, the sample used by Professor Henry to estimate equity beta is too small to provide reliable estimates. As a result, a reliable equity beta range cannot be derived from this sample alone.

Evidence from wider samples supports an equity beta higher than 0.7. The evidence from Frontier Economics, SFG and CEG, based on a larger sample including international businesses indicates an equity beta of at least 0.82.

(iii) The AER's view as to the "best empirical estimate" is not supported by evidence

There does not appear to be any evidence for the AER's statement that "the best empirical estimate" of the equity beta is 0.5.

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[234] Preliminary Decision, pp 3-479, 3-485.

[235] Olan T Henry, *Estimating β: An update*, April 2014, p 63.

[236] Preliminary Decision, p 3-479.

[237] Preliminary Decision, p 3-479.

[238] Olan T Henry, *Estimating β: An update*, April 2014, Tables 2 and 5.

[239] Olan T Henry, *Estimating β: An update*, April 2014, p 36.

[240] SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, [31].

Professor Henry does not recommend that a value of 0.5 be adopted, nor does his report refer to 0.5 as the "best empirical estimate". Rather, as noted above, Professor Henry recommends a range of 0.3 to 0.8, based on his analysis of Australian data only.[241]

Indeed, no expert concluded that the best empirical estimate of the equity beta is 0.5. Rather, the expert evidence supported an equity beta of at least 0.8.[242]

As noted above, the AER's conclusion as to the range and "best empirical estimate" for beta are based on its analysis of the fixed weight portfolio estimates and the average of individual firm estimates in Professor Henry's report.[243] However, for reasons set out above, the analysis underpinning these conclusions is unsound.

The only experts that have been asked to opine as to the best estimate of the equity beta are SFG and Frontier. SFG's and Frontier's advice is that in order to arrive at a reliable estimate of the equity beta, a sample broader than that given to Professor Henry must be used. SFG and Frontier recommend an equity beta estimate of 0.82 based on a broader sample including both Australian and international businesses.[244]

(iv) The AER's adjustment to the "best empirical estimate" is arbitrary

The AER states that the theory of the Black CAPM points to an estimate of the SLCAPM beta that is above the best estimate indicated by Professor Henry's analysis. This appears to be the reason for the AER's adjustment from the "best empirical estimate" of 0.5 to a final point estimate of 0.7.

UE understands that what the AER is seeking to make is an adjustment to the equity beta to account for is the SLCAPM bias that is indicated by Black CAPM theory. That is, while Black CAPM theory does not say anything about adjusting the equity beta to account for SLCAPM bias, this parameter is being used by the AER as the adjustment tool to account for this bias.

However in this case the adjustment made to the AER's "best empirical estimate" of beta is highly arbitrary. The AER cannot reasonably be satisfied that adjusting the equity beta estimate from 0.5 to 0.7 will adequately account for bias in the SLCAPM, because it has not sought to quantify the effect of this bias.

We agree that, if the SL CAPM is to be used alone to estimate the return on equity, some adjustment needs to be made to its input parameters to account for the known weaknesses of the model. If the SL CAPM is used without any adjustment, the empirical evidence shows that the return on equity for low-beta stocks will be significantly under-estimated.

Our concern is that the AER's adjustment to the equity beta is not sufficient to account for the shortcomings in the AER's implementation of the SL CAPM. In particular, it is clear that choosing the top of the AER's equity beta range is not sufficient to address the SL CAPM's low-beta bias, nor does it address the statistical reliability issues associated with the small sample used by the AER to estimate the equity beta. As shown in (b) above, it is clear that choosing the top of the AER's equity beta range will not correct for the low-beta bias in the SLCAPM indicated by Black CAPM theory – if the AER's parameter estimates are used in the Black CAPM along with the best available estimate of the zero-beta premium, the return on equity estimated by the Black CAPM is above the return on equity estimated by the AER using the SLCAPM (see Table 4.2 above).

Indeed the AER acknowledges that it does not know by how much it needs to adjust its equity beta estimate to account for the issues indicated by Black CAPM theory – i.e. the effects of low-beta bias in the SLCAPM. The AER notes that *"while the direction of this effect may be known, the magnitude is much more difficult to ascertain".*[245] Since the AER does not estimate the Black CAPM, it cannot make a proper adjustment.

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[241] Olan T Henry, *Estimating β: An update*, April 2014, p 63.

[242] SFG, *Beta and the Black Capital Asset Pricing Model*, February 2015, section 4.

[243] Preliminary Decision, p 3-479.

[244] Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 34.

[245] Preliminary Decision, p 3-497.

The size of the AER's adjustment is ultimately driven by the width of its equity beta range, rather than by an empirical analysis of the adjustment required to address the SL CAPM's weaknesses. Since the AER caps its range at 0.7, the adjustment to the equity beta can take the point estimate no higher than 0.7. Of course, if the AER had adopted the recommendation of its consultant for an equity beta range of 0.3 to 0.8, its adjustment to account for Black CAPM theory and international evidence would have taken the point estimate to 0.8. Thus, the problem of arbitrariness in the AER's adjustment is compounded by the error in its construction of the equity beta range.

In this submission, UE puts forward an alternative method for estimating the return on equity using the SL CAPM alone, with an empirically based adjustment to account for the known weaknesses of this model. This alternative method is explained in section 4.6 below and the accompanying expert report from Frontier Economics.

4.5 Reasonableness of the overall outcome

(a) The AER's cross-check analysis

The AER considers that its return on equity estimate is broadly supported by:

- estimates using the Wright approach;

- estimates of the return on equity and ERP from independent valuation reports

- the ERP range from the recent Grant Samuel valuation report for Envestra;

- estimates of the return on equity and ERP from recent broker reports; and

- estimates from other regulators.

In fact, when properly interpreted, these cross-checks do not support the AER's return equity estimate. These cross-checks actually demonstrate that the AER's estimate of the return on equity is below that required to promote efficient investment in, and efficient use of electricity services for the long-term interests of consumers.

(i) Use of the Wright approach to support the AER's ERP estimate

As noted above, UE considers that the AER has misinterpreted and misapplied the work of Professor Wright. Wright did not develop an alternative implementation of the SLCAPM for checking of the overall return on equity. Rather, Wright developed an alternative method for estimating the MRP.

Further, the way in which the AER has developed its ERP range from the Wright approach means that this 'cross-check' will almost certainly support the AER's ERP estimate. The AER derives a wide range of estimates from the Wright approach by using an equity beta range of 0.4 to 0.7 and a market return range of 10.0% to 12.7%.[246] The AER then checks the reasonableness of its ERP estimate by confirming that it falls within the broad range of estimates derived from the Wright approach.

Clearly if the AER had used its chosen point estimate of beta in applying the Wright approach, this cross-check would not support the AER's return on equity and ERP estimates (Table 4.5). Even if the AER's lower bound value for the market return from the Wright approach were to be adopted, the resulting return on equity would be above that allowed by the AER (7.8%, compared to 7.3% allowed by the AER). If a midpoint or upper bound value for the market return were to be taken from the Wright approach, the resulting return on equity and ERP would be significantly higher than that allowed by the AER.

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[246] Preliminary Decision, p 3-511.

Table 4.5: Estimates of the return on equity and ERP using the Wright approach[247]

Approach to estimating the ERP	ERP estimate	Return on equity estimate
AER approach (equity beta 0.7; MRP 6.5%)	4.55%	7.3%
Wright approach with lower bound R_m estimate (equity beta 0.7; R_m 10.0%)	5.07%	7.8%
Wright approach with midpoint R_m estimate (equity beta 0.7; R_m 11.35%)	6.01%	8.8%
Wright approach with upper bound R_m estimate (equity beta 0.7; R_m 12.7%)	**6.96%**	**9.7%**

(ii) Independent valuation reports

The AER refers to estimates of the return on equity and ERP from independent valuation reports.

We agree that evidence from independent valuation reports provides an important reasonableness check on the AER's estimate of the required return on equity. These reports provide market evidence of the return on equity required by investors.

However, for reasons set out below, we consider that this important market evidence has been misinterpreted by the AER. When properly interpreted, this evidence demonstrates that the AER's estimate of the return on equity is below that required by the market to promote efficient investment.

Most obviously, the independent valuation reports surveyed by the AER do not support the reasonableness of the AER's overall return on equity estimate. As noted by the AER, the range of imputation-adjusted estimates of the return on equity set out in these reports is 8.98 to 14.67 per cent.[248] This compares to the AER's estimate of 7.3 per cent.

This evidence also does not support the AER's ERP estimate, contrary to the conclusion of the AER in the Preliminary Decision. The AER states that its range of imputation-adjusted estimates for the ERP (a range of 3.72 to 11.67 per cent) is based on the 18 independent valuation reports identified in Table 3-20 of the TransGrid draft decision.[249] However after reviewing Table 3-20 of the TransGrid draft decision, it is unclear to UE how the AER has arrived at its ERP range.

An abridged version of Table 3-20 from the TransGrid draft decision is set out as Table 4.6 below. What this shows is that:

- the imputation-adjusted ERP in all but two of the surveyed reports is at least 5% - well above the ERP determined by the AER (4.55%);

- the imputation-adjusted ERP from the Grant Samuel report for Envestra (discussed below) is quoted as 4.47%. However this appears to be based on the midpoint of Grant Samuel's range of SLCAPM

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[247] Estimates of the market return are the AER's estimates, as set out in Table 3-61 of the Preliminary Decision. All calculations are based on a risk-free rate of 2.76%.

[248] Preliminary Decision, p 3-518.

[249] Preliminary Decision, p 3-517, footnote 1976.

values, with none of the uplift used by Grant Samuel. As discussed below, a fundamental aspect of Grant Samuel's analysis was to conclude that the calculated SLCAPM return on equity was not an appropriate benchmark and understated the required rate of return on equity, and this was one reason why Grant Samuel applied an uplift to its SLCAPM-based estimates. Incenta notes that on a correct interpretation of this report, the relevant range for the ERP is 5.27% to 5.37%, exclusive of any uplift for the value of imputation credits.[250] This clearly does not support the AER's ERP estimate; and

- the only other report with an imputation-adjusted ERP less than 5% is more than ten years old (the 2003 Deloitte report for United Energy). The return on equity and ERP estimate in this report cannot be said to be indicative of current practitioner views as to the required return on equity or ERP.

Of the 20 independent valuation reports referred to by the AER which have been published in the last decade, none of these actually used an ERP estimate below 5% (adjusted for imputation). Excluding the 2003 Deloitte report and using the correct range of estimates from the Grant Samuel Envestra report, the ERP range from this evidence is approximately 5 – 5.8% (based on the reports in Table 3-20 of the Draft Decision). Therefore, this market evidence clearly does not support the AER's ERP estimate.

Table 4.6: Independent valuation reports surveyed by the AER

Report date	Business	Valuer	Return on equity (imputation adjusted)[251]	ERP (imputation adjusted)
20/02/1998	Allgas Energy	Ernst & Young	n/a	n/a
19/03/1999	United Energy	SG Hambros	n/a	n/a
5/04/2003	GasNet	Sumner Hall	n/a	n/a
27/05/2003	United Energy	Deloitte	9.3	4.04
26/04/2006	AGL	Grant Samuel	11.6	5.8
19/06/2006	GasNet (regulated)	Lonergan Edwards	11.14	5.29
19/06/2006	GasNet (unregulated)	Lonergan Edwards	11.14	5.29
25/08/2006	Alinta Ltd	Grant Samuel	11.6	5.8
15/11/2006	Alinta Infrastructure Holdings	Grant Samuel	11.39	5.79
29/06/2007	Alinta Ltd (gas transmission)	Grant Samuel	11.74	5.74
29/06/2007	Alinta Ltd (gas and electricity distribution)	Grant Samuel	11.74	5.74
5/11/2007	SP AusNet (gas transmission)	Grant Samuel	11.78	5.68
5/11/2007	SP AusNet (gas and electricity distribution)	Grant Samuel	11.78	5.68
9/10/2009	Babcock & Brown Infrastructure Group (WA Gas Networks)	Grant Samuel	n/a	n/a
9/10/2009	Babcock & Brown Infrastructure Group (Tas Gas Pipeline)	Grant Samuel	n/a	n/a

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[250] Incenta, *Further update on the required return on equity from independent expert reports*, February 2015, p 25.

[251] Imputation adjusted estimates are taken from Table 3-20 of the TransGrid draft decision and thus reflect the adjustments for imputation made by the AER.

Report date	Business	Valuer	Return on equity (imputation adjusted)[251]	ERP (imputation adjusted)
9/10/2009	Babcock & Brown Infrastructure Group (WestNet Energy)	Grant Samuel	n/a	n/a
9/10/2009	Babcock & Brown Infrastructure Group (TasGas)	Grant Samuel	n/a	n/a
22/09/2010	Spark Infrastructure Group	Lonergan Edwards	n/a	n/a
24/09/2010	Prime Infrastructure Group (TasGas)	Grant Samuel	10	5
13/04/2011	Spark Infrastructure Group	Lonergan Edwards	10.9	5.4
3/08/2012	Hastings Diversified Utilities Fund	Grant Samuel	8.52	5.52
3/10/2012	DUET Group	Grant Samuel	8.54	5.54
31/05/2013	DUET Group	Grant Samuel	n/a	n/a
4/03/2014	Envestra	Grant Samuel	8.67	4.47

(iii) Use of the Grant Samuel analysis

The AER has made significant errors in its interpretation of the Grant Samuel report for Envestra. When these errors are accounted for, it is clear that this evidence does not support the ERP and return on equity estimate adopted by the AER.

The AER presents a wide ERP range from the Grant Samuel report for Envestra – a range of 4.3 to 6.2 per cent – and on this basis concludes that its ERP estimate of 4.55 per cent is consistent with the range adopted by Grant Samuel.[252] However this range of ERP estimates referred to by the AER encompasses:[253]

- a lower bound that *does not* include any adjustment for imputation and does not allocate any of Grant Samuel's uplift to the ERP; and

- an upper bound that *does* include an adjustment for imputation and allocates all of Grant Samuel's uplift to the ERP.

The AER mixes apples and oranges, by mixing imputation-adjusted estimates with unadjusted estimates from the Grant Samuel report. Such an approach is illogical, particularly in circumstances where Grant Samuel has made clear that its estimates make no allowance for imputation credits.[254] Given that no allowance is made in the Grant Samuel estimates for imputation, an imputation adjustment must be made for comparison with the AER's ERP estimate. The unadjusted estimates from the Grant Samuel report are simply not comparable with the AER's ERP estimates. This is made clear in Grant Samuel's letter in response to the NSW draft decisions, where it states:[255]

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[252] Preliminary Decision, p 3-520.

[253] Preliminary Decision, p 3-520, footnote 1983.

[254] Grant Samuel, *Financial Services Guide and Independent Expert's Report to the Independent Board Sub-committee in relation to the Proposal by APA Group*, 3 March 2014, Appendix 3, pp 8-9.

[255] Grant Samuel, *Australian Energy Regulator – Draft Decision*, letter to the directors of TransGrid, 12 January 2015, p 7.

> *It is abundantly clear in our reports that we make no adjustment in our valuations for dividend imputation. Accordingly, a dividend imputation adjustment would be required to ensure comparability with the AER basis of calculation.*

Further, the Grant Samuel report and its letter in response to the NSW draft decisions make clear that the uplift is to account for factors likely to be affecting the return on equity (not the return on debt). The factors taken into account by Grant Samuel in making the uplift include: repricing of risk by equity investors since the GFC; alternative models, such as the Gordon Growth Model (a version of the DGM), currently indicating higher returns on equity than the SLCAPM; and evidence that brokers are currently adopting cost of equity estimates that are higher than indicated by the SLCAPM.[256]

A fundamental aspect of Grant Samuel's analysis was to conclude that the calculated SLCAPM return on equity was not an appropriate benchmark and understated the realistic required rate of return on equity, and this was one reason why Grant Samuel applied an uplift to its SLCAPM estimates. Therefore it is not appropriate to use Grant Samuel's "lower bound" SLCAPM estimate of the return on equity with no uplift.

Finally, it should be noted from the Grant Samuel report that it adopted a WACC estimate at the lower end of its range (6.5% - 7.0%) for the purposes of its valuation of Envestra assets, in order to ensure that the fairness assessment for the APA proposal was robust.[257] That is, Grant Samuel erred towards the lower end of its WACC range to ensure that its NPV valuation of the Envestra assets was conservative on the high side. This same tendency is not required to satisfy and, we argue, not consistent with the NEO or the ARORO, because these objectives seek to determine the return on equity that is sufficient to attract efficient investment in UE's network.

On a correct interpretation of the Grant Samuel report for Envestra, it is clear that it does not support the AER's return on equity or ERP estimate. Incenta notes that the range for the return on equity implied by Grant Samuel's uplift factor was from 9.47% to 9.57%, with a respective ERP range of 5.27% to 5.37%, exclusive of any uplift for the value of imputation credits.[258] These Grant Samuel ranges compare with the AER's cost of equity of 7.3% and ERP of 4.55%.

(iv) Broker reports

The information from broker reports referred to in the Preliminary Decision does not support the AER's return on equity estimate.

It should be noted that the AER only refers to estimates from <u>recent</u> broker reports, being reports published over the past year. These reports therefore provide good information as to current market expectations of the required return on equity. These reports also provide some indication of how market practitioners have been estimating the return on equity in the current low risk-free rate environment.

Given that these reports are current, it is not appropriate to focus just on the ERP in these reports, as the AER appears to have done.[259] The evidence from these reports should also be used as a cross-check on the overall rate of return.

The relevant estimates for both the return on equity and ERP are the imputation-adjusted estimates. Estimates without an imputation adjustment cannot be compared to the AER's estimates of the ERP and return on equity.

The AER reports a range for the imputation-adjusted return on equity in recent broker reports of 7.3 to 9.3 per cent.[260] The AER's estimate of the return on equity is at the very bottom of this range.

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[256] Grant Samuel, *Financial Services Guide and Independent Expert's Report to the Independent Board Sub-committee in relation to the Proposal by APA Group*, 3 March 2014, Appendix 3, pp 8-9.

[257] Grant Samuel, *Australian Energy Regulator – Draft Decision*, letter to the directors of TransGrid, 12 January 2015, p 4.

[258] Incenta, *Further update on the required return on equity from independent expert reports*, February 2015, p 25.

[259] Preliminary Decision, p 3-521.

[260] Preliminary Decision, p 3-521.

(v) ERP estimates from 'other market participants', including practitioners and regulators

The AER also refers to ERP and return on equity estimates from other regulators, as part of the other information it takes into account in step 5 of its foundation model approach.

We consider that past decisions of the AER and other regulators should not be used as direct evidence of the required return on equity. These decisions are, at best, secondary evidence of the prevailing return on equity at previous points in time. However the return on equity in these decisions:

- will not reflect prevailing market conditions (rather, they will reflect market conditions at the time the decision was made); and

- may not be consistent with the ARORO, to the extent that they have been determined under different regulatory frameworks with different objectives.

Use of such decisions will also be circular and self-perpetuating where it is based on previous decisions the same regulator has made in relation to the return on equity.

For these reasons, UE does not propose a role for other regulators' decisions in determining the return on equity for the BEE.

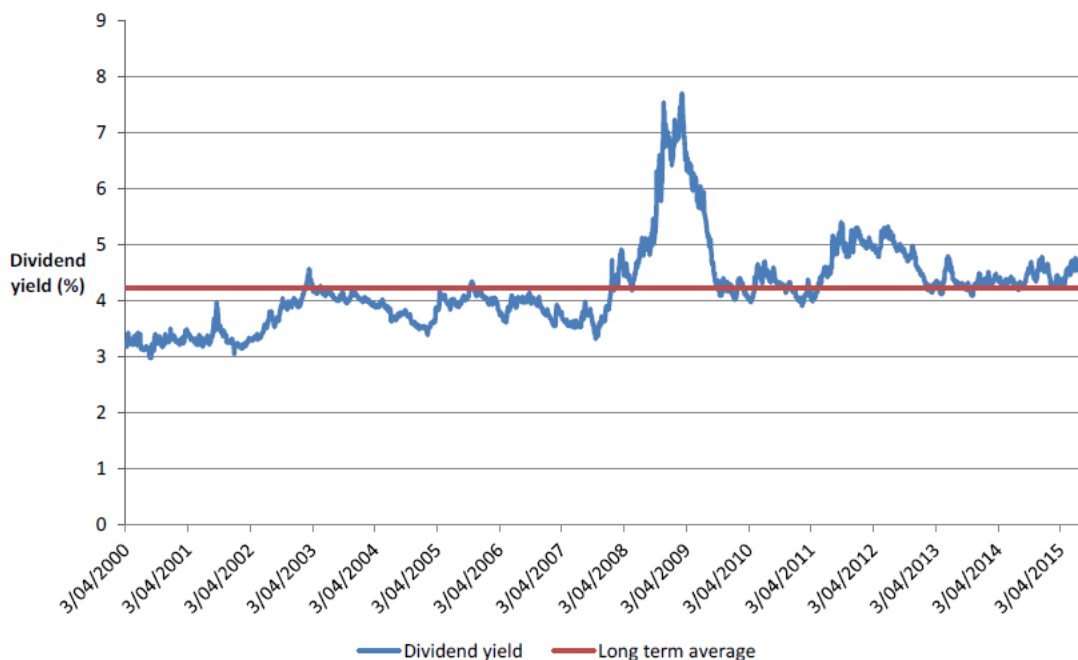**(b) Conditioning variables**

The Preliminary Decision refers to a number of conditioning variables, which are said to provide directional information, particularly in relation to the MRP. The evidence from these conditioning variables does not support the AER's approach to estimating the return on equity. In particular, this evidence is inconsistent with the AER's assumption that as the risk-free rate has fallen the MRP has remained constant (meaning that the return on equity has fallen in lock-step with the risk-free rate).

(i) Dividend yields

As shown by the AER's Figure 3-21 (reproduced below), dividend yields have increased significantly in recent months and are now well above pre-GFC levels.[261]

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[261] Preliminary Decision, p 3-395.

Figure 3-21 Dividend yields

As explained by CEG, given that the risk-free rate has been lower in the post-GFC period (and is now near historic lows), this implies that the MRP has risen by more than an offsetting amount.[262] Certainly, this evidence is not consistent with the AER's view that the return on equity has been falling in lock-step with the risk-free rate.

The AER has misinterpreted this evidence, by treating it as merely an indicator of whether the MRP is above or below historical average levels. The AER dismisses this evidence on the basis that:[263]

> It is unclear whether the recent increase in dividend yields is evidence of a sharp and sustained move away from their long term average. This short term movement does not provide a clear signal that the MRP should not be close to its historical average level.

However movements in the dividend yield are not just an indicator of changes in the risk premium required by investors. Rather, changes in dividend yield indicate movements in the overall required return on equity. Therefore the fact that dividend yields have been increasing and are now well above pre-GFC levels indicates that as the risk-free rate has fallen post-GFC, the equity risk premium has increased.

This evidence certainly does not support the AER's assumption that the return on equity has been falling in lock-step with the risk-free rate.

(ii) Implied volatility

As shown by the AER's Figure 3-21 (reproduced below), the ASX200 implied volatility index has increased significantly in recent months and is now well above its 20-year average.[264]

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[262] CEG, *Estimating the cost of equity, equity beta and MRP*, January 2015, p 27.

[263] Preliminary Decision, p 3-394.

[264] Preliminary Decision, p 3-398.

Figure 3-24 Implied volatility (VIX) over time
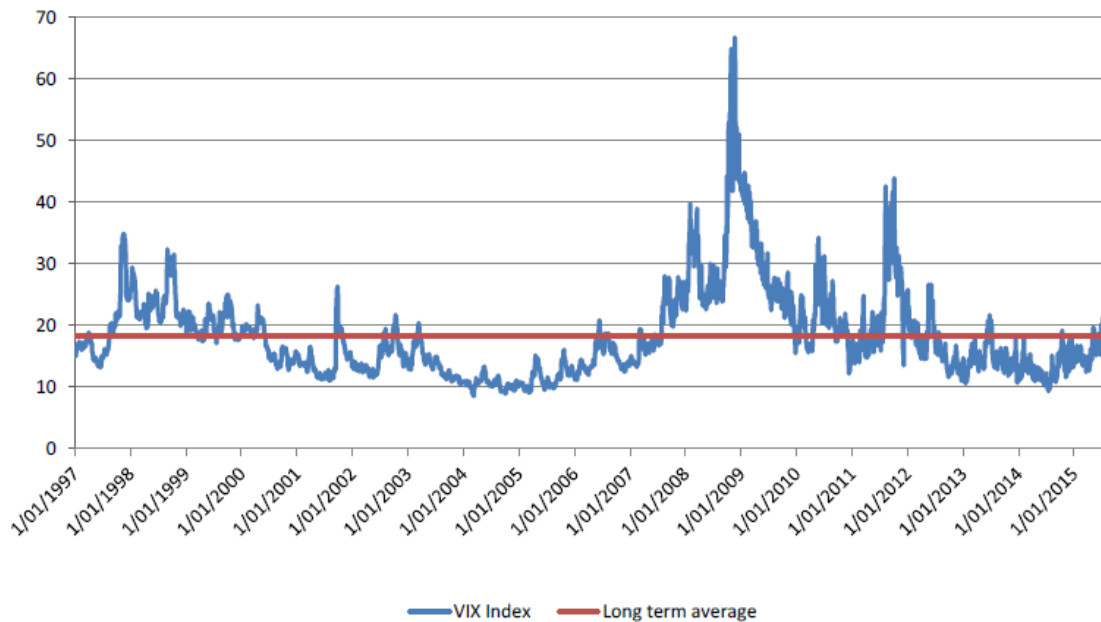
Source: ASX200 VIX volatility index, sourced via Bloomberg cost AS51VIX from 2/1/2008 and CITJAVIX prior to 2/1/2008.

Whereas in previous decisions the AER has considered a relatively stable volatility index to be evidence of a steady MRP, in the Preliminary Decision the AER does not appear to take the recent increase in this measure into account as evidence of a higher MRP.

Rather, like the evidence of higher dividend yields, the AER seeks to dismiss this evidence on the basis that it "does not provide a clear signal". The AER states:[265]

> In the month of August, implied volatility has increased relative to its steady pattern of being below its long run average since 2012. This short term movement does not provide a clear signal that the MRP should not be close to its historical average level.

UE considers that the evidence for a higher MRP could not be any clearer. The AER's DGM analysis indicates that the MRP has increased as the risk-free rate has fallen, and that the MRP is now well above its historical average. The evidence from dividend yields and implied volatility measures further support this.

On the other hand, there does not appear to be any clear evidence to support the AER's view that the MRP has not changed as the risk-free rate has fallen or that the return on equity has fallen in lock-step with the risk-free rate—or even that current market conditions are consistent with average market conditions.

4.6 An alternative implementation of the foundation model approach

Our preferred approach to estimating the return on equity is as set out in our Regulatory Proposal. This approach has regard to all relevant models and evidence, and uses this material for its proper purpose. Each of the relevant return on equity models is independently used to derive an estimate of the required return on equity, while other relevant evidence is used to determine the best estimate of each parameter within these models. The outputs from each relevant model are then weighted to arrive at a return on equity estimate.

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[265] Preliminary Decision, p 3-398.

Based on updated data to reflect prevailing market conditions, this approach leads to an estimate of the prevailing return on equity of 9.89 per cent.

However if the AER proposes to continue relying solely on the SL CAPM to estimate the return on equity, the AER must change the way it implements this model. It is clear from the evidence referred to above that the way in which the SL CAPM is applied in the Preliminary Decision leads to a return on equity that is not consistent with the ARORO and does not reflect prevailing market conditions. The AER does not properly recognise the weaknesses of the SL CAPM, nor does it account for these weaknesses in its application of the model. Further, the AER's practice of applying an effectively fixed ERP to a variable risk-free rate is not appropriate in current market conditions, since it leads to the return on equity moving in lock-step with changes in the risk-free rate. The result is that the AER's estimate of the return on equity is below the level of return required by the market, as indicated by the AER's cross-checks and other relevant evidence.

The accompanying expert report of Frontier Economics outlines an alternative approach that involves properly adjusting SL CAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:[266]

- using a current measure of the risk-free rate (i.e. the prevailing yield on 10-year CGS). Over the 20 business days to 10 December 2015, this produces a risk-free rate of 2.94 per cent;

- deriving the MRP in a way that gives appropriate weight to measures of the prevailing (current) MRP. Frontier recommends that 50 per cent weight be given to estimates of the prevailing MRP from the DGM, 40 per cent weight to historical measures and 10 per cent weight to evidence from independent expert reports (i.e. evidence of market practitioner estimates of the MRP). Of the 40 per cent weight that is assigned to historical measures equal weight (i.e. 20 per cent each) is given to estimates of historical excess returns and estimates using the Wright approach. Over the 20 business days to 10 December 2015, this produces an MRP of 7.8 per cent;

- estimating a 'starting point' equity beta using a sufficiently large dataset. Frontier recommends including both US and Australian energy network businesses to ensure that the dataset is large enough to produce robust estimates, with twice as much weight given to the Australian data. This produces a 'starting point' equity beta of 0.82; and

- making two transparent and empirically based adjustments to the starting point equity beta estimate to account for the known shortcomings of the SL CAPM:

    - the first of these adjustments is to account for low beta bias, and draws on empirical evidence from the Black CAPM. Frontier recommends that 75 per cent weight be given to this adjustment, in recognition of the strong and consistent evidence of low-beta bias in the empirical literature (i.e. the adjustment is 75 per cent of the full adjustment that would need to be made to account for low-beta bias). This results in an adjustment from the starting point beta of 0.82 to a beta of 0.88; and

    - the second adjustment is to account for book-to-market bias (i.e. the failure of the SL CAPM to account for the effect of book-to-market ratio on stock returns). Frontier recommends giving less weight to this adjustment (25 per cent weight) in recognition that the evidence in relation to this bias is more recent. This results in a further adjustment, to an equity beta of 0.91.

This leads to an estimate of prevailing return on equity of 10.05 per cent for the 20 business days to 10 December.

Frontier observes that this estimate from the 'adjusted SL CAPM' is close to their estimate using the DGM, a model that is not affected by low-beta or book-to-market bias. Thus, the evidence from the DGM corroborates Frontier's adjusted SL CAPM estimate.

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[266] Frontier Economics, *The required return on equity under a foundation model approach*, January 2016.

5. Gamma

5.1 Introduction

In the Preliminary Decision, the AER adopts a similar approach to estimating gamma as in recent decisions. This involves:

1   Conceptualising gamma as the before-personal-tax and before-personal-costs value of imputation credits. In line with this conceptual approach, the AER estimates gamma as the product of the distribution rate and the utilisation value to investors in the market per dollar of imputation credits distributed (referred to as the "utilisation rate").[267]

2   Deriving estimates of the distribution rate and theta for each of "all equity" and "listed equity".[268] For theta, the AER derives a number of different estimates, based on three different estimation methods:

(a)   the equity ownership approach, which uses ABS data to estimate the proportion of equity in Australian companies held by domestic investors;

(b)   tax statistics, which indicate the proportion of distributed imputation credits that are redeemed by investors; and

(c)   market value studies.

3   Calculating gamma values based on its pairing of:

(a)   its estimate of the distribution rate for all equity with its estimates of theta for all equity based on the equity ownership approach and tax statistics; and

(b)   its estimate of the distribution rate for listed equity with its estimates of theta for listed equity based on the equity ownership approach and market value studies.

4   Determining a range for gamma based on "the overlap of evidence from the equity ownership" approach (i.e. the overlap between the gamma ranges calculated by the AER based on the equity ownership approach for each of "all equity" and "listed equity").[269] The AER considered that the overlap of the evidence from the equity ownership approach suggests a value for gamma between 0.40 and 0.42.

5   Selecting a point within the range defined by step 4 by reference to evidence from tax statistics and market value studies. The AER observed that both tax statistics and SFG's market value study suggest a value for gamma lower than 0.4. On this basis, the AER adopted a value for gamma at the lower end of the range suggested by the overlap of the evidence from the equity ownership approach (that is, 0.4).[270]

As discussed below, the AER has made errors at each of these steps in its reasoning.

For reasons set out below, we maintain our position that the best estimate of gamma is 0.25. This estimate reflects a proper interpretation of the NER and the best empirical evidence in relation to the value of imputation credits.

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[267] Preliminary Decision, p 4-16.

[268] Preliminary Decision, p 4-18.

[269] Preliminary Decision, p 4-19.

[270] Preliminary Decision, p 4-19.

5.2   The AER's conceptual approach to estimating gamma

The AER's conceptual approach to estimating gamma appears to have evolved since it published the Rate of Return Guideline in December 2013.

In the Rate of Return Guideline, the AER approached gamma as a measure of the proportion of imputation credits that can be utilised. The AER defined theta as "*the extent to which investors can use the imputation credits they receive to reduce their tax (or receive a refund)*".[271] Thus, in the Rate of Return Guideline, the AER appeared to treat gamma as a measure of the utilisation, or eligibility to utilise / potential for utilisation of imputation credits.

In the Preliminary Decision the AER seeks to estimate gamma as the "*before-personal-tax and before-personal-costs*" value of imputation credits. The AER appears to acknowledge in the Preliminary Decision that gamma is a measure of the value of imputation credits to investors[272], not simply their utilisation, or potential for utilisation. However the AER states that this value must be measured on a "*before-personal-tax and before-personal-costs basis*".[273] Consistent with this, the AER estimates the utilisation rate (theta) as "*the before-personal-tax and before-personal-costs utilisation value to investors in the market per dollar of imputation credits distributed*".[274]

Thus, between the Guideline and the Preliminary Decision, the AER appears to have shifted from treating gamma as a "utilisation" (or potential utilisation / eligibility for utilisation) concept to treating it as a "value" concept.

However, because the AER seeks to estimate value on a before-personal-tax and before-personal-costs basis, its approach is in fact unchanged. Since the AER ignores the effect of any factors which might reduce the value of imputation credits that are redeemed, its approach to estimating value is effectively equivalent to estimating the rate of imputation credit utilisation (or potential for utilisation) or to assuming that those factors have no affect—which it has not tested nor has any evidence to support. The AER explains this in the Preliminary Decision as follows:[275]

> *In the Guideline, we also defined the utilisation rate as the extent to which investors can use the imputation credits they receive to reduce their tax (or receive a refund). In this decision, consistent with Handley's advice, we consider the utilisation rate is the utilisation value to investors in the market per dollar of imputation credits distributed. However, we consider that our views in the Guideline and in this decision are broadly equivalent; that is, our definition of the utilisation rate in this preliminary decision still reflects the extent to which investors in the market can use the imputation credits they receive. This is because, as discussed above and in sections A.5, A.7 and A.8.1, to be consistent with the Officer framework (and therefore the building block framework in the NER/NGR) the utilisation rate should reflect the before-personal-tax and before-personal-costs value of imputation credits to investors. On a before-personal-tax and before-personal-costs basis, an investor that is eligible to fully utilise imputation credits should value each dollar of imputation credits received at one dollar (that is, have a utilisation rate of 1)."*

In effect, the AER continues to interpret gamma as a measure of the utilisation of imputation credits, or a measure of investors' eligibility to utilise those credits.

As explained in our initial proposal, this approach is contrary to the requirements of the NER and represents a significant departure from conventional and previous regulatory practice.

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[271] AER, *Better Regulation: Explanatory Statement Rate of Return Guideline*, December 2013, p 159.

[272] Preliminary Decision, p 4-16.

[273] Preliminary Decision, p 4-16.

[274] Preliminary Decision, p 4-33.

[275] Preliminary Decision, pp 4-53 – 4-54.

UE considers that it is clear from the language of clause 6.5.3 of the NER that the AER is required to estimate the value of imputation credits, not the utilisation of imputation credits, or a measure of investors' eligibility to utilise those credits. Clause 6.5.3 refers to the "value of imputation credits", not utilisation. Indeed, the NER were recently amended to change the definition of gamma from "the assumed utilisation of imputation credits" to "the value of imputation credits.

Further, a value-based approach to estimating gamma (and theta) will best promote the NEO, as it provides for overall returns which promote efficient investment. As noted by Professor Gray:[276]

> "Under the building block approach, the regulator makes an estimate of gamma and then reduces the return that is available to investors from dividends and capital gains from the firm accordingly. In my view, it is clear that this is consistent with a value interpretation. If the value of foregone dividends and capital gains is greater than the value of received imputation credits, the investors will be left under-compensated, and vice versa."

If gamma is treated as merely a measure of utilisation, or if the value of imputation credits is assessed before personal costs and taxation (i.e. ignoring these costs to investors), the overall return to equity-holders will be less than what is required to promote efficient investment. Quite simply, there will be certain costs incurred by investors – such as transactions costs involved in redeeming credits – which are not accounted for.

The value of imputation credits to investors will necessarily reflect (and will be net of) any transactions costs or other personal costs incurred in redeeming credits. Such costs cannot simply be assumed away. If such costs are assumed away, then the resulting estimate of theta (and therefore gamma) will overstate the true value of imputation credits to investors.

Therefore, UE maintains its position that the estimate of theta must simply reflect the value of imputation credits to investors. It would be an error to seek to estimate theta as a hypothetical before-personal-tax and before-personal-costs value.

5.3 Estimates of the distribution rate

(a) The appropriate measure of the distribution rate

The AER refers to a distribution rate for "all equity" and for "listed equity" only. The "all equity" figure is based on analysis of the cumulative payout ratio across all Australian companies, using ATO data. The "listed equity" figure is also based on ATO data, but with an allocation of total tax paid between public and private companies.[277]

UE considers that it is neither necessary nor appropriate to separately identify a distribution rate for a limited set of listed businesses only. This is because the distribution rate for all equity is likely to be a reasonable proxy for that of the benchmark entity. On the other hand, for reasons discussed below, the distribution rate for a limited set of listed businesses is likely to be a poor proxy for that of the benchmark entity.

Whereas the AER's definition of the benchmark entity is assumed to operate solely within Australia[278], the distribution rate for listed equity is likely to be skewed by the practices of multinational firms with significant foreign earnings. Almost two thirds of the value of listed entities comprises the top 20 firms, which tend to be large multinational firms with significant foreign earnings. The presence of material foreign earnings can have a significant impact on a firm's distribution rate because imputation credits are only created when tax is paid on Australian earnings, but may be distributed with any dividend (whether distributing Australian earnings or foreign earnings). This means that for a given dividend payout ratio (i.e., the proportion of profits that are

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[276] SFG, *Estimating gamma for regulatory purposes*, February 2015, [12].

[277] NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, section 3.3.

[278] The AER's definition of the benchmark efficient entity is a pure play, regulated energy network business *operating within Australia*. AER, *Rate of Return Guideline*, p 7; AER, *Explanatory Statement, Rate of Return Guideline*, pp 32-35, see in particular the discussion of 'Operating within Australia' on p 35.

distributed as dividends), the imputation credit distribution rate will be higher (as a proportion of total credits created) for an entity with more foreign profits.

This is illustrated by way of example by Professor Gray.[279] Professor Gray compares two hypothetical firms with the same dividend payout ratio (i.e., the proportion of profits that are distributed as dividends), but with different levels of foreign earnings. His example shows that the existence of foreign earnings leads to a materially higher distribution rate, even where the dividend payout ratio is the same.

The effect of foreign earnings on the distribution rate can also be seen in the empirical estimates of the distribution rate for different company types. As may be expected, the distribution rate for top-20 ASX listed companies (many of which will have material foreign earnings) is significantly higher than the average distribution rate across all companies (0.84 compared to 0.68). When top-20 ASX listed companies are removed from the public company set, the distribution rate for public companies falls to around the rate across all companies (0.69).

Table 5.1: Distribution rate by company type[280]

Firm type	Distribution rate
Top-20 ASX listed	0.840
Public but not top-20 ASX listed	0.693
All publicly listed	0.755
Private	0.505
All	**0.676**

Given that the BEE, by definition is a business with no foreign profits, it would be inappropriate to use a measure of the distribution rate that is skewed by businesses with material foreign earnings.

In the Preliminary Decision the AER suggests that, although the listed equity distribution rate may be unrepresentative of the distribution rate for the BEE, it may nonetheless be necessary to use a listed equity distribution rate for "internal consistency".[281] The AER considers that where an estimate of theta is based on the value of imputation credits to a particular set of investors, the distribution rate that is combined with that theta estimate must be for the same set of investors. On this reasoning, the AER considers that if an estimate of theta based on listed equity data is used, this must be combined with a listed equity distribution rate.

For reasons discussed in section 5.5 below, we do not agree that estimates of theta based on listed equity data must be paired with a listed equity distribution rate. The distribution rate and theta are separate parameters and need not be estimated using the same dataset. Whereas the distribution rate is a measure of the credit distribution practices of the BEE, theta is a measure of the value of credits to investors (or potential investors). In each case it must be considered which approach will provide the best estimate for the BEE, and there is no reason why this ought to be the same across all parameters. For reasons discussed above, the

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[279] SFG, *Estimating gamma for regulatory purposes*, 6 February 2015, p 45.

[280] NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, p 23.

[281] Preliminary Decision, p 4-87.

distribution rate for the BEE will be best proxied by the distribution rate across all companies. On the other hand, for reasons set out below, to the extent that the rate of equity ownership is relevant to theta, the most informative measure is that for listed equity. Put another way, the BEE is an entity with solely Australian earnings, but as likely to be foreign owned as any listed entity.

This position is supported by Frontier Economics in its expert report accompanying this submission.[282] Frontier notes that whether the BEE is defined narrowly (as the firms that the AER regulates) or more broadly, for the purposes of estimating the distribution rate it would not include firms that have foreign-sourced profits to assist in the distribution of imputation credits. Thus, the distribution rate should not be estimated with reference to the top 20 ASX-listed firms, or with reference to any estimate that is materially affected by the top 20 firms. For this reason, Frontier recommends excluding the influence of the top 20 firms from any estimate of the distribution rate for the BEE. Frontier notes that but for the top 20 listed firms, the distribution rate estimate for listed equity is 70 per cent, which is in line with the distribution rate for all equity.

(b) Distribution rate for all equity

UE agrees with the AER's conclusion in the Preliminary Decision that the best estimate of the distribution rate across all equity is 0.7.

Recent analysis by NERA (referred to in Table 5.1 above) indicates that the distribution rate across all equity is now slightly below 0.7, at around 0.68.[283] Therefore 0.7 represents a reasonable and conservative estimate.

5.4   Estimates of the value of distributed credits (theta)

(a)   Types of evidence relied on by the AER to estimate theta

There are three types of evidence referred to by the AER in relation to theta. These are, in order of weight given by the AER:

·   equity ownership rates (i.e. the share of Australian equity held by domestic investors);

·   redemption rates from tax statistics; and

·   market value studies.

This section will address the relevance of each of the forms of evidence relied on by the AER in the Preliminary Decision, to the task of estimating the value of imputation credits to investors.

(i)   Equity ownership rates

The AER continues to rely on the equity ownership approach as direct evidence of the value of distributed imputation credits. The AER states that its estimate of the value of distributed imputation credits "primarily reflects" the evidence from the equity ownership approach.[284]

The AER's estimates of the equity ownership rate provide a binding constraint on its estimates of theta and gamma. As noted above, the AER adopts a range for gamma based on "the overlap of evidence from the equity ownership" approach.[285] Other evidence is then only used to determine where in this range the AER's point estimate of gamma should lie. Since other evidence indicates a gamma that is below the AER's range from the equity ownership approach, this other evidence is effectively disregarded by the AER. It is only the AER's estimates of the equity ownership rate that are consistent with its estimates of theta and gamma.

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[282] Frontier Economics, *The appropriate use of tax statistics when estimating gamma*, January 2016, p 15.

[283] NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, p 23.

[284] Preliminary Decision, p 4-17.

[285] Preliminary Decision, p 4-19.

In relying on equity ownership rates as direct evidence of the value of distributed imputation credits, the AER at least implicitly assumes that:

- all domestic investors are eligible to utilise imputation credits, while foreign investors are not (**Assumption 1**); and

- eligible investors (i.e. domestic investors) value imputation credits at their full face value because each dollar of imputation credits received can be fully returned to them in the form of a reduction in tax payable (**Assumption 2**).

Both of these assumptions are incorrect.

Assumption 1 is known to be incorrect due to certain tax rules which prevent redemption of credits by domestic investors in some circumstances. In particular, not all domestic investors are eligible to utilise imputation credits, for example due to the 45-day holding rule[286] or because they are in a tax loss position.

The AER acknowledges the 45-day rule but considers that it can be assumed to have a negligible effect.[287] However, the analysis underpinning this conclusion is based on data that is known to be unreliable. The AER relies on analysis of the ATO dividend data presented in an expert report by Dr Neville Hathaway dated September 2013.[288] However that report explained that there "appears to be a big problem with the data" in that a large amount of credits are not accounted for in the ATO dividend data – i.e. there is $87.5 billion in franking credits that appear in the ATO tax paid and franking account balance (FAB) data, but which are missing from the dividend data. Dr Hathaway expresses more confidence in the ATO tax paid and FAB data, and says that it is likely to be the dividend data where the problem lies.[289] The AER analysis on the effect of the 45-day rule appears to be entirely based on the ATO dividend data, despite Dr Hathaway's warnings regarding the reliability of this data. The AER does not appear to take into account the point made by Dr Hathaway, that the dividend data appears to grossly underestimate the amount of imputation credits distributed, or to assess whether this data is reliable enough to analyse the impact of the 45-day rule.[290]

The ATO tax paid and FAB data (which Dr Hathaway considers to be more reliable) indicate that the redemption rate for imputation credits is materially below the domestic equity ownership rate across all equity, suggesting that equity ownership figures do overstate the level of actual utilisation. The AER (correctly) observes that the current redemption rate is 0.45, which is significantly below the domestic equity ownership rate across all equity (currently 0.6).[291] This indicates that factors such as the 45-day rule or tax losses are in fact preventing or deterring the redemption of imputation credits by some domestic investors.

As for Assumption 2 above, our Regulatory Proposal identified a number of reasons why even eligible investors will not value imputation credits at their full face value. These include transaction costs associated with the redemption of imputation credits and portfolio effects (discussed below).

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[286] Although the 'qualified persons' rules, and the 45-day holding rule within those rules, were repealed from the *Income Tax Assessment Act 1936* (**ITAA36**) in 2002, they still have ongoing application as a result of being imported into the imputation rules by section 207-145(1)(a) of the *Income Tax Assessment Act 1997* (**ITAA97**). Section 207-145(1)(a) of the ITAA97 provides that the amount of the franking credit on a distribution is not included in the assessable income of an entity or allowed as a credit where the entity is not a 'qualified person' in relation to the distribution. A 'qualified person' for the purposes of this 'section' (per section 160APHO(2)) is, broadly, a taxpayer who has held shares or an interest in shares on which a dividend has been paid, 'at risk' for a continuous period of not less than 45 days. To work out whether the shares are 'at risk', a taxpayer is required to first work out their 'net position', which is determined under the rules contained in the repealed section 160APHJ of the ITAA36.

[287] Preliminary Decision, p 4-72

[288] Preliminary Decision, p 4-72. Table 4-6 refers to the following report as its data source: Dr Neville Hathaway, *Imputation Credit Redemption ATO data 1988-2011 – Where have all the credits gone?*, September 2013. It appears that the data in Table 4-6 is drawn from Figure 4 of Dr Hathaway's report, which (as explained in paragraphs 51 and 52 of that report) relies on the ATO dividend data.

[289] Dr Neville Hathaway, *Imputation Credit Redemption ATO data 1988-2011 – Where have all the credits gone?,* September 2013, paragraph 50.

[290] The figures in Table 4-6 on page 4-72 of the Preliminary Decision appear to be taken from Figure 4 on page 18 of Dr Hathaway's report, which is based on the ATO dividend data.

[291] Preliminary Decision, p 18.

Given that neither of these assumptions hold, equity ownership rates cannot be used as direct evidence of the value of distributed imputation credits. Equity ownership rates will only indicate the maximum set of investors who **may** be eligible to redeem imputation credits and who may therefore place **some** value on imputation credits. Certainly theta cannot be higher than the domestic equity ownership rate, since foreign investors cannot place any value on imputation credits and it would be irrational to place more value on a redeemed credit than the dollar value of tax that can be offset by it. However the domestic equity ownership rate cannot be used as direct evidence of the value of imputation credits, because it does not account for the fact that:

- some domestic investors may be ineligible to redeem imputation credits; and

- even eligible investors will not value imputation credits at their full face value.

Therefore the AER has erred in concluding that equity ownership rates are direct evidence of the value of imputation credits (or evidence from which a value can be inferred) and in giving these measures the primary role in the determination of a point estimate for theta.

(ii) Tax statistics

The AER also appears to rely on redemption rates from tax statistics as direct evidence of the value of distributed imputation credits. The AER states that it has placed "some reliance" on tax statistics in estimating theta, but less reliance than is placed on equity ownership rates.[292]

Redemption rates from tax statistics will be closer to the true value of imputation credits than domestic equity ownership rates. This is because redemption rates account for certain factors impacting on the value of imputation credits which are not accounted for in the domestic equity ownership rate – for example, redemption rates will reflect the fact that some domestic investors are not eligible to redeem credits due to the 45-day holding rule, and that some investors face costs and other barriers that deter them from utilising imputation credits.

However redemption rates from tax statistics also cannot be used as direct evidence of the value of distributed imputation credits, because redemption rates do not take into account the fact that investors may value redeemed credits at less than their full face value. As noted above, our Regulatory Proposal identified a number of reasons why investors will not value imputation credits at their full face value, including:

- **Transaction costs**. Transaction costs associated with the redemption of credits may include requirements to keep records and follow administrative processes. This can be contrasted with realisation of cash dividends, which are paid directly into bank accounts. The transaction costs associated with redemption of imputation credits will tend to reduce their value to investors (meaning that the value of credits redeemed will be less than their face value) and may also dissuade some investors from redeeming credits (thus reducing the redemption rate);

- **Time value of money**. There will typically be a significant delay (which can be years) between credit distribution and the investor obtaining a tax credit. This may be a period of several years in some cases, for example where credits are distributed through other companies or trusts, or where the ultimate investor is initially in a tax loss position. Over this period, the value of the imputation credit to the investor may be expected to diminish, due to the time value of money;

- **Portfolio effects**. Portfolio effects refer to the impact of shifting the investor's portfolio away from the optimal construction (including overseas investments) in order to take advantage of imputation. An investor who would otherwise invest overseas (to get a better return from the overall portfolio) might choose instead to make that investment in Australia to obtain the benefit of an imputation credit. This reallocation of portfolio investment would tend to continue with the relevant imputation credit having less and less marginal value until an equilibrium is reached with the credit having no additional value: that is, on average, the value of the imputation credits will be less than the face value. To the extent that an investor reduces the value of their overall portfolio simply to increase the extent to which they can redeem imputation credits, this lost value will be reflected in a lower

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[292] Preliminary Decision, p 4-25.

valuation of the imputation credits. These portfolio effects are further explained in the expert report of Professor Stephen Gray which accompanied our Regulatory Proposal.

Redemption rates from tax statistics can only indicate the upper bound for theta. Theta clearly cannot be higher than the proportion of credits that are redeemed by investors, since credits that will never be redeemed have no value. However theta may be (and for reasons referred to above, is likely to be) less than the redemption rate.

Therefore the AER has erred in giving redemption rates a direct role in the determination of a point estimate for theta, and in failing to recognise that redemption rates are an upper bound for theta.

(iii) Market value studies

The AER places least weight on market value studies, as it considers that these studies have a number of limitations, including:[293]

- these studies can produce nonsensical estimates of the utilisation rate – that is, greater than one or less than zero

- these studies can be data intensive and employ complex and sometimes problematic estimation methodologies

- the results of these studies can reflect factors, such as differential personal taxes and risk, which are not relevant to the utilisation rate

- the results of these studies might not be reflective of the value of imputation credits to investors in the market as a whole, and

- it is only the value of the combined package of dividends and imputation credits that can be observed using dividend drop-off studies, and there is no consensus on how to separate the value of dividends from the value of imputation credits (the 'allocation problem').

In effect, the AER is raising two questions in relation to market value studies:

- Are they measuring the right thing? (reflected in the third point above)

- How well are they measuring it? (reflected in the other four points)

(A) Are market value studies measuring the right thing?

The first concern flows from the AER's conceptual definition of theta, which seeks to exclude the effects of personal taxes and personal costs. Since market values will reflect the impact of personal costs and taxation, the AER considers that a market value approach may not be compatible with its revised definition of theta.

As noted above, UE does not agree with the AER's revised definition of theta (i.e. the qualified version which ignores the effects of personal costs and taxation). As explained in our Regulatory Proposal, theta must reflect the value of distributed imputation credits to investors, which will necessarily reflect (and will be net of) any transaction costs or other personal costs incurred in redeeming credits.

If the conventional definition of theta is adopted – i.e. defining theta as the value of distributed imputation credits to investors – then use of market value studies is entirely compatible with this definition. Market value studies will reflect the value of imputation credits to investors, as reflected in market prices for traded securities.

Indeed, of the three approaches identified by the AER to estimate theta, an approach based on market value studies is the only approach that is entirely compatible with a definition of theta that is consistent with the NER and the NEO. As discussed above, both equity ownership rates and redemption rates from tax statistics will

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[293] Preliminary Decision, p 4-29.

overstate the true value of theta, since they will not reflect certain factors which affect the value of imputation credits to investors.

Use of market value studies – and more generally, the adoption of a market value measure – is also consistent with how other rate of return parameters are estimated.[294] Other rate of return parameters such as the MRP and DRP are estimated based on the return required by investors as reflected in market prices. The market value measures of these parameters are not adjusted to account for personal costs or other factors which may be reflected in market prices.

In any event, even if the AER's definition of theta were to be adopted, there is a relatively simple adjustment that can be made to estimates from market value studies to address this concern. As explained by Associate Professor Handley, this involves 'grossing up' the theta estimate from a market value study to reflect the effect of personal costs. If this adjustment were to be made to the estimate from the estimate from Professor Gray's dividend drop-off study, it would result in a small increase in the theta estimate, from 0.35 to 0.4.[295] (For clarity, UE does not agree with this adjustment, because the AER's conceptual definition of theta is clearly wrong. However, if the AER's definition was to be adopted, then this does not require wholesale rejection of market value evidence, since an adjustment can be made to account for differences between the AER's definition and the conventional definition.)

(B) Do market value studies accurately measure that thing?

The AER lists several methodological concerns with dividend drop-off studies, several of which are not relevant to the particular study relied on by UE.

In particular, the AER's concern about 'nonsensical results' clearly does not apply to Professor Gray's dividend drop-off study. Professor Gray's study produces a theta estimate of 0.35, which is an entirely sensible result given that:

- it is within the theoretical bounds for theta (i.e. it is between zero and one);

- it is below the domestic equity ownership rate for both listed equity (0.46) and all equity (0.6). As noted above, the domestic equity ownership rate indicates the maximum set of investors who *may* be eligible to redeem imputation credits and who may therefore place *some* value on imputation credits, and therefore it may be expected that the value for theta would be below this figure;

- it is also below the redemption rate indicated by tax statistics (0.45). Again, this may be expected given that redemption rates will indicate the upper bound for theta and do not capture certain factors affecting value, such as the time value of money, transaction costs and portfolio effects.

Indeed, the result of the SFG study is consistent with the other evidence and a result that is to be expected in light of that evidence.

Similarly, the AER's concern about 'problematic estimation methodologies' may apply to *some* market value studies but does not apply to the particular study relied on by UE. The methodology used in Professor Gray's study is the product of a consultative development process involving the AER and several regulated businesses and overseen by the Tribunal in the *Energex* review. The methodology used in Professor Gray's study was designed specifically to overcome the methodological shortcomings of previous studies (e.g. shortcomings in the methodology employed by Beggs and Skeels (2006), which were identified by the Tribunal in the *Energex* review). In accepting the conclusions of Professor Gray's study, the Tribunal expressed confidence in those conclusions in light of the careful scrutiny to which the methodology had been subjected, and the way in which it had been designed to overcome shortcomings of previous studies.[296]

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[294] As noted above, the NER requires the rate of return and the value of imputation credits to be measured on a consistent basis (NER, cl 6.5.2(d)(2)).

[295] John C Handley, *Advice on the Value of Imputation Credits*, 29 September 2014, p 43.

[296] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [22].

Professor Gray notes that the dividend drop-off literature has evolved over time, and that the SFG studies use current state-of-the-art techniques. Professor Gray explains:[297]

> *In relation to dividend drop-off studies, I first note that the dividend drop-off literature has evolved over time, as do all areas of scientific investigation. This evolution has seen the development of different variations of the econometric specification, different variations of regression analysis, and different types of sensitivity and stability analyses. It has also seen material growth in the available data. The SFG studies use the latest available data, and they apply a range of econometric specifications, regression analysis and sensitivity and stability analyses that have been developed in the literature. The SFG estimate of 0.35 is based on this comprehensive analysis. It is not as though the SFG studies use one of the reasonable approaches and other studies use different reasonable approaches. The SFG studies are comprehensive state-of-the-art studies.*

Box 1 below outlines the process by which the methodology used in Professor Gray's study was developed, and the conclusions of the Tribunal in relation to that methodology. In light of this, it cannot be said that Professor Gray's study shares the same methodological issues as previous market value studies. Rather, this study was specifically designed to overcome the shortcomings of previous studies.

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[297] SFG, *Estimating gamma for regulatory purposes*, February 2015, [177].

Box 1: Key conclusions of the Tribunal in *Energex* in relation to the SFG methodology

In *Application by Energex Limited (No 2)* [2010] ACompT 7, the Tribunal had before it two market value studies which produced different estimates of theta – a study by Beggs and Skeels (2006) and a study by SFG (2010) which sought to replicate the Beggs and Skeels (2006) methodology. The Tribunal identified shortcomings in the methodology used in both studies and observed that the results of both studies should be treated with caution.

The Tribunal therefore sought a new "state-of-the-art" dividend drop-off study.[298] To this end, the Tribunal directed that the AER seek a re-estimation by SFG of theta using the dividend drop-off method, but without the constraint that the study replicates the Beggs and Skeels (2006) study. The Tribunal encouraged the AER to seek expert statistical or econometric advice to review the approach prior to the estimation proceeding and to consider any possible enhancements to the dataset. It was said that the new study should employ the approach that is agreed upon by SFG and the AER as best in the circumstances.

The terms of reference for the new study were settled between the AER and the businesses involved in the Energex review (Energex, Ergon and ETSA Utilities), with oversight from the Tribunal. The AER and the businesses also had the opportunity to comment on a draft of the report, and SFG's responses to those comments are incorporated in the final report.

In submissions to the Tribunal, the AER raised eight "compliance" issues with the final SFG (2011) study – these were perceived issues of non-compliance by SFG with the agreed terms of reference. The Tribunal was not concerned by any of these issues and considered that they raised no important or significant questions of principle. The Tribunal concluded that any departures from the agreed terms of reference were justified, or even necessary and observed that calling them "major compliance issues" was unnecessarily pejorative.[299]

The Tribunal was ultimately satisfied that the procedures used by SFG (2011) to select and filter the data were appropriate and did not give rise to any significant bias in the results obtained from the analysis. It was also not suggested by the AER that the data selection and filtering techniques had given rise to any bias.[300]

In relation to the model specification and estimation procedure, the Tribunal concluded:[301]

In respect of the model specification and estimation procedure, the Tribunal is persuaded by SFG's reasoning in reaching its conclusions. Indeed, the careful scrutiny to which SFG's report has been subjected, and SFG's comprehensive response, gives the Tribunal confidence in those conclusions. In that context, the Tribunal notes that in commissioning such a study, it hoped that the results would provide the best possible estimates of theta and gamma from a dividend drop-off study. The terms of reference were developed with the intention of redressing the shortcomings and limitations of earlier studies as far as possible.

Ultimately, the Tribunal was satisfied that the SFG (2011) study was the best study available at that time for the purposes of estimating gamma in accordance with the NER.[302] The Tribunal did not accept the submission of the AER that either minor issues in the construction of the database or econometric issues would justify giving the SFG study less weight and earlier studies some weight.

[298] *Application by Energex Limited (No 2)* [2010] ACompT 7, [146]-[147].

[299] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [18].

[300] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [19].

[301] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [22].

[302] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [29].

The other two issues referred to by the AER – the allocation problem, and the possibility that the results of these studies might not be reflective of the value of credits to investors in the market as a whole – have previously been considered and addressed by Professor Gray. These issues are again addressed in Professor Gray's most recent report.[303] As noted in our Regulatory Proposal:

- in relation to whether estimates reflect the value of credits to investors in the market as a whole, and whether there may be some impact on the theta estimate from 'abnormal trading' around ex-dividend day, Professor Gray notes that to the extent this effect is material it would result in the dividend drop-off (and therefore the theta estimate) being higher than it otherwise would be.[304] This is because any increase in trading around ex-dividend day would be driven by a subset of investors who trade shares to capture the dividend and imputation credit and who are therefore likely to value imputation credits highly (i.e. higher than the average investor). These investors tend to buy shares shortly before payout of dividends (which pushes up the share price) and tend to sell shortly after (which pushes down the share price), the overall effect of which is to increase the size of the price drop-off;

- in relation to the allocation issue, Professor Gray notes that empirical evidence provides a very clear and consistent view of the combined value of cash and imputation credits.[305] This evidence indicates that the combined value is one dollar. The relevant evidence includes the recent studies by SFG (2011 and 2013) and Vo et al (2013). Allocation can be made based on this clear evidence as to combined value of the cash/credit package.

In summary, the general set of 'limitations' referred to by the AER do not provide a justification for placing limited weight on the particular market value study relied on by UE. Several of the general limitations do not apply to the SFG study that is relied on by UE, and the other concerns have been comprehensively addressed by Professor Gray.

The AER's approach to considering market value studies – which involves simply identifying limitations which *may* apply to these studies in general, without considering whether those limitations apply to the particular study relied on by UE – is illogical and unreasonable. Without considering whether the potential limitations it has identified actually apply to the SFG study, the AER cannot reasonably form a view that this study is unreliable or should be given limited weight.

Accordingly, the AER has erred in placing only limited weight on all market value studies in estimating theta. We consider that approach to be incorrect. Market value studies that are methodologically robust – in particular the SFG study – can and should be used as direct evidence of the value of imputation credits.

Market value studies are the only form of evidence which can provide the basis for a point estimate of theta, rather than just an upper bound.

(b) Estimates relied on by the AER

(i) Range of estimates for the equity ownership rate

The AER concludes that a reasonable estimate of the equity ownership rate is between:[306]

- 0.56 and 0.68, if all equity is considered; and

- 0.38 and 0.55, if only listed equity is considered.

The AER then combines these ranges with its estimates of the distribution rate to derive corresponding ranges for gamma. The AER's gamma estimate is taken from the point of overlap between these two ranges.

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[303] SFG, *Estimating gamma for regulatory purposes*, February 2015, [185].

[304] SFG, *An appropriate regulatory estimate of gamma*, May 2014, [150]-[153].

[305] SFG, *An appropriate regulatory estimate of gamma*, May 2014, [158]-[163].

[306] Preliminary Decision, p 4-100.

UE has three concerns with the AER's approach to the construction of ranges for the equity ownership rate:

- first, the AER has erroneously treated equity ownership rates as direct evidence of theta. For reasons discussed above, equity ownership rates provide at best an upper bound for theta;

- secondly, the AER has used estimates of the "listed equity" and "all equity" equity ownership rate, without proper consideration of which measure is likely to be most appropriate for the BEE; and

- thirdly, the AER has inappropriately taken a range for the equity ownership rate over a long period, rather than assessing the current equity ownership rate.

The first issue is addressed in section 5.4(a)(i) above. The second and third issues are addressed below.

(A) Listed equity and all equity measures

Given that measures of the equity ownership rate are available both for all equity and listed equity only, it is necessary to consider which of these measures is likely to be most appropriate in estimating the value of imputation credits to investors in the BEE.

To the extent that equity ownership rates are relevant (i.e. as an absolute upper bound on theta), the relevant measure is the listed equity measure. This is because the equity ownership rate for the BEE is best proxied by the listed equity ownership rate.

Businesses with the characteristics of the BEE are likely to be at least as attractive to foreign investors as listed companies. This is evident from:

- the large proportion of privately owned network businesses that are partly or wholly foreign owned (refer to Table 5.2 below); and

- the interest shown by foreign investors in recent sales of network businesses.[307]

Table 5.2: Foreign ownership of privately owned network businesses in VIC and SA

Business	Foreign Owners (incl. via holding companies)	Foreign ownership Share	Domestic owners	Domestic ownership share
JEN	Singapore Power International, State Grid Corporation	100%	N/A	0%
United Energy	Singapore Power International, State Grid Corporation	34%	DUET Group	66%
Citipower	Cheung Kong Group	51%	Spark Infrastructure	49%
Powercor	Cheung Kong Group	51%	Spark Infrastructure	49%
AusNet	Singapore Power International, State Grid Corporation	51%	N/A	49%[308]
SA Power Networks	Cheung Kong Group/Power Assets	51%	Spark Infrastructure	49%
ElectraNet	State Grid Corporation	80%	Hastings Utilities Trust	20%

[307] For example, short-listed bidders for TransGrid assets included consortia that included China State Grid and interests from Canada, Abu Dhabi and Kuwait.

[308] This is likely to over-state the level of domestic ownership in AusNet. Of the 49% that is not held by Singapore Power International and State Grid Corporation, it is not clear how much is held by foreign investors. For the purposes of this analysis, it is assumed that none of the remaining 49% is held by foreign investors.

Business	Foreign Owners (incl. via holding companies)	Foreign ownership Share	Domestic owners	Domestic ownership share
Australian Gas Networks	Cheung Kong Group	100%	N/A	0%

The equity ownership rate for all equity is unlikely to be a good proxy for the equity ownership rate for a BEE, since the "all equity" group will include a very large number of small, privately-owned and family companies, and will therefore include many businesses that are comparatively unattractive or inaccessible to foreign investors (e.g. the local corner store).

(B)   Time period for measuring the equity ownership rate

The AER derived its ranges for the equity ownership rate by considering the range for this metric over a period commencing in July 2000.   The period since July 2000 was chosen on the basis that a change in the tax law occurred in July 2000, entitling domestic investors to a refund for excess credits.

There is no apparent basis for taking figures up to 15 years old. Rather, to the extent that domestic equity ownership is relevant, what is required is an estimate that is commensurate with the prevailing conditions in the market, and current rates of equity ownership.   It is the current rate of domestic equity ownership that will affect the ability of current investors to redeem (and therefore place some value on) imputation credits. The domestic equity ownership rate at some previous point in time is not relevant to this. The AER's approach in this regard is entirely inconsistent with the estimate of many other parameters, such as the risk free rate. There is no reason to think that the figures for the prevailing rate of equity ownership are unreliable.

The domestic ownership rate (as analysed by the AER) is currently 0.45 for listed equity and 0.6 for all equity. To suggest that the current equity ownership rate could be as high as 0.55 for listed equity, or as high as 0.68 for all equity, is simply incorrect.

Even if it were appropriate to consider the equity ownership rate over some extended period, the AER's choice of period is arbitrary. As noted above, the AER justifies its choice of period on the basis that a change in the tax law occurred in July 2000, entitling domestic investors to a refund for excess credits. However the choice of this event as the starting point for the data series is arbitrary, given that there are more recent events (such as the GFC) which are likely to have caused a change in the rate of foreign ownership.

The chart presented in the Preliminary Decision (reproduced below) shows that the AER's choice of period is significant to its conclusion on the domestic equity ownership rate. If, for example, the AER had confined its consideration to a period after the onset of the GFC, it would have drawn very different conclusions as to the domestic equity ownership rate. Since September 2008, the domestic equity ownership share has been in a much narrower range of 0.56 – 0.61, and for listed equity it has been in the range of approximately 0.38 – 0.47. This simple change to the period of analysis would have to significantly alter the AER's conclusion on gamma, since:

- the AER could not have identified an overlap between its estimates of gamma based on equity ownership for listed and all equity. Taking the more recent (post-GFC) period to measure the equity ownership rate leads to a range for gamma of 0.29 – 0.36 based on all equity measures, and a range of 0.40 – 0.43 based on all equity. Since there is no overlap between these ranges, it is not clear how the AER would have derived a primary range for gamma had it used a shorter period of analysis for the equity ownership rate;

- if this more recent period were to be adopted, the AER's gamma estimate of 0.4 could not be reconciled with the evidence on the equity ownership rate for listed equity. Indeed, the AER's estimate of gamma would not be consistent with any of the evidence for listed equity.

Figure 4-3 Refined domestic ownership share of Australian equity
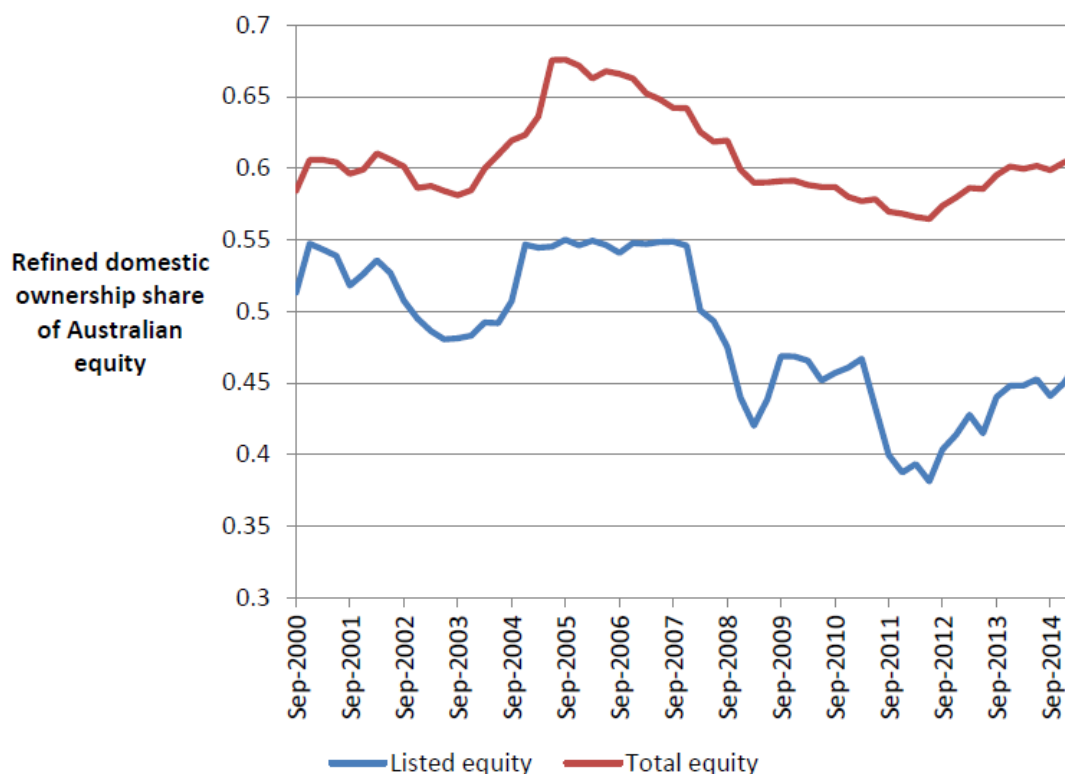
Source: Australian National Accounts: Finance and Wealth (ABS cat. 5232.0), tables 47 and 48.

(C) The relevant measure of the equity ownership rate

For reasons set out above, to the extent that equity ownership rates are relevant in providing an absolute upper bound for theta, the correct figure to use is the current listed equity figure. The AER's analysis shows that the current listed equity ownership rate is 0.46.[309]

When combined with a distribution rate of 0.7, this evidence indicates that the absolute upper bound for gamma is 0.32. Gamma can be no higher than 0.32, but may be lower than this.

(ii) Estimate from tax statistics

The AER concludes that the redemption rate from tax statistics is 0.45, based on analysis by Hathaway and a recent update from NERA.

This estimate is robust and provides a firm upper bound for theta. As noted by NERA, this figure is drawn from the tax statistics that are considered to be more reliable.[310]

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[309] Preliminary Decision, p 4-100.

[310] NERA, *Estimating Distribution and Redemption Rates from Taxation Statistics*, March 2015, p 25.

Thus, tax statistics indicate that theta cannot be higher than 0.45, and therefore gamma cannot be higher than 0.32.

(iii) Range of estimates from market value studies

The AER considers that market value studies support a range for the utilisation rate of between zero and one.[311]

Although the AER says that it has had "particular regard" to the SFG (2013) study, it is not clear from the Preliminary Decision what weight (if any) this study is given by the AER.[312] The AER's final estimate of gamma is clearly inconsistent with the findings of this study.

Besides stating that it has had "particular regard" to the SFG study, the Preliminary Decision does not reveal any meaningful consideration of the relative merits of the available market value studies. We have proposed to rely on a specific market value study, being the study designed to overcome the limitations of prior studies. However instead of assessing the merits of this particular study, the AER has grouped this study with a range of other studies and sought to assess the merits of this broad group of studies at a very general level only. The AER has not performed any analysis of the relative merits or deficiencies of the SFG study, nor has there been any expert review of this particular study to identify its relative merits or limitations. The only particular consideration given to the SFG study is in the AER's high level assessment of whether its set of general limitations associated with market value studies (discussed in section 5.4(a)(iii) above) apply to the that study.[313]

The AER appears to consider that all market value studies should be given equal (or similar) weight, regardless of the:

- time period for estimation (including whether the study relates to the period before or after changes to the tax law in 2000);

- robustness of the methodology; and

- quality of data and filtering techniques.

This is an erroneous and unreasonable approach to consideration of market value studies. As the AER is aware, many of the earlier market value studies have methodological shortcomings and rely on very old data. As explained above, the SFG study relied on by UE was specifically designed to overcome the shortcomings of previous studies. In particular, the methodology used in the SFG study:

- was designed, at the request of the Tribunal, to overcome shortcomings in previous studies (particularly the Beggs and Skeels (2006) study)

- was the product of a consultative process involving the AER

- relies on more recent data than previous studies, and

- has been endorsed by the Tribunal.

In effect, the SFG study was designed to supersede previous studies, both in terms of its methodology and the currency of the underlying data.

As noted above, the SFG study was found by the Tribunal (at the time of its May 2011 decision in *Energex*) to be "*the best dividend drop-off study currently available*".[314] The Tribunal also did not accept the submission of the AER that either minor issues in the construction of the database or econometric issues justified giving the

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[311] Preliminary Decision, p 4-18.

[312] Preliminary Decision, p 4-32.

[313] Preliminary Decision, pp 4-111 – 4-115.

[314] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [29].

SFG study less weight and earlier studies (particularly the previous Beggs and Skeels (2006) study) some weight. The Tribunal observed that "*the Beggs and Skeels study, despite not being subjected to anything like the same level scrutiny [sic], is known to suffer by comparison with the SFG study on those and other grounds*".[315]

Unlike the Tribunal in *Energex*, the AER in its Preliminary Decision gives no consideration to the relative strengths and weaknesses of the available market value studies. Rather, the AER has simply grouped all market value studies together and referred to a range of estimates emerging from this broad group.

The approach taken in the Preliminary Decision is even more simplistic than the approach in the Rate of Return Guideline. In the Guideline, the AER at least excluded studies from the pre-2000 period when different tax laws were in operation. However in the Preliminary Decision the AER has brought back the pre-2000 studies, the effect of which is to widen the AER's range of theta estimates from 0 – 0.5 to 0 – 1.0. Again, this simple change has significant implications for the AER's conclusion on gamma – if the range were restricted to 0 – 0.5 based on the post-2000 studies, this would indicate a range for gamma of 0 – 0.35 (based on a distribution rate of 0.7) or 0 – 0.39 (based on a distribution rate of 0.77), in any case below the AER's final point estimate.

We maintain our view that the best estimate of theta from market value studies is 0.35. This reflects the output of the best dividend drop-off study currently available.

(iv) Lally / Handley adjustment to estimates from dividend drop-off studies

The AER states that, as a minimum, the output of the SFG study requires an adjustment for the apparent incorrect valuation of cash dividends that would also be expected to be reflected in the estimated value of distributed imputation credits.[316] The adjustment is to address the AER's concern that dividend drop off studies, including SFG's study, that estimate a value for cash dividends at a materially different amount to their face value, are not correctly estimating a post-tax value before personal taxes and personal transaction costs.[317] The proposed adjustment is based on advice from Handley and Lally, and involves dividing the value of imputation credits by the value of dividends from the same study.[318] Applying this adjustment to the SFG study would lead to an adjustment of the output from 0.35 to 0.40.

The proposed adjustment is an extension of the AER's conceptual framework for estimating gamma. The AER expresses concern that market value studies are not producing estimates on a pre-personal-tax and pre-personal-costs basis, and it therefore makes an adjustment to remove the effect of these factors.

For reasons set out in section 5.2 above, UE does not agree with the AER's conceptual framework. Specifically, we do not agree that gamma should be estimated on a pre-personal-tax and pre-person-costs basis. For the same reasons, we do not agree that the output of market value studies should be adjusted to remove the effect of personal taxes and personal transaction costs.

UE notes however that if the AER's view on the conceptual framework were to be accepted, the Handley / Lally adjustment would provide a simple way of adjusting market value studies so that they could be used within this framework.[319] As noted above, if the Handley / Lally adjustment is applied to the SFG study, this leads to a theta estimate of 0.4. This implies that even if the AER's conceptual framework were to be adopted, a reasonable estimate of theta is likely to be around 0.4, implying a gamma of approximately 0.3.

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[315] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [29].

[316] Preliminary Decision, p 4-32.

[317] Preliminary Decision, pp 4-31 – 4-32.

[318] Preliminary Decision, p 4-30.

[319] UE notes the AER appears to consider that this adjustment may not be sufficient to remove the effect of all factors affecting investors' valuation of imputation credits, since there may be some factors which affect investors' valuation of imputation credits only, and not dividends (Preliminary Decision, p 4-111). UE does not agree with this reasoning. The AER has not identified what these additional factors are, or to what extent they ought to be ignored in estimating the value of imputation credits to investors. Therefore the AER cannot reasonably conclude that some further adjustment would be warranted, beyond that recommended y Lally and Handley.

5.5 Pairing of estimates for "all equity" and "listed equity"

In the Preliminary Decision, the AER pairs estimates of theta based on listed equity data with its distribution rate for listed equity, and similarly pairs estimates of theta based on all equity data with its distribution rate for all equity. The AER considers that it would be inappropriate to pair an estimate of theta from only listed equity with an estimate of the distribution rate from all equity (and vice versa).[320]

The AER does not explain why it is necessary or desirable to use the same set of companies to estimate the distribution rate and theta. Rather, the AER appears to consider that consistency of datasets is desirable in and of itself.

UE does not agree that estimates of theta based on listed equity data can only be "paired with" a listed equity distribution rate. The distribution rate and theta are separate parameters and need not be estimated using the same dataset. Whereas the distribution rate is a measure of the credit distribution practices of the BEE, theta is a measure of the value of credits to investors (or potential investors). In each case it must be considered which dataset or empirical measure will provide the best estimate for the BEE, and there is no reason why this ought to be the same across all parameters.

For reasons discussed above, the appropriate dataset for estimating the distribution rate may well be different to that used for estimating theta. This is because the characteristics of investors (or potential investors) in the BEE are likely to be more aligned with investors in listed entities, but the credit distribution rate of the BEE is unlikely to be aligned with that of a large listed entity. The BEE is likely to be at least as attractive to foreign investors as a listed entity, but unlike many large listed entities, it will not have material foreign earnings (which tend to increase the distribution rate for large listed entities).

It is for this reason that UE proposes to adopt the best estimate of each parameter based on the most representative dataset in each case, without the constraint that the datasets for each parameter must be the same.

5.6 Approach to deriving an estimate of gamma

The AER's approach to assessment of the empirical evidence in the Preliminary Decision is illogical and irrational.

The AER's reasoning involves two steps:

- first, the AER determines a range for gamma, based on the "overlap of the evidence from the equity ownership approach" (i.e. the overlap between the ranges for listed and all equity respectively), and

- secondly, the AER selects a point in that range based on the evidence from tax statistics and market value studies.

The first step is arbitrary and illogical, since it involves looking for an overlap between the ranges produced by two different measures and then taking that point of overlap as a binding constraint on the gamma estimate. Since the listed and all equity measures of the equity ownership rate are based on different datasets, there is no reason to expect that the ranges produced by these two measures would necessarily overlap. Indeed, as noted above, it is only because the AER takes such a long historical period to estimate its ranges for the equity ownership rate that the two ranges do overlap.

More importantly, there is no reason to expect that the value for gamma would lie at the point of overlap between these two ranges. The point of overlap indicates nothing about the value of gamma. Rather, it is driven by the AER's choice of time period for estimating ranges for the equity ownership rate. The point of overlap can be made larger or smaller (or made to disappear altogether) simply by varying the time period for analysis of the equity ownership rate.

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[320] Preliminary Decision, p 4-18.

The second step is similarly arbitrary and illogical, in that it uses different types of evidence to indicate where in a (illogical) pre-determined range the final estimate of gamma should lie. What the AER fails to recognise is that the equity ownership rate, the redemption rate and the market value are each measuring different things. The fact that the gamma estimates based on redemption rates and market value studies are both lower than the range of estimates from the equity ownership approach is to be expected, once it is borne in mind what these measures represent. Properly interpreted, the evidence from tax statistics and market value studies indicates that the value for gamma is (as it must by definition be) *below* the range from the equity ownership approach, not that it is at the lower end of that range.

As a result of this approach, the AER's estimate of gamma can only be reconciled with its range of estimates for the equity ownership rate. The AER's estimate is significantly above the values indicated by tax statistics and market value studies.

5.7   The correct interpretation of the empirical evidence

When correctly interpreted, the evidence presented in the Preliminary Decision demonstrates that:

- the distribution rate for the BEE is approximately 0.7

- the upper bound for theta, as indicated by equity ownership rates and tax statistics, is approximately 0.45. This implies an upper bound for gamma of 0.32

- the best estimate of the value of distributed imputation credits, on the AER's conceptual framework (i.e. ignoring personal costs), is 0.4. This implies a gamma of 0.28, and

- the best estimate of the value of distributed imputation credits, based on a proper application of the NER, is 0.35. This implies a gamma of 0.25.

The AER's gamma estimate of 0.4 is not consistent with the evidence presented in the Preliminary Decision. This value is well above even the upper bound values indicated by the equity ownership approach and tax statistics.

# 6.	Forecast inflation

## 6.1	Background

An accurate forecast of inflation is necessary to ensure that businesses have a reasonable opportunity to recover their efficient costs over the long term. Under the AER's current practice, forecast inflation plays a role in determining the amount to be deducted from the annual revenue requirement for indexation of the regulatory asset base.[321] If the forecast of inflation is too high – that is, if actual inflation turns out to be materially lower than had been forecast – this deduction will be too large. This will lead to under-recovery of costs over the long-term, since the amounts deducted from the annual revenue requirement will be larger than the amount by which the asset base is increased by inflation at the end of the regulatory period (this being based on <u>actual</u> inflation[322]).

The forecast of inflation also bears an interrelationship with the allowed rate of return. The reason why there needs to be a deduction from the annual revenue requirement for indexation of the regulatory asset base is because under the NER, a nominal rate of return is used[323] in combination with a real (inflation-adjusted) RAB.[324] Without the deduction, service providers would be compensated twice for the effects of inflation – once through the rate of return, and again through indexation of the regulatory asset base. It is therefore important that the forecast of inflation used to calculate the revenue deduction be:

- accurate (i.e. as close as possible to actual inflation, which is used to roll forward the RAB at the end of the regulatory period); and

- consistent with the implied forecast of inflation in the nominal rate of return.

In the Preliminary Decision, the AER adopted an inflation forecast of 2.5 per cent for the 2016 regulatory period. This is based on the methodology that has been adopted by the AER since 2008, which involves:[325]

- for the first two years of the regulatory period, taking the mid-point of the RBA *forecast* range for CPI inflation. For these two years, the RBA has published a forecast range of 2 – 3 per cent, with a mid-point of 2.5 per cent;[326] and

- for the following eight years, taking the mid-point of the RBA *target* range for CPI inflation, being 2,5 per cent (as this range is 2 to 3 per cent).

As RBA forecasts are only used for the first two years of the regulatory period, the inflation forecast derived using this methodology is primarily determined by the mid-point of the RBA's target range. This approach is reasonable where investors expect monetary policy to return inflation to—and maintain it at—the mid-point of the RBA's target range.

In its initial proposal, UE had adopted the current AER method for forecasting inflation, as described above. However, UE also foreshadowed a review of their method for estimating forecasted inflation if current market conditions persist.

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[321] Under clause 6.4.3(a) of the NER, the annual revenue requirement for a DNSP for each regulatory year of a regulatory period must be determined using a building block approach, under which the building blocks include "indexation of the regulatory asset base". Pursuant to clause 6.4.4(b), the "indexation of the regulatory asset base" building block comprises a negative adjustment equal to the amount referred to in clause S6.2.3(c)(4) for that year – i.e. the amount necessary to maintain the real value of the regulatory asset base as at the beginning of the subsequent year by adjusting that value for inflation .

[322] NER cl 6.5.1(e)(3) .

[323] NER, cl 6.5.2(d)(2).

[324] NER, cl 6.5.1(e)(3).

[325] Preliminary Decision, p 3-256.

[326] RBA, *Statement on Monetary Policy*, November 2015, Table 6.1.

6.2 Shortcomings of the AER method in current market conditions

Recent market evidence demonstrates that the AER's current forecasting method is currently over-estimating inflation. In particular, the most recent Australian Bureau of Statistics (**ABS**) data shows that actual CPI inflation is well below the RBA's forecasts and target range – year-end CPI inflation for the June and September quarters was 1.5 per cent per annum, while for the March quarter it was 1.3 per cent.

Table 6.1: Comparison of actual inflation with RBA and AER forecasts

Year ended	Actual inflation	RBA forecast (as at May of the prior year)	Forecast based on AER method (as at May of the prior year)
June 2013	2.4%	2 – 3%	2.5%
June 2014	3.0%	2 – 3%	2.5%
June 2015	**1.5%**	**2.5 – 3.5%**	**2.55%**

With RBA cash rates at record low levels and with near term rate cuts priced into financial markets, the RBA cash rate is close to the 'zero lower bound', with the result that the potential for monetary policy to stimulate economic activity and return inflation to the RBA's target range for CPI inflation is diminished.

The consequence of this is that:

- the AER's method is likely to result in an inflation forecast that is above market expectations of inflation over the regulatory period

- the inflation forecast used to make adjustments to cash flows (based on the AER inflation forecast) is likely to be inconsistent with the forecast of inflation implied in the nominal rate of return (which reflects market expectations)

- the downward adjustment to depreciation cash flows is expected be too large—because the inflation forecast derived using the AER's method is expected to be higher than the actual inflation used to roll forward the RAB from 2016 to 2021—thus artificially depressing the overall return to investors, and

- over the long-term, UE will not be able to recover its capital costs.

6.3 Return to a market-based method

UE proposes that an alternative forecasting method, based on market data, be adopted. The alternative method is referred to as the 'Fisher equation' method, or the 'breakeven inflation' forecasting method. Under this method, an estimate of expected inflation is derived using a simplified version of the Fisher equation, based on the difference in yields on nominal and inflation indexed CGS of the same maturity.[327]

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[327] CEG, *Measuring expected inflation for the PTRM*, June 2015, p 10; CEG, *Measuring risk free rates and expected inflation: A report for United Energy*, April 2015. CEG refers to this as the 'breakeven inflation' forecasting method. CEG notes that the equation it uses is a simplified version of the Fisher equation.

The Fisher equation method was used by the AER prior to 2008. The AER only changed to its current method in 2008 as a result of market conditions at that time causing a scarcity of CGS. In its decision to move away from the Fisher equation method, the AER agreed with stakeholders that a market-based estimate of forecast inflation would be preferable, but concluded that due to market conditions at that time its market-based measure was likely to be unreliable. The AER therefore departed from the PTRM method for forecasting inflation (the Fisher equation method) and sought an alternative method that it considered would provide the best estimate of expected inflation. The AER concluded:[328]

> *The AER's approach to forecasting inflation in this final decision has been in response to an acceptance that the previously ubiquitously used Fisher equation may not currently produce realistic inflation forecasts at this time, due to a bias in indexed CGS yields caused by the scarcity of these bonds. The AER considers that a market based estimate derived from a robust methodology would be preferred to any other alternative method, as the former typically results in a greater degree of certainty and objectivity, however, it is not possible to use such a method at this time…*

> *The AER has determined that a methodology that is likely to result in the best estimates of expected inflation is to reference the RBA's short term inflation forecasts, that currently extend out two years, and to adopt the mid-point of the RBA's target inflation band beyond that period (i.e. 2.5%).*

UE agrees with the AER that a market-based estimate of inflation is preferable to an estimate based on the RBA forecasts and target range. A market-based estimate is more likely to be consistent with expectations of inflation reflected in the nominal rate of return, and more likely to be reflective of actual inflation over the regulatory period.

Further, the limitations that applied to the Fisher equation method in 2008 no longer apply. Dr Hird notes that during the period from 2006 to late 2008 the indexed CGS market was much smaller than today, and this shortage of supply combined with high demand were pushing up indexed CGS prices and pushing down real yields, with the effect that Fisher equation estimates were overstated.[329] However Dr Hird explains that since that time the supply of indexed CGS has increased considerably, thus alleviating concerns regarding the accuracy of the breakeven forecasting method:[330]

> *At that time the Australian Office of Financial Management was not issuing new indexed linked securities and there were doubts about its commitment to maintain a supply of these bonds into the future. However, since then the AOFM has recommenced issuance of these bonds and the stock of bonds have increased by more than 400% and the number of different maturity dates have more than doubled from 3 to 7. The AOFM has also announced the imminent issuance of a new 2040 or 2045 CPI indexed bond.*

> *On this basis I consider that the shortage of supply of these bonds which led to breakeven inflation overstating expected inflation prior to 2009 is no longer a material concern. In any event, to the extent that it this was a material concern it would imply that breakeven inflation would be overestimating expected inflation which, if true, would suggest the AER's methodology (which forecasts higher inflation than breakeven inflation currently) was overestimating by even more.*

In recent years, the current AER method has delivered similar outcomes to the Fisher equation method, because market expectations have been broadly in line with the RBA's forecasts and target range. Therefore, until now, there has been no pressing need for the AER to change its inflation forecasting method.

However there is now a material divergence between the RBA forecasts / targets and market-based measures of inflation expectations. There has also been a material divergence between the RBA forecasts / targets and out-turn inflation over the past year, as shown in Table 6.1 above.

During the development of the 2013 rate of return guideline, forecasts produced using the Fisher equation were close to those produced by the AER's methodology (see Table 9). Therefore, at that time, it was

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[328] AER, *Final decision: SP AusNet transmission determination 2008-09 to 2013-14*, January 2008, pp 105-106.

[329] CEG, *Measuring expected inflation for the PTRM*, June 2015, p 7.

[330] CEG, *Measuring expected inflation for the PTRM*, June 2015, p 7.

unsurprising that stakeholders endorsed the continuation of the current approach when asked their views. The situation has since changed materially and the AER should not rely on outdated stakeholder support for its approach to satisfy itself that its approach is appropriate in the current environment. It is also worth noting that those views where never incorporated into the final guideline.

The evidence demonstrates that over the past year, actual inflation has been significantly lower than RBA forecasts and well below the RBA's target band (Figure 6).

Figure 6: Actual inflation vs prior year RBA forecast and RBA target band[331]
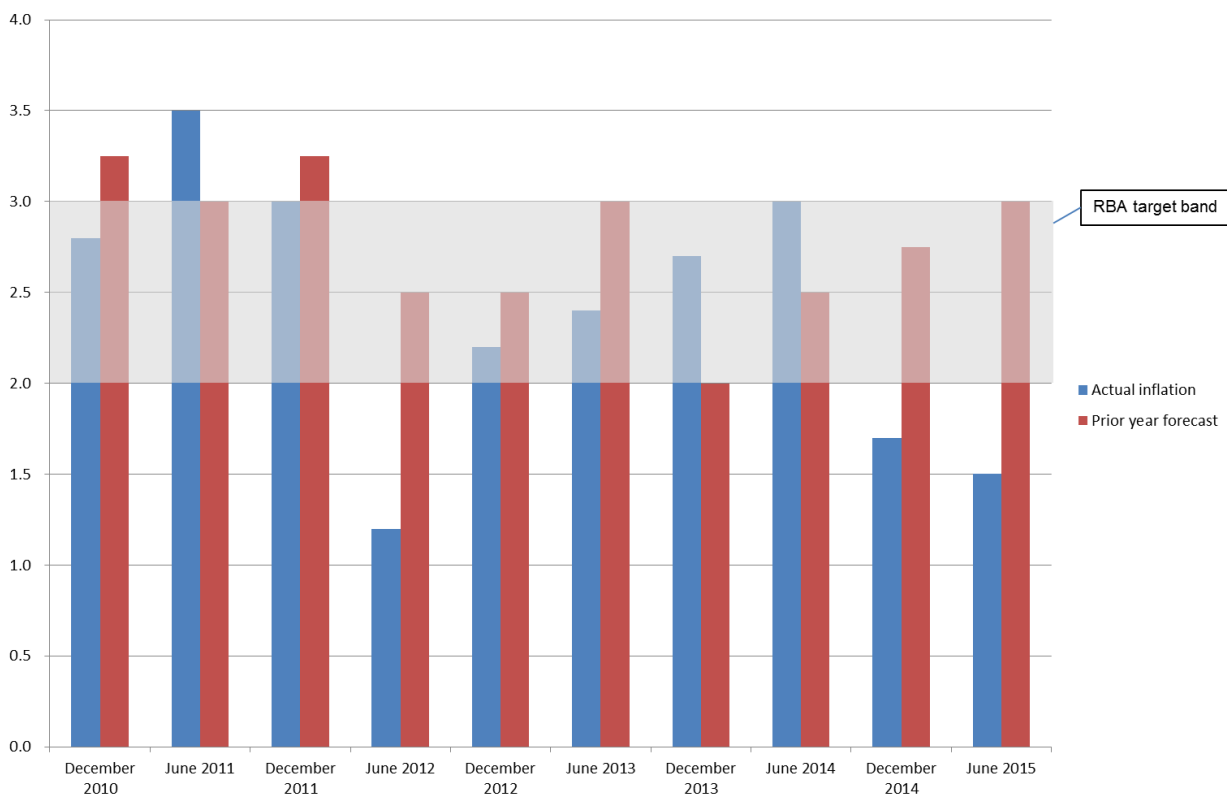
Further, Dr Hird explains that over the medium term, it is more likely that actual inflation will be below the mid-point of the RBA's target range. Dr Hird notes that, with the RBA cash rate at record low levels, the power of monetary policy to spur economic growth and increases in the inflation rate is now more limited. Dr Hird concludes:[332]

> *In this context, it is reasonable to expect that investors perceive an asymmetry in the probability that inflation will be above/below the RBA's target, at least in the medium term. This means that, even if the 'most likely' estimate is for expected inflation to average 2.5% in the medium to long term, this is not the mean (probability weighted) estimate. That is, there is more downside than upside risk to inflation.*

This implies that it is no longer reasonable to expect inflation to revert to the middle of the RBA target range over the medium term. Accordingly, in current market conditions, a methodology that assumes medium term inflation would be at or around the mid-point of the RBA target range (as the current AER method does) is likely to over-estimate forecast inflation.

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[331] Actual inflation data reflect the annual change in CPI over year to June / December (as relevant), as reported by the ABS. The prior year forecast for each December and June quarter is the RBA forecast for the relevant quarter, as set out in the RBA's Statement on Monetary Policy for May of the prior financial year (e.g. for the December 2014 and June 2015 quarters, the prior year forecast is as set out in the RBA's Statement on Monetary Policy for May 2014).

[332] CEG, *Measuring expected inflation for the PTRM*, June 2015, p 10.

We therefore consider that now is an appropriate time for the AER to revert to the Fisher equation method for forecasting inflation as the better forecast method. Since the Fisher equation method provides a market-based estimate of inflation, use of this method will:

- promote consistency between the inflation forecast used to make adjustments to cash flows and the forecast of inflation implied in the nominal rate of return;

- provide for an inflation forecast that is more likely to be reflective of actual inflation over the regulatory period; and

- provide businesses with a reasonable opportunity to recover their efficient costs over the long-term, since the inflation forecast used to calculate deductions from the revenue allowance will be more consistent with actual inflation, which is used to roll forward the RAB over time.

UE proposes to use the CEG implementation of the Fisher equation method, which places 60 per cent weight on a 5-year inflation forecast and 40 per cent weight on a 10-year forecast.[333] CEG explains that a 5-year forecast should be used for indexation of the portion of the RAB that is assumed to be debt financed, since the business' debt financing obligations over the 5-year regulatory period are in nominal terms. However for indexation of the equity-financed component of the RAB, a 10-year forecast should be used in order to effectively convert the 10-year nominal return on equity to a real return on equity.

UE also adopts CEG's recommendation to substitute actual inflation into the 5-year forecast used for indexation of the debt-financed portion of the RAB, where actual observations are available.[334]

UE therefore proposes to apply an inflation forecast of 2.01 per cent, based on an application of the Fisher equation method over the 20 business days to 30 September 2015.

6.4   AER proposal for separate consultation on the inflation forecasting method

In the Preliminary Determination the AER states that, going forward, it would consider a change to inflation forecasting in accordance with the consultation processes mandated by the NER. The AER also suggests that the next rate of return guideline review may be a suitable process for also reviewing the inflation forecasting method.[335]

It is not clear to UE why a change to the inflation forecasting method could only be considered as part of a separate consultation process (if that is what the AER is suggesting) or why it could not be considered by the AER as part of making its distribution determination for UE.

UE considers that the AER must consider the appropriateness of the inflation forecasting method at the time of each distribution determination. This is because:

- the NER require that the annual revenue requirement for each regulatory year include an adjustment equal to the amount by which the RAB is adjusted for inflation in that year,[336] and it is therefore necessary for the AER to determine a forecast of inflation, as an input or value to be used in its decision on the annual revenue requirement;

- the NER also require that, as part of a building block determination, the AER specify appropriate methods for the indexation of the regulatory asset base;[337]

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[333] CEG, *Measuring expected inflation for the PTRM*, June 2015, section 3.

[334] CEG, *Measuring expected inflation for the PTRM*, June 2015, pp 24-25.

[335] Preliminary Determination, pp 3-256 – 3-257.

[336] NER, cl 6.4.3.

[337] NER, cl 6.3.2(a).

- the AER's distribution determination is predicated on a decision on the annual revenue requirement for each regulatory year, which is to include an adjustment equal to the amount by which the RAB is adjusted for inflation in that year;[338]

- the AER's distribution determination is also predicated on a decision as to appropriate amounts, values or inputs to be used in determining the annual revenue requirement for each regulatory year, which necessarily include a forecast of inflation for each year.[339]

UE understands that the AER may be concerned that, since the PTRM is required to include a method for estimating inflation, the only way in which the forecasting method could be changed is through an amendment to the PTRM.

If this were to be the AER's concern, UE considers that it would be unfounded. The NER do not require that the inflation forecast used to calculate the "indexation of the regulatory asset base" building block be determined in accordance with the inflation forecasting method specified in the PTRM. On the contrary, the NER states that as part of a building block determination, the AER must specify appropriate methods for the indexation of the regulatory asset base.[340] Further, as noted above, the AER's distribution determination is predicated on a decision as to appropriate amounts, values or inputs to be used in determining the annual revenue requirement for each regulatory year, which necessarily include a forecast of inflation for each year.[341] The fact that an inflation forecasting methodology is specified in the PTRM does not relieve the AER of its duty under the NER to determine an appropriate forecast of inflation for each regulatory year of the 2016 regulatory period.

The AER has not previously expressed any reservation about considering a change to the inflation forecasting method as part of a revenue determination process. On the contrary:

- during the 2013 Rate of Return Guidelines process, the AER deferred consideration of the inflation forecasting method, on the basis that it would be considered in upcoming determinations. The AER stated in its explanatory statement:[342]

- As discussed with stakeholders, the final guideline does not cover our position on transactions costs or forecast inflation. These issues will need to be considered in upcoming determinations.

- as noted above, the AER has previously adopted an inflation forecasting methodology that was different to that set out in its PTRM and applied in previous determinations. In its January 2008 determination in respect of SP AusNet the AER did not apply the Fisher equation method, even though the Fisher equation method had been applied up until that time, and was the method included in the PTRM at the time SP AusNet submitted its revenue proposal.[343] The AER stated that in considering SP AusNet's revised proposal, it was guided by the principle that the appropriate approach to forecasting inflation should be a methodology that the AER determines is likely to result in the best estimates of expected inflation.[344]

UE considers that, in light of the evidence that the AER's current method is not producing accurate forecasts of inflation, the AER must review its inflation forecasting method as part of making its distribution determination for UE. This would be consistent with the AER's message to stakeholders during the 2013 Rate of Return Guidelines process.

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[338] NER, cl 6.12.1(2).

[339] NER, cl 6.12.1(10).

[340] NER, cl 6.3.2(a).

[341] NER, cl 6.12.1(10).

[342] AER, *Explanatory Statement: Rate of Return Guideline*, December 2013, p 21.

[343] AER, *Final decision: SP AusNet transmission determination 2008-09 to 2013-14*, January 2008, pp 105-106. As noted by the AER, the first PTRM (which applied until September 2007) used the Fisher equation to estimate inflation (in the 'WACC' worksheet, cell F9).

[344] AER, *Final decision: SP AusNet transmission determination 2008-09 to 2013-14*, January 2008, p 102.

7.   Interrelationships

The NER require that, in determining the allowed rate of return, regard be had to any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.[345]

This section addresses relevant interrelationships involving the financial parameters discussed above.

7.1   Need for consistent application of the ARORO

We consider that the return on equity and return on debt need to be estimated on the basis of a consistent approach to the ARORO.

As discussed in section 2.2 above, UE sees the ARORO as having two key elements:

- first, the ARORO requires identification of the level of risk that applies to the DNSP in respect of the provision of standard control services;

- secondly, the ARORO requires estimation of efficient financing costs for a BEE facing a similar degree of risk.

Our proposed approaches to estimating the return on equity, return on debt and the overall rate of return apply this framework consistently. Specifically:

- we consider that the relevant degree of risk, for the purposes of estimating both the return on equity and return on debt, is that faced by entities operating in a workably competitive market providing services similar to standard control services within Australia;

- in estimating both the return on equity and return on debt, our objective is to estimate the efficient financing costs of a BEE facing a similar degree of risk. This requires consideration of what financing practices would be engaged in by businesses facing the relevant degree of risk, operating in a workably competitive market. This is because it is ultimately competition that drives efficient behaviour. For example, our proposed approach to estimating the return on debt reflects financing practices that would be engaged in by businesses facing the relevant degree of risk, operating in a workably competitive market. Similarly, our estimates of the return on equity are benchmarked against returns required by the market for investing in businesses with a similar degree of risk, including those operating in competitive markets;

- where we are required to estimate risk parameters, we do so on the basis of samples of businesses facing a similar degree of risk to that faced by entities operating in a workably competitive market providing services similar to standard control services. The businesses included in these samples need not be providers of regulated services, but they must provide services that are sufficiently similar. For example in estimating the equity beta, our proposed sample of businesses includes businesses operating in workably competitive markets providing services similar to standard control services. Similarly, in estimating the return on debt, yields are measured using benchmark indices for the relevant credit rating band, with those indices reflecting bond yields across a wide range of businesses within that credit rating band, including businesses operating in competitive markets (i.e. a range of different businesses facing a similar degree of risk as assessed by credit rating agencies);

- our assumed gearing ratio of 60 per cent is broadly consistent with evidence of gearing ratios for businesses operating in a workably competitive market providing services similar to standard control services. If anything, the evidence suggests that 60 per cent may overstate gearing levels for such

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[345] NER cl 6.5.2(e).

businesses, meaning that adopting this gearing assumption is likely to lead to a conservative (low) estimate of the overall rate of return.[346]

Thus, our proposed approaches to estimating the return on equity, return on debt and the overall rate of return, as set out in section 8, are both consistent with the approach to the ARORO described in section 2.2 above.

7.2   Interrelationship between the return on equity and the value of imputation credits

There is a well-recognised interrelationship between the return on equity and the value of imputation credits. Since the MRP needs to be grossed up for the value of imputation credits, a higher theta estimate implies a higher required return on equity. This interrelationship is explicitly recognised in the NER.[347]

This interrelationship is accounted for in this submission and the supporting expert advice. As explained by Frontier Economics[348], the proposed MRP estimate of 7.9 per cent is based on AER estimates of the MRP from historical excess returns and the DGM that assume a value for theta of 0.6. However Frontier notes that the impact on these estimates of adopting a lower theta value (e.g. a value of 0.35) is relatively small, particularly when compared to the effect of variation in the other factors that affect the estimate of the MRP. Frontier considers that the AER's estimates of the MRP from historical excess returns and the DGM are conservative in that the AER's historical returns estimate does not reflect the NERA correction for historical dividends and the AER's DGM estimates are based on ad hoc reductions to long-term GDP growth rates. Frontier notes that correcting for these effects would more than offset any adjustment needed to account a reduction in the estimate of theta from 0.6 to 0.35.

If the AER were to reduce its estimate of theta to 0.35, while maintaining its current approach to estimating the MRP, no adjustment to the AER's MRP estimate would be necessary. This is because the top of the AER's range of estimates of the historical average MRP (used by the AER as its MRP point estimate) would remain at 6.5%.[349]

7.3   Interrelationships with the inflation forecast

As noted above, there is an interrelationship between the method for forecasting inflation and the amount that is deducted from the annual revenue requirement for indexation of the regulatory asset base, and between the allowed rate of return and the method for forecasting inflation.

The first of these interrelationships is a direct interrelationship. If the forecast of inflation is too high – that is, if actual inflation turns out to be materially lower than had been forecast – the deduction from the annual revenue requirement will be too large. This will lead to under-recovery of costs over the long-term, since the

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[346] Frontier Economics analyses average gearing ratios across a sample of listed Australian infrastructure firms, including both regulated and unregulated businesses. Frontier Notes that, while the mean gearing ratio across this sample is slightly below 60%, this is almost entirely due to the very low leverage levels of two entities – Aurizon (which began its life as a public company with very little debt and has stated its intention to increase leverage over time) and Qube (which is in the process of seeking to acquire Asciano and has maintained low leverage to preserve borrowing capacity). Refer to: Frontier Economics, *Estimating the equity beta for the benchmark efficient entity*, January 2016, p 21.

[347] NER, cl 6.5.2(d)(2)

[348] Frontier Economics, *The required return on equity under a foundation model approach*, January 2016, pp 34-37.

[349] For reasons set out in section 4.4, UE does not agree with the AER's approach to estimating the MRP. However we note that if the AER were to maintain the same approach to estimating the MRP while lowering its estimate of theta, its estimate of the MRP would not need to change. NERA provides estimates of the historical average MRP based on theta assumptions of 0.35 and 0.6. Over the longest available time period, NERA estimates a historical average MRP of 6.65 per cent using a theta assumption of 0.6, and 6.56 per cent using a theta assumption of 0.35 (NERA, *Historical Estimates of the Market Risk Premium*, February 2015, pp 42-43). Thus, NERA's analysis shows that if the AER were to reduce its theta estimate from 0.6 to 0.35, the top of the range for the historical average MRP (with the AER uses as its MRP point estimate) would remain at approximately 6.5 per cent.

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amounts deducted from the annual revenue requirement will be larger than the amount by which the asset base is increased by inflation at the end of the regulatory period (this being based on <u>actual</u> inflation[350]).

The second of these interrelationships is more indirect. As noted above, the deduction from the annual revenue requirement for indexation is needed to avoid "double counting" of inflation. In effect, inflation is counted twice (i.e. because under the NER, a nominal rate of return[351] in combination with a real (inflation-adjusted) RAB[352]) and deducted once. It is therefore important that each time it is counted or deducted, a consistent approach to forecasting inflation is used.

The forecast of inflation used to calculate the revenue deduction therefore needs to be:

- accurate (i.e. as close as possible to actual inflation, which is used to roll forward the RAB at the end of the regulatory period); and

- consistent with the implied forecast of inflation in the nominal rate of return.

It is for this reason that UE proposes to adopt a market-based estimate of forecast inflation. Using a market-based method ensures consistency with how the allowed rate of return is estimated, and in current market conditions, will provide for a more accurate forecast.

7.4 Claimed interrelationship between the approach to the return on debt and equity beta

In the Preliminary Decision, the AER suggests that there may be an interrelationship between the choice of method for estimating the return on debt (in particular, whether a trailing average method is adopted) and the equity beta. It is suggested that, to the extent there is a degree of "mismatch risk" due to the choice of method for estimating the return on debt (i.e. a risk that the allowed return on debt does not reflect the debt financing costs of a BEE), this ought to be accounted for in estimating the equity beta.[353]

UE does not accept that there is this interrelationship between the transition method for estimating the return on debt and the equity beta. The risk of a mismatch between the regulatory allowance for the return on debt and efficient financing costs is not a non-diversifiable systematic risk.

Chairmont, in its report to the AER, makes this point clear:[354]

> Interest rate risk per se is a systematic risk for all or most companies in the market. However, the form of interest rate risk applicable to NSPs in the 'on-the-day' regime was something quite specific to firms under that regulatory umbrella. Most industries would have had greater total interest rate risk than regulated NSPs, as most enterprises do not have the benefit of a direct link between the interest rate impact of their revenues and their costs which NSPs do. This places NSPs in a better position than an unregulated business, as the allowance is in effect a revenue item that they can manage to, even with the uncertainties of the DRP mismatch component.
>
> Ex-post results for the DRP mismatch would have impacted the profit results of the NSPs, which may then have caused some benefit or drag to the share price of the specific NSP. However, it may be argued that this is not a systematic risk. The variability of cashflow is specific to the industry and the individual NSP and may be diversifiable by investors. If this is so, then the required return on equity would not be affected by the DRP mismatch risk as it was a diversifiable specific risk rather than a

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[350] NER, cl 6.5.1(e)(3).

[351] NER cl 6.5.2(d)(2).

[352] NER, cl 6.5.1(e)(3).

[353] Preliminary Decision, p 3-176.

[354] Chairmont, *Financing Practices Under Regulation: Past and Transitional*, 13 October 2015, p 40.

component of market systematic risk. Therefore, the return on equity should be the same regardless of the existence of DRP mismatch risk and beta should not change because of it.

It follows that any change in the AER's approach to estimation of the return on debt (including any change to the transition method) will not affect the return on equity.

8.   Conclusion

For reasons set out above, UE does not agree with the AER's approach to estimating the allowed rate of return, the value of imputation credits and forecast inflation.

Our position on the correct approach to estimating each parameter is set out below.

8.1   Return on debt

For reasons set out in section 3, it is our primary position that the trailing average approach to estimating the return on debt should be implemented immediately, with no transition. This is necessary to ensure that the return on debt allowance reflects the efficient financing costs of a BEE – i.e. the cost of financing a staggered portfolio of fixed-rate debt.

Alternatively, even if the AER's view is correct that it is necessary to have regard to the financing practices of a regulated BEE in response to previous regulatory methodologies and settings, the appropriate approach would be to adopt either:

1   a hybrid form of transition with the assumed level of hedging based on evidence as to the optimal hedging ratio; or

2   a hybrid form of transition with an assumption of 100% hedging of the base rate, if evidence supported this assumption.

Of these two alternative positions, the first is clearly preferable. If the AER is correct that efficient financing practice involves some degree of hedging of the base rate, it is then necessary to consider to what degree hedging would be efficient, and a transition can only apply to the base rate component to the extent that the BEE used hedging to match the previous on-the-day approach to setting the allowed return on debt. The evidence demonstrates that the efficient level of hedging under the previous on-the-day approach was around one third.

Estimates for the first year of the regulatory period based on each of the three alternative approaches are set out below. These estimates are based on a 10 year benchmark term of debt and credit rating of BBB to BBB+, and as detailed in the report and supporting material prepared by Esquant submitted with this Regulatory Proposal.

Table 8.1: Return on debt for the first year of the regulatory period

Transition method	Return on debt for first year
No transition (immediate application of trailing average method)	7.80%
Hybrid transition, assuming an optimal hedging ratio	7.06%
Hybrid transition, assuming 100% hedging	**5.57%**

UE proposes that the return on debt be updated in subsequent years of the regulatory period in accordance with the method and formulae set out in section 3.6.

UE's proposal represents a departure from the methods for estimating the return on debt set out in the Rate of Return Guideline. Our reasons for departure are set out in section 3 above.

8.2 Return on equity

Our preferred approach to estimating the return on equity is as set out in our Regulatory Proposal. This approach has regard to all relevant models and evidence, and uses this material for its proper purpose. Each of the relevant return on equity models is independently used to derive an estimate of the required return on equity, while other relevant evidence is used to determine the best estimate of each parameter within these models. The outputs from each relevant model are then combined to arrive at a return on equity estimate. Based on updated data to reflect prevailing market conditions, this approach leads to an estimate of prevailing return on equity of 9.89 per cent.

However if the AER proposes to continue relying solely on the SL CAPM to estimate the return on equity, the AER must change the way it implements this model. The way in which the SL CAPM is applied in the Preliminary Decision leads to a return on equity that is not consistent with the ARORO and does not reflect prevailing market conditions. The AER does not properly recognise the weaknesses of the SL CAPM, nor does it account for these weaknesses in its application of the model. Further, the AER's practice of applying an effectively fixed risk premium to a variable risk-free rate is not appropriate in current market conditions, since it leads to the return on equity moving inappropriately in lock-step with changes in the risk-free rate.

The accompanying expert report of Frontier Economics outlines an alternative approach that involves properly adjusting SL CAPM parameters to deliver a return on equity that contributes to the achievement of the ARORO and reflects prevailing market conditions. This involves:

- making a transparent and empirically based adjustment to the equity beta estimate to account for the known shortcomings of the SL CAPM, particularly low beta bias; and

- deriving the MRP in a way that gives appropriate weight to measures of the prevailing (current MRP).

This leads to an estimate of prevailing return on equity of 10.05 per cent in the averaging period (20 business days to 10 December). This is calculated using the SL CAPM with an equity beta of 0.91, MRP of 7.8 per cent and a risk-free rate of 2.94 per cent.

For reasons set out in section 4, UE considers that either the multi-model approach or the 'adjusted SL CAPM' approach (as described above and in section 4.6) would be clearly preferable to the approach taken in the Preliminary Decision. For the purposes of this submission, we adopt the adjusted SL CAPM approach.

Either of the alternative approaches put forward by UE would represent a departure from the methods for estimating the return on equity set out in the Rate of Return Guideline. Our reasons for departure are set out in section 4 above.

8.3 Overall rate of return

UE maintains its proposed gearing ratio of 60 per cent. Applying this gearing ratio and the estimates of the return on debt and return on equity set out above leads to a nominal vanilla WACC of 8.70 per cent in the averaging period (20 business days to 10 December).

8.4   Gamma

As explained in section 5 above, when correctly interpreted, the evidence in relation to gamma demonstrates that:

- the distribution rate for the BEE is approximately 0.7;

- the upper bound for theta, as indicated by equity ownership rates and tax statistics, is approximately 0.45. This implies an upper bound for gamma of 0.32;

- the best estimate of the value of distributed imputation credits, <u>on the AER's conceptual framework</u> (i.e. ignoring personal costs), is 0.4. This implies a gamma of 0.28;

- the best estimate of the value of distributed imputation credits, based on a proper application of the NER, is 0.35. This implies a gamma of 0.25.

For these reasons, UE maintains its proposal for a gamma of 0.25, based on a distribution rate of 0.7 and a theta estimate of 0.35.

Our proposal represents a departure from the methods for estimating gamma set out in the Rate of Return Guideline. Our reasons for departure are set out in section 5 above.

8.5   Forecast inflation

For reasons set out in section 6 above, UE proposes that an alternative forecasting method, based on market data, be adopted. The alternative method is referred to as the 'Fisher equation' method, or the 'breakeven inflation' forecasting method. Under this method, an estimate of expected inflation is derived using a simplified version of the Fisher equation, based on the difference in yields on nominal and inflation indexed CGS of the same maturity.

Based on this alternative method, the current best estimate of forecast inflation is 2.01 per cent.