Network Industry Submission

AER Proposed Determination

Review of the Weighted Average Cost of Capital (WACC) parameters for electricity transmission and distribution

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1 Overview

Joint Industry Associations' high-level response to the AER's proposed WACC parameters for electricity networks

Purpose and Structure of this Overview

This overview document supplements the detailed submissions and supporting expert reports lodged by the JIA in response to the AER's proposed WACC parameters for the electricity networks. It provides an overview of the JIA's response in a number of key areas. It is structured as follows:

- The second section of this chapter provides an overview of the key provisions of the National Electricity Law and Rules that govern the AER's WACC review, and considers the implications of these for the conduct of the WACC review. It also sets out the JIA's observations on the extent to which we consider the AER has satisfied the requirements in the course of the review so far.

- The third section of this chapter discusses the strength of the evidence that the JIA has supplied and our concerns we have that the insights this material provides have not been properly recognised in the proposed determination, which is consequently flawed.

- The fourth section of this chapter takes a broader view by examining the extent to which the AER's proposals reflect a full and proper consideration of the very real impact of the global financial crisis on our members' businesses and on this decision.

- The fifth section of this chapter explains the reaction of investors to the AER's WACC proposals, and demonstrates that the AER's proposals have led to a heightening of regulatory risk and erosion of stability of the regulatory regime.

- The sixth section of this chapter discusses the impact of the AER's proposals on incentives for efficient and innovative investment in electricity networks in the context of recent comments by Infrastructure Australia and in the context of recent Government policy.

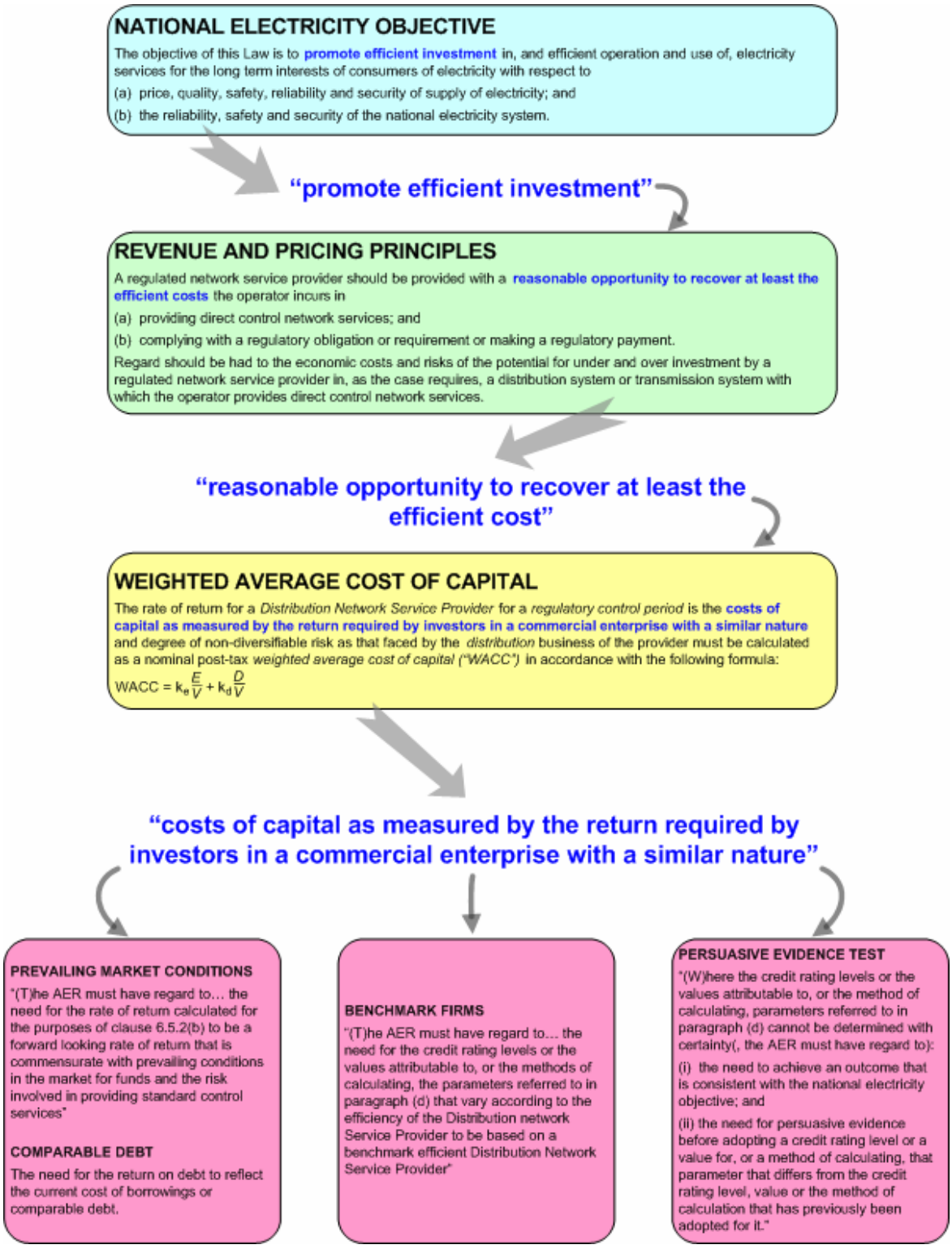
- The seventh section of this chapter comments on the likely impacts of the AER's proposals on the achievement of the Government's climate change mitigation objectives.

- The eighth section of this chapter sets out concluding remarks.

Overview of the legal framework and its implications for the WACC review

The Rules require the AER to review the WACC parameter values within the CAPM framework. Whilst this task requires a detailed examination of each WACC parameter, the National Electricity Law and Rules also impose an overarching set of objectives and other guiding provisions. The diagram below provides a summary of the key provisions that govern the AER's

Figure 1.1: Regulatory Framework



WACC review. It also depicts the hierarchical inter-relationship between these provisions within the context of the AER's WACC review.

The diagram depicts the hierarchy of provisions that govern the AER's decision-making in its WACC review. The provisions have been carefully developed so that each lower rung in the hierarchy supports the achievement of the outcomes specified in the higher rungs.

At the lowest rung, each WACC parameter is subject to uncertainty and the AER exercises discretion and judgement when it decides on a value for these parameters. The exercise of the AER's discretion must be guided by the National Electricity Law and Rules, including the National Electricity Objective. A correct package of CAPM parameters is only established when the discretions and judgements at the individual parameter level are exercised in accordance with the over-arching, higher levels of the regulatory hierarchy.[1]

In relation to WACC, all regulators in Australia to date have adopted a pragmatic approach to CAPM that gives substantial weight to the need to provide a stable environment that is conducive to delivering much needed new investment. Accordingly, a broad consensus regarding the WACC parameters has developed across jurisdictional regulators in the energy sector.

Against this background, the JIA considers that the AER's overall conclusions on the cost of capital reflect a significant departure from the previously determined WACC parameters, and these conclusions each have a negative financial impact on electricity network companies. For instance:

- the equity beta will be reduced from 1.0 to 0.8;
- the value of imputation credits (gamma) will be increased from 0.5 to 0.65;
- the benchmark credit rating will be increased from BBB+ to A-;
- the term of the risk free rate will be reduced from 10 years to 5 years, so that it matches the 5 year regulatory period; and
- MRP will be maintained at 6.0 when persuasive evidence exists to support a higher value particularly given the value attributed.

It is particularly noteworthy that no previous regulatory decision in the energy sector has adopted such an extensive, adverse reduction in the WACC parameters. As discussed in 'The impact of the global financial crisis' below, these changes have occurred at a time of heightened uncertainty as the global financial crisis deepens and Australia enters a recessionary period.

In light of the above, the JIA urges the AER to re-examine its findings in relation to the cost of capital, having proper regard to investors' reasonable expectations and the forward looking cost of capital. In this context, it is worth emphasising that:

- the Rules state that, in conducting its WACC review, the AER must have regard to the need for the rate of return calculated to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and the risk involved in providing distribution services; and

[1] This is analogous to the principle in re Michael (the DBNGP Case) in which each discretion at a lower, more specific level, needed to be exercised consistent with principles expressed at a more general level.

- The scope of the AER's WACC review is constrained, quite intentionally, so that the AER can only amend the WACC parameters if there is persuasive evidence to do so.

Against this backdrop, the JIA is very concerned that:

- the AER's explanatory statement fails to appropriately recognise and, therefore, give proper weight to the provisions contained in the Rules and the Law to guide its judgements and discretions in determining WACC parameters;

- in particular, the AER's explanatory statements on WACC have failed to calculate a forward looking rate of return that is commensurate with prevailing conditions in the market for funds;

- the AER has incorrectly applied the persuasive evidence test in not giving substantive pre-eminence to values or methods previously adopted;

- the AER has applied different and inconsistent versions of the "persuasive evidence" requirement from parameter to parameter using an insurmountable threshold in some places to reject as inadequate the evidence provided by the JIA, while in respect of other parameters its own consultants evidence is accepted without applying any substantive threshold of significance;

- as a result, the AER has created an environment of uncertainty and unpredictability, which appears to be contrary to the rationale for the Rules' provisions in relation to WACC and the regulatory framework more generally; and

- the AER has proposed changes to the WACC methodology and the benchmark cost of capital that have surprised the financial markets, and as a result, regulatory risk has been heightened.

As explained in 'The impact of the financial crisis' below, it is also essential that the AER recognises the changing nature of investment – discretionary investment in leading edge technology in response to climate change and associated challenges – and the implications of this new investment for the benchmark cost of capital, particularly in the context of the present global financial crisis.

These matters are discussed in further detail below.

The strong evidentiary support for our submission

The JIA prepared substantial, thoroughly researched material to assist in the decision making process. This material included factual material, empirical studies and analysis at an advanced conceptual level. That work was prepared with a conservative approach and our position concerning the parameters was a moderate one. Our evidence could have supported a much more aggressive request for upgrades of parameters.

The AER, however, has rejected the substantial majority of this material and in each case the rejection of this evidence has involved errors of fact and errors of analysis.

We were also disappointed that the veracity of our factual material was questioned and that parts of our expert material were not fully considered on the basis that it could be accorded no weight until every aspect could be tested. We were struck by the contrast in approach with the AER's own consultants' work being accepted without being tested even when the material, and the AER's analysis of it, contained errors.

Notwithstanding those sentiments, we are determined to engage constructively with the AER and persuade you of the correctness of the material we have filed. To that end, we have assembled a range of new detailed direct witness evidence, further detailed empirical analysis including a peer review and conceptual pieces from leading analysts and researchers in addition to information provided on a confidential basis to the AER. We would also welcome a more direct and thorough engagement between the JIA and the AER so that together issues can be fully explored and the correct decisions reached.

The impact of the global financial crisis

Regardless of the changed global financial conditions there is a strong basis to maintain (if not improve) at least the previously adopted values for the WACC parameters. It is all the more important to do so in the context of the global financial crisis.

The crisis has profoundly changed the financial environment in which the electricity transmission and distribution businesses must raise capital. Commenting on the impacts of the crisis, the authors of a report commissioned recently by the AEMC[2] stated:

> The magnitude of the credit crisis will leave a step change to a more conservative approach to capital allocation which is likely to last a generation, reducing debt allocation and requiring additional equity to be committed to projects. In the absence of the additional equity, the projects will not proceed. Where the equity capital is available it will come at a higher price as a result.

In addition to this, it is expected that there will be an important structural shift in the allocation of risk which should be reflected in a shift of the market risk premium:

> There will be an institutionalising of a more conservative approach to the provision of capital in response to the current credit crisis which will transfer risk to equity and increase the risk premium attached to investment in general and for the energy sector.[3]

The reasons for this are identified in the S3 Advisory report as follows:

> Risk premiums for debt and equity have increased for a number of reasons including:
>
> - A retreat from the underestimation of risk over recent years, which some in the financial markets attribute to excess global liquidity;
>
> - Debt providers now reducing their risk exposure and requiring equity providers to take more of the risk, therefore increasing equity risk premiums;

[2] David Green, S3 Advisory, *Final Report to AEMC: Financing of future energy sector investments in Australia- The potential effects of the Carbon Pollution Reduction Scheme and Renewable Energy Target,* December 2008, page 13.
[3] Ibid, page 13.

- Greater ability by providers of capital to be more selective in allocations of their capital, therefore requiring more reward for lower risk;

- Equity providers are risk shy given the losses faced by some equity providers since the credit crisis began;

- Both debt and equity providers being increasingly risk averse, therefore requiring higher rewards for any risk they take;

- As a response to the high demand for the limited available capital; and

- A movement back to fundamentals such as investing in the assets as opposed to hybrid instruments.[4]

World leaders have described the global financial crisis as "the worst financial crisis in history"[5] and a "crisis unlike any we have seen in our lifetime"[6]. In this environment, the AER proposes to reduce the regulatory WACC to a level significantly below the levels provided in the recent past – a period absent of financial turmoil and characterised by highly stable financial markets and a prolonged period of sustained economic growth. It is extremely difficult to see how providers of capital would be attracted to invest in Australian electricity networks if the AER's proposal were to be implemented. Indeed, the S3 Advisory report commissioned by the AEMC makes some observations that contrast sharply with the views underpinning the AER's WACC proposals:

> Capital providers (debt and equity) have a choice of where their capital will be allocated. If capital providers are considering an investment in infrastructure they will compare the various infrastructure classes (eg transport, energy) and decide where the best returns are for the lowest risk.
>
> The strong view of Finance Market Practitioners and a number in international investors with interests in the energy sector is that Australia will find it difficult to attract sufficient capital to the domestic serving sector in aggregate…given the fallout of the credit crisis.[7]

In response to the JIA's concerns about the global financial crisis, the AER's explanatory statement comments:

> [W]hile it is obviously important to be cognisant of the current volatility in financial markets, the AER considers it equally important not to over-react to current market conditions in setting rates of return applicable over the period 2010-18. Rather, the AER intends to take a longer term perspective in setting rates of return for energy network businesses over the period 2010-2019.

In effect, the AER is purporting to look beyond the current financial crisis by adopting WACC parameters as if the current market conditions were absent. In fact there is evidence that, even after the crisis abates there will be significantly changed conditions both concerning the compensation the market demands for taking risks and in the allocation of risk between equity and debt providers.

The AER's approach reflects its subjective judgment that on average market parameters over 2010-2019 will not be significantly influenced by current market conditions. Each year throughout the first half of that period certain of our members will have their individual resets

[4] Ibid, pages 22-23.
[5] Australian Prime Minister Rudd.
[6] US President Obama.
[7] David Green, S3 Advisory, *Final Report to AEMC: Financing of future energy sector investments in Australia- The potential effects of the Carbon Pollution Reduction Scheme and Renewable Energy Target*, December 2008, page 6.

undertaken. Even if the AER's forecast of the future is correct, and at some point during the period capital markets recover, that will be of no comfort or assistance to those members, and the end users in their network areas, who by then will already have had resets locked in capital programs based on WACC parameters that are out of step with the market.

Importantly, since the publication of the AER's WACC decision, a number of highly credentialed institutions and individuals have commented on the extent and depth of the global financial crisis. The following quotes illustrate that it would be inappropriate for the AER to continue to assume that substantial weight should not be given to the current financial crisis.

In its *Global Financial Stability Report* - Market Update, of January 2009, the International Monetary Fund, stated:[8]

> Risks to financial stability have intensified since October 2008. Macroeconomic risks have risen as global growth has fallen precipitously alongside a sharp slowdown of global trade. Credit risks have also risen as a deterioration of economic and financial conditions have resulted in rising loan losses. At the same time, the flight from risky assets and illiquid market conditions has increased funding costs, even as risk-free rates have declined with monetary easing.

In a speech given on 20 January 2009, Mervyn King, Governor of the Bank of England stated:

> Before last September, the world economy was slowing and at home the Monetary Policy Committee published a central projection of falling output in the United Kingdom in the third quarter. Inflation, though, was still rising. But after the failure of the American investment bank Lehman Brothers, there was a widespread collapse of confidence in the banking systems of the industrialised world... For the world economy as a whole, consensus forecasts of growth in 2009 have been revised down from 3% to just 1% since September.

The BIS Quarterly Review of December 2008[9] stated:

> Financial stability concerns took centre stage once again over the period between end-August and end-November. In the wake of the mid-September failure of Lehman Brothers, global financial markets seized up and entered a new and deeper state of crisis. As money market funds and other investors were forced to write off their Lehman-related investments, counterparty concerns mounted in the context of large-scale redemption-driven asset sales.
>
> The ensuing sell-off affected all but the safest assets and left key parts of the global financial system dysfunctional. With credit and money markets essentially frozen and equity prices plummeting, banks and other financial firms saw their access to funding eroded and their capital base shrink, owing to accumulating mark to market losses. Credit spreads surged to record levels, equity prices saw historic declines and volatilities soared across markets, indicating extreme financial market stress. Government bond yields declined in very volatile conditions, as recession concerns and safe haven flows increasingly outweighed the impact of anticipated increases in fiscal deficits. At the same time, yield curves steepened from the front end, reflecting repeated downward adjustments in policy rates.

RBA Governor Glen Stevens addressed the CEDA Annual Dinner in Melbourne on 19 November 2008, and stated:

> What had been for over a year a serious dislocation in international financial markets, but one which seemed to be being managed, turned quite suddenly into a very serious crisis during the

[8] http://www.imf.org/external/pubs/ft/fmu/eng/2009/01/pdf/0109.pdf
[9] http://www.bis.org/publ/qtrpdf/r_qt0812a.pdf

> weeks following the failure of Lehman Brothers on 15 September. In a breathtaking turn of events, the financial landscape changed dramatically, with the failure or rescue and effective nationalisation of a number of systemically important financial institutions in the United States, the United Kingdom and continental Europe. Share markets slumped, currencies moved abruptly, commodity prices continued their sharp decline and investors' appetite for risk contracted further.

On 6 November 2008 George Soros stated:[10]

> After periods of relative calm and partial recovery, crisis episodes recurred in January 2008, precipitated by a rogue trader at Société Générale; in March, associated with the demise of Bear Stearns; and then in July, when IndyMac Bank, the largest savings bank in the Los Angeles area, went into receivership, becoming the fourth-largest bank failure in US history. The deepest fall of all came in September, caused by the disorderly bankruptcy of Lehman Brothers in which holders of commercial paper—for example, short-term, unsecured promissory notes—issued by Lehman lost their money.
>
> Then the inconceivable occurred: the financial system actually melted down. A large money market fund that had invested in commercial paper issued by Lehman Brothers "broke the buck," ie, its asset value fell below the dollar amount deposited, breaking an implicit promise that deposits in such funds are totally safe and liquid. This started a run on money market funds and the funds stopped buying commercial paper. Since they were the largest buyers, the commercial paper market ceased to function. The issuers of commercial paper were forced to draw down their credit lines, bringing interbank lending to a standstill. Credit spreads—ie, the risk premium over and above the riskless rate of interest—widened to unprecedented levels and eventually the stock market was also overwhelmed by panic. All this happened in the space of a week.

In light of these comments by independent and respected observers, it is particularly pertinent to note that the Rules in relation to the WACC review require that the AER must have regard to:

> … the need for the rate of return to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and the risk involved in providing prescribed transmission services or standard control services (as the case may be) …

Whilst the AER has acknowledged that the debt premium is substantially higher as a result of the global financial crisis, the AER has not yet accepted that the cost of equity has also increased. Specifically, whilst reported historic returns may imply that the market risk premium (**MRP**) has fallen as a result of the global financial crisis, this evidence is contradicted by the asset prices and implied required returns exhibited in the financial markets now, which show that forward looking estimates of the MRP have increased dramatically. Significantly new evidence covering the severity of the crisis has emerged since we lodged our original Submissions and this needs to be taken into account in the AER's final decision. The final decision would be flawed if it did not take proper account of the forward looking MRP estimates in its final determination.

Regardless of the changed global financial conditions there is a strong basis to maintain (if not improve) at least the previously adopted values for the WACC parameters. It is all the more important to do so in the context of the global financial crisis.

The following section examines the reactions of investors to the AER's WACC proposals, and considers the implications of those proposals on investors' perceptions of regulatory risk.

[10] http://www.georgesoros.com/crisis-and-what-to-do110608

Heightened regulatory risk and erosion of stability of the regulatory regime

As already noted in 'Overview of the legal framework and its implications for the WACC review' above, the JIA considers that the AER has erred by taking an overly mechanistic approach to selecting CAPM parameters. In doing so, the AER has not properly considered the need for a stable and predictable regulatory regime. If a significant downgrading of the parameters occurs at the same time as the most significant financial realignment for decades, it will take substantially increased returns for a sustained period to repair investors' investment confidence. This is clearly evident from the negative reaction of the financial markets immediately following publication of the AER's proposed determination. In particular, on the day the AER published its proposed determination, UBS released the following advice to investors:

> *The AER has sharply lowered prospective regulated equity returns*
>
> A draft decision has cut the equity beta to 0.8 where 1.0 has been the norm and increased the franking gamma to 0.65 where 0.5 has been the universal norm. Coupled with the fall in bond rates from 6% in January to 3.7% (five year rates) the permitted return on equity falls from 12% to 8.5%. We cannot see equity investors investing for such a paltry return and therefore expect a sharp fall in capital expenditure.

The next day Macquarie Research released the following statement:

> *Event*
>
> The Australian Energy Regulator (AER) has issued its Draft Review of the weighted average cost of capital (WACC) parameters for electricity transmission and distribution assets for a five-year period from March 2009.
>
> *Action and recommendation*
>
> In our view, the Draft Decision on WACC parameters sends the wrong signal to both debt and equity markets for regulated utilities in Australia, creating an additional risk to asset returns in turbulent market conditions.

This concern arises because the headline effect on returns reflects that the AER has effectively imposed significant changes in the detailed WACC methodology. For example:

- In relation to gamma, the AER has assumed that the payout ratio is 1 and therefore has departed from the previously accepted Monkhouse approach;
- In relation to the term of the risk free rate, the AER has moved from a 10 year term to a 5 year term, even though 10 years was adopted by the Australian Competition Tribunal in the 2003 GasNet decision; and
- In relation to the benchmark credit rating and the debt premium, the AER has moved away from the accepted regulatory practice that the benchmark network company should be standalone and privately owned.

Investors formed reasonable expectations through numerous regulatory determinations that the basic WACC methodology issues had been settled. The decision by the AER to reverse standard regulatory practice is very damaging to investor confidence. The AER's conclusion that it should

seek to reverse the findings of the Australian Competition Tribunal in relation to GasNet is especially surprising. JIA seriously doubts whether it is appropriate for the AER to question the veracity of the Australian Competition Tribunal decision, and to assert, in effect, that there is persuasive evidence that the findings of the Tribunal were incorrect.

The negative impact of these developments on incentives for efficient investment is examined in further detail below.

Impacts on incentives for efficient and innovative investment

Section 2.3 of the explanatory statement refers to the $22.8 billion in capital projects that the AER has approved (or proposes to approve) to be undertaken over the period from 2007 to 2014. The data presented by the AER highlights exactly the point that the JIA's initial submission sought to make – these "approved" levels of investment were forecast on the basis of investors' reasonable expectations in the past, including expectations on the WACC parameters. (Indeed, as noted in the previous section the emerging evidence now shows that the appetite for investment in regulated energy network businesses is highly reliant on the current WACC parameters being maintained. The AER's proposed downgrading of the WACC parameters removes the very support upon which the AER's parameter downgrades rely.)

If the AER is determined to pursue such a dangerously low suite of proposed parameters it should first undertake a robust forward looking analysis of returns which incorporate its proposed lower WACC parameters and compare the results with market conditions. From this it will be apparent that the proposed parameters remove any attraction to invest in the sector leaving reliability obligations as the only reason to continue to invest.

This is compounded by the uncertainty created by the considerable new regulatory risk that the proposed determination introduces. It creates doubt over future regulated returns and on the effectiveness of the persuasive evidence test in tempering this uncertainty.

The overwhelming majority of investment in electricity networks is undertaken to meet mandated reliability of supply obligations in accordance with national and jurisdictional legislation and instruments. Network capacity in the distribution sector has been subject to two jurisdictional reviews over the last 5 years resulting in substantial additional capital requirements. Without any positive incentive to invest, it leaves network businesses in the invidious position of choosing between losing money and meeting the reliability and security obligations, or being financially responsible while risking reliability and security.

To the extent that investments are discretionary (such as "market benefits" investments; upgrades to interconnectors and major flow paths; and investment in smart networks to facilitate distributed generation and demand management initiatives), this significant investment will only occur if the investment settings is sufficient to attract investment.

The AER is misguided if it assumes that because the investments have been included in regulatory allowances for future capex, such investment will take place.

Importantly, the discretionary and innovative investment that is required to facilitate the industry's response to climate change (discussed in the next section) and associated challenges cannot take place in the current regulatory and financial environment.

A priority of the current Commonwealth Government is to build national infrastructure to remove bottlenecks that have constrained economic growth in Australia over recent years. The Commonwealth has implemented a suite of nation building policies to meet Australia's infrastructure needs, increase productivity growth and assist to address the adverse impacts of the global financial crisis. State and Territory governments have complementary policies.

In its recent report to COAG[11], Infrastructure Australia highlighted the importance of network investment for the broader national economy and for the development of renewable generation. In particular Infrastructure Australia highlighted two important points:

> The Australian energy market is a series of regional markets with limited interconnectedness. The lack of a national market has implications for national productivity and economic growth; and inadequate interstate connectivity poses a problem not just for ensuring energy security under current arrangements, but is also likely to frustrate the development of renewable energy generation.

Planning for, and executing the necessary network investment will be a major undertaking that will take considerable time. However, as noted above, such investment will only be forthcoming if adequate incentives are in place. Investors, network businesses and their Boards are particularly aware that leading edge technologies and long-term innovation brings greater risk and less certainty regarding cost recovery.

The JIA considers that the predictable outcome of the AER's Proposed Determination will be significant under-investment in transmission interconnectors, the very investments that Infrastructure Australia's Report to COAG cites as being necessary for the creation of a true national energy market.

The lower rate of return proposed by the AER for the energy sector is both inconsistent with the policy objectives of the Commonwealth Government and is heading in entirely the opposite direction to the recommendations of Infrastructure Australia.

Climate Change

The electricity network sector is a key facilitator in meeting the government's climate change objectives, embodied in the Carbon Pollution Reduction Scheme (**CPRS**) and expanded Renewable Energy Target (**RET**). While recent modelling shows the expected changes in the generation mix to be relatively gradual as part of the CPRS, the same is not true of the expanded RET target, which requires that an extensive proportion of new generation capacity over the next 12 years be of a renewable form. The key immediate issue for network service providers (in particular, transmission) in this regard is to ensure that the capability of their networks is adequate to deliver the government's policy outcomes.

[11] Infrastructure Australia, *A Report to the Council of Australian Governments*, December 2008.

In meeting the requirements of the Government's climate change policies, augmentation of the transmission networks will be required:

- to accommodate any change in generation flows resulting from a change in the location and cost structure of the generation sector, including the impact of an increase in intermittent generation on the operation and control of the power system and maintaining power system security; and

- in interconnectors to support any increase in flows between regions, to the extent that changed location of generation causes movement of imports and exports in each region to change.

At the WACC proposed by the AER, returns will be insufficient to attract the investment required to install optimal levels of capacity, particularly in interconnectors and other major flow paths, to support expansion of the grid in light of climate change policies. In particular, the ROAM report commissioned by the AEMC on the market impacts of CPRS and RETS states that[12]:

> The costs of transmission investment necessary to facilitate the introduction of substantial quantities of wind and geothermal energy into the grid are emphasised in a number of reports. ACIL Tasman estimates that $4 billion of investment in electricity transmission will be required under the ETS.
>
> ROAM agrees [with the ACIL Tasman report and the Garnaut Review] that CPRS and RET are likely to require substantial transmission investments in support of renewable generation.

Similarly, the S3 Advisory consultancy report commissioned by the AEMC states[13]:

> There is…a review of the regulatory WACC underway by the Australian Energy Regulator, the outcome of which will influence whether augmentations of the networks, as a result of RET, will be considered economic by capital providers.
>
> Given a number of international energy Market Participants have recently increased their hurdle rates it is hard to conceive of a reason for them to invest in regulated assets that will potentially have their economic returns reduced by the regulator.

In addition, the AER's current position is likely to further impact upstream of the transmission grid. That is, it will have an indirect but significant impact upon potential renewable investments located close to the grid whose viability is dependent upon interconnector upgrades and upgrades to the shared grid.

To date, both the modelling undertaken by Garnaut and Commonwealth Treasury assumes that transmission investment will occur as and when required. In the event that this does not occur (which is highly likely if the WACC parameters are downgraded as proposed by the AER), there is potential for a progressively more constrained grid to develop, creating impediments to the flow of gas-fired generation from Queensland into NSW and for wind generation investment in South Australia.

[12] ROAM Consulting, *Report to AEMC: Market impacts of CPRS and RET*, 17 December 2008.
[13] David Green, S3 Advisory, *Final Report to AEMC: Financing of future energy sector investments in Australia- The potential effects of the Carbon Pollution Reduction Scheme and Renewable Energy Target*, December 2008, page 9.

At the distribution level the investment required to address climate change involves both innovation and long lead times – and cannot simply be delivered by imposing a compliance obligation on distributors to build for climate change. The nature of this investment differs fundamentally from the old technology of networks that were designed for one-way flows. Similarly, the rapid and continued growth in embedded generation will create new challenges for distribution network businesses as network flows change dramatically. The quantum of capital expenditure required to meet these challenges – including the reconfiguration of the distribution networks – is inherently uncertain, but it is likely to be substantial.

The nature of this new investment presents challenges to the network companies and to the current regulatory framework. Networks must invest in leading edge technologies and new processes, which differ markedly from traditional investment in poles and wires. It is now accepted that world leaders in distribution networks are those who innovate, who implement smart grids, and who drive high technology solutions. The investment must start now if the new long-term challenges are to be met.

The challenge for the regulatory framework is that this innovative investment cannot be defined and regulated in the traditional way, either in terms of defining the inputs (eg numbers of transformers replaced) or in terms of defining the short, medium and long-term outputs (eg a target level of reliability). In fact, the nature of innovative investment is such that it cannot be directed by the regulator or Government. Innovation is fundamentally discretionary and can only be facilitated by creating a commercial environment that is conducive to it.

Concluding remarks

The JIA members are extremely concerned that the proposed determination would, if implemented in the Final Determination, lead to a downward revision in the WACC. Regardless of the changed global financial conditions there is a strong basis to maintain (if not improve) at least the previously adopted values for the WACC parameters. It is all the more important to do so in the context of the global financial crisis at a time when the global financial crisis is triggering unprecedented capital constraints and sharp increases in the risk premia required by lenders and equity investors. In this environment, any downward revision of the WACC would not only be contrary to the principles enshrined in the National Electricity Law and Rules, it would have broad-ranging and long-lasting negative consequences for investment in Australian energy infrastructure.

The JIA urges the AER to address the deficiencies in its current approach to the WACC parameters by:

- fully and properly considering the present and emerging effects of the global financial crisis on the cost of capital;
- correcting important errors in the factual findings in the proposed determination, explanatory statement and its appendices;
- taking proper account of the expert material that has been presented by the JIA previously and in this submission and apply the relevant decision making tests consistently across this material and the material commissioned by the AER itself;

- delivering a forward looking rate of return that is commensurate with prevailing and emerging conditions in the market for funds and the risk involved in providing regulated services, in accordance with the requirements of the Rules and National Electricity Law; and

- applying the 'persuasive evidence' test properly and consistently, recognising the importance of this test in providing certainty for investors over time (as intended by policy makers).

The following submission and supporting expert papers provide a detailed response in relation to each of the WACC parameters.

2 Multi-parameter considerations

Introduction

At the time the AER's proposed Statement was released in December 2008, the parameters proposed would deliver a nominal "vanilla" WACC of 8.60% while at the same time actual market returns were already well into double digits.

As at the date of this submission (the beginning of February 2009), the disparity has grown further. By contrast, the WACC parameters that the JIA sought are much more closely in line with market conditions.

The AER proposed cost of equity[14] was 9.9% and the JIA proposed cost of equity was 12.4%[15]. That means the AER's proposed cost of equity is 20% below the JIA cost of equity proposed in this submission. Additionally, the AER's proposed cost of equity is 13% below that based on the previously adopted values.

A further problem with the AER's proposed parameters also emerges when they are combined and applied in the current environment. The application of the parameters would provide only a relatively small additional reward to equity holders compared with providers of debt despite the additional risk that equity holders bear. By contrast, under the JIA's proposed parameters, there is a considerably larger additional reward to equity holders.

The AER proposed cost of debt is 7.8% and the AER proposed cost of equity is 9.9% (ie a premium of 2.1% for equity over debt). Under these circumstances any rational investor, past or present, would rather invest in a lower risk infrastructure bond (ie debt) than a significantly higher risk infrastructure stock (ie equity).

These comparisons illustrate that the AER's approach of considering each parameter in isolation, and not properly considering the evidence or the overall result, has resulted in a proposed outcome that makes no sense in the current environment.

This Chapter investigates these problems at a global or "multi-parameter level". In particular the Chapter:

- discusses how the legal framework applies; and
- demonstrates that the AER's proposed WACC is inconsistent with market evidence, and therefore fails to meet the requirements of the legal framework.

[14] All cost of equity values are stated prior to consideration of the shareholder's cost of tax or their valuation of franking credits.
[15] These rates of return have been calculated over the three month period constituting the 66 business days between 25 August 2008 and 25 November 2008, consistent with the AER December 2008 Explanatory Statement and using the debt margins implied by the WACC values presented in the AER December 2008 Explanatory Statement.

Regulatory Framework

AER's Draft Position and Evidence

The National Electricity Law (NEL) and the National Electricity Rules (NER) govern the AER's WACC review process and substantive decision. These laws provide requirements and guidance at a range of levels, each of which must be properly applied.

The JIA's original submissions and this further submission have been framed with an acute awareness of how each of these instruments applies to the WACC review process. The JIA provided explicit submissions on the application of the relevant instruments, particularly concerning:

- matters that the decision making process must have regard to, including the meaning of persuasive evidence; and
- on what constituted the "previously adopted values".

The AER's Explanatory Statement:

- rejected the JIA's interpretation of the persuasive evidence test but proposed no concrete alternative explanation of how the standard applied; and
- largely accepted the JIA's submission on what are the "previously adopted values", particularly at the individual company level. However, the Explanatory Statement rejected the notion that there was in fact a single common equity beta of 1.0 as the previously adopted value for all businesses.

The JIA do not accept either of these conclusions and continues to press its original submissions on the above points. In this chapter the JIA provide further submissions on these points.

In developing its response to the AER's consultation on the WACC Review, the JIA have paid close attention to ensure that the requirements of the NEL and NER were met and has applied these requirements consistently to its whole package of information - that is, to its expert reports, business information and the JIA's submissions themselves.

The Explanatory Statement, however, suggests (incorrectly in our view) that certain material that the JIA has submitted is beyond the scope of the review:

> Even if the Sharpe CAPM was so fundamentally flawed as to be inappropriate as a basis for setting regulatory returns (which the AER disagrees with and which has not been adequately demonstrated by CEG), the appropriate response would be a policy response to change the framework, rather than the regulator manipulating the regulatory framework to deal with the alleged fundamental flaws in the framework. As acknowledged by the JIA and CEG, the NER mandates the use of the Sharpe CAPM in determining the cost of equity. The AER is unable to review the use of the Sharpe CAPM. 'Locking-in' the Sharpe CAPM into the NER was one of the measures that was intended to provide greater regulatory certainty to industry stakeholders and other stakeholders.

The JIA has acknowledged that the AER is bound to apply the CAPM. However, a key objection that the JIA has with the Explanatory Statement is that key information which goes to the

robustness of the CAPM in producing an appropriate overall return (such as the CEG material discussed in the quote above) has been given little or no weight in the Proposed Statement because the AER has conceived too narrowly of its task. This issue is discussed in further detail later in this chapter.

In particular, the Explanatory Statement is not clear as to whether, when and how the National Electricity Objective and the revenue and pricing principles prescribed in the NEL can be brought to bear when the NER requires the application of Sharpe CAPM parameters. This submission provides the JIA's roadmap on these issues.

On the other hand, it is of equal concern to the JIA that the AER is inconsistent in its treatment of key concepts that are central to the WACC review. These concepts are:

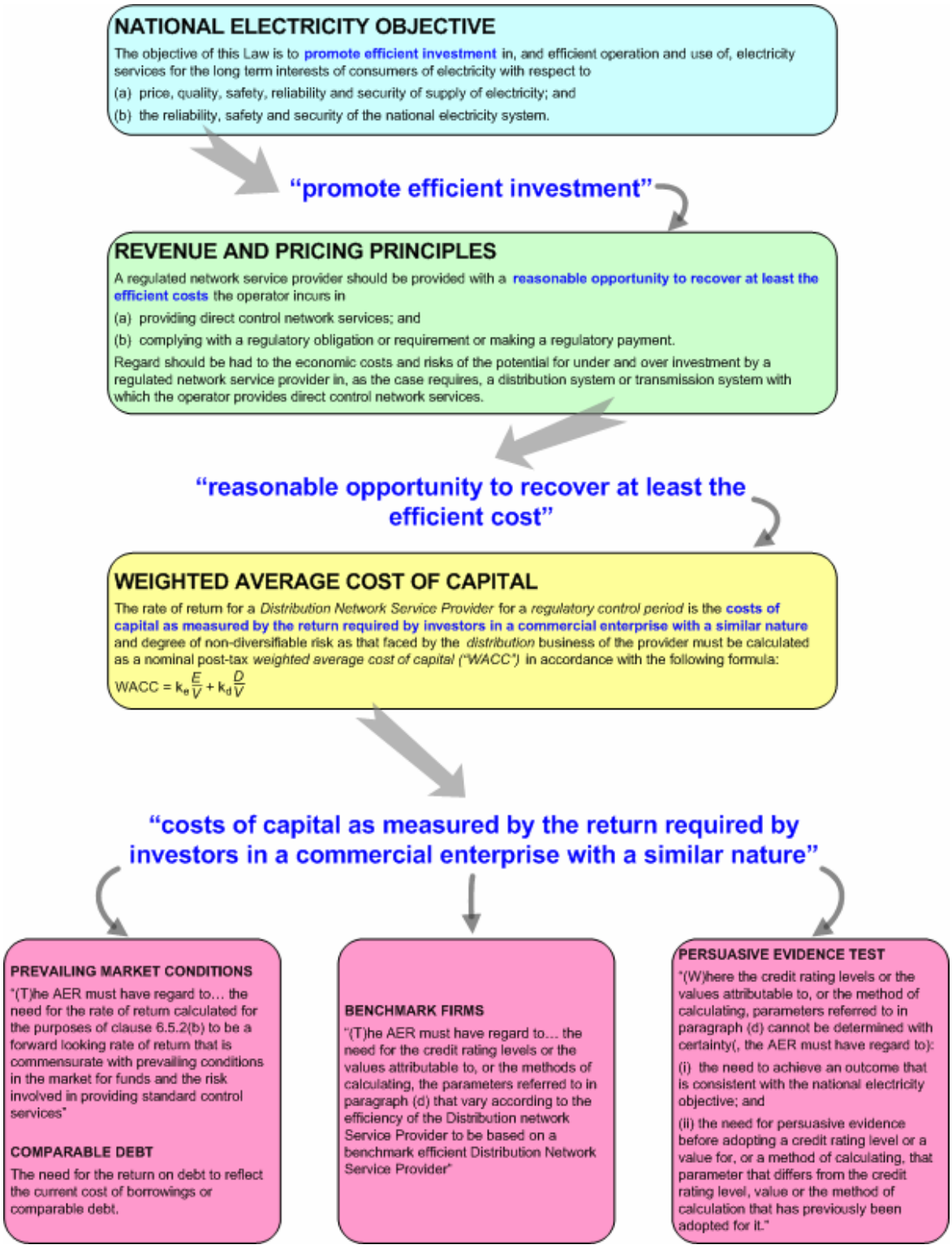
- prevailing market conditions and comparable debt;
- the efficient benchmark firm; and
- the need for persuasive evidence before departing from a previously adopted parameter, as opposed to estimating a new value in relative isolation of the weight assigned to previously adopted values.

Requirements of the legislative framework and examples of where the Explanatory Statement fails to adhere to them

As noted above, there are four principal sets of provisions that guide and bind the AER in the WACC review. These are:

- the National Electricity Objective;
- the Revenue and Pricing Principles;
- the provisions that specifically require parameters that fit within a Sharpe CAPM model; and
- the provisions concerning the considerations that are specific to the WACC review.

Figure 2.1: Regulatory Framework



Fundamental issues have been raised in the Explanatory Statement as to how each of these instruments should be interpreted and how they fit together as a package of legislative guidance that is binding on the AER in its WACC review.

Requirement 1: National Electricity Objective

The JIA consider that the starting point for resolving these issues is the principle that Courts use to interpret legislation:

> Courts are no longer satisfied with a literal or grammatical meaning of words that does not conform to the presumed legislative intention, including the policy that can be discerned from the law in question[16].

It is therefore important to consider the overall purpose of the legislative package. There are two key relevant points at which the participating jurisdictions have legislated:

- the initial creation of the National Electricity Market (NEM) as a core element of inter-governmental National Competition Policy in 1995. The core concern was a wholesale transformation of the industry to improve the economic performance of the industry; and

- the "second wave" of reforms in 2006, when the transformation had occurred and the institutions and instruments were reformed for the long run operation of the market. In particular, at this time a National Electricity Objective was inserted as the centrepiece of the whole structure with the purpose of guiding decision making across the whole market where previously there had been a host of economic principles found in different instruments. This is essentially the "objects clause" of the legislation, which is the primary guiding statement of purpose used by the Courts in interpreting the legislation.

The initial legislative package that created the NEM was implemented through legislation arising from the intergovernmental agreements between the States, Territories and Commonwealth in response to the Industry Commission report[17] and Hilmer Review[18]. Two key themes were central to development of the legislative package:

- economic reform of the structure and regulation of the sector to ensure that the production and supply of energy was undertaken on a market driven basis through competition and commercialisation; and

- significant investment in network interconnection to enable optimal resource allocation by avoiding duplication and enabling optimal decisions on the types and locations of new generation capacity and load.

The original intergovernmental agreements continue to contain important provisions that assist in the interpretation of NEL and NER concepts. The JIA will return to certain salient points from these agreements that are important in understanding concepts in the NER that apply to this review.

The second round of reforms is, perhaps, even more significant in that a conscious effort by Governments was put into developing a single statement of the objective of the legislative package. Other amendments were subsequently made to ensure that Rule making and

[16] Palgo Holdings Pty Ltd v Gowans [2005] 221 CLR 249 at paragraph 58.
[17] Industry Commission, Energy Generation and Distribution (Report No. 11; AGPS, 1991).
[18] Report by the Independent Committee of Inquiry into a National Competition Policy for Australia, 25 August 1993.

economic regulatory decisions were made in accordance with the stated objective. The introduction of the National Electricity Objective did not change the direction of policy but was a key means to clarify how the economic policy considerations should be integrated and prioritised. Section 7 of the NEL states:

> The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interest of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.

So there is a hierarchy of legislative provisions regulating the electricity network sector. Positioned at the apex of the hierarchy is the National Electricity Objective which informs the interpretation of all the other provisions.

Section 16(1) of the NEL states that:

> The AER must, in performing or exercising an AER economic regulatory function or power –
>
> (a) perform or exercise that function or power in a manner that will or is likely to contribute to the achievement of the national electricity objective …

The current WACC review is an "economic regulatory function" and therefore section 16(1) is an explicit requirement of the AER's decision (Requirement 1).

Requirement 2: Revenue and Pricing Principles

The AER WACC review is, of course, primarily concerned with setting the returns and therefore provides the primary motivation for efficient investment in the network sector. Focusing on the concepts within the National Electricity Objective, it is, of course, the concept of promoting efficient investment that is of most relevance to the WACC review.

It is also worth noting that this concept is not new. As noted above, the inclusion of the concept of promoting efficient network investment in the National Electricity Objective was drawn from one of the two original key drivers for the formation of the NEM when it was formed.

Moving down the hierarchy, the next provisions to consider are the revenue and pricing principles. These principles are a feature that was introduced into the law only in the second round of reforms. To understand them in context it is necessary to consider how the legislative scheme achieves a balance between providing incentives and certainty for the promotion of efficient investment in networks, on the one hand, and efficient prices on the other.

The structure now seeks to provide this balance through:

- a review of the key metrics by which investments will be recompensed every five years (ie this WACC review); and
- individual assessments on a company-by-company basis of the investments to be made by that company (ie the individual transmission determinations and distribution determinations).

These two regulatory processes must fit together like a "hand and glove". The WACC parameters are direct inputs into transmission and distribution determinations.

Section 16(2)(a) of the NEL states that:

> the AER must take into account the revenue and pricing principles –
>
> (i) when exercising a discretion in making those parts of a distribution determination or transmission determination relating to direct control services…

Section 16(2)(b) of the NEL states that:

> the AER may take into account the revenue and pricing principles when performing or exercising any other AER economic function or power, if the AER considers it appropriate to do so.

The AER WACC Review process is one to which section 16(2)(b) applies and the AER has a discretion whether to apply the Revenue and Pricing Principles. In this process the AER, therefore, has a decision to make: will it apply the principles?

JIA submits that the only reasonable decision to make is to apply the principles given that they must be applied during the transmission and distribution determinations and, the outcome of the WACC review process must be capable of operating with the company specific determinations in order to comply with the principles and the National Electricity Objective.

Furthermore, the principles are included in the law to enhance certainty which is a desirable feature to include in this WACC review, a key reason cited by the Australian Energy Market Commission (**AEMC**) for elevating the WACC parameters and methodologies into the NER for electricity transmission businesses.

The explicit requirement is to make a decision on whether to apply the principles and then, in relation to the JIA's submission, the implicit requirement in this case is to apply them is Requirement 2.

<u>Key Principles</u>

In this regard, the key principles are:

1. Reasonable opportunity to recover efficient costs:

> 7A(2) – A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs.

This effectively sets a minimum for the return to be permitted.

2. Potential for under and over investments

> 7A(6) – Regard should be had to the economic costs and risks of the potential for under and over investment by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

There has been no evidence that there has been overinvestment even at what the AER clearly consider to be inflated rates of return (based on its proposed parameter values). To the contrary: the significant increases in investment the AER is currently approving indicate that there has been a significant underinvestment in necessary network infrastructure.

With respect to setting the incentives going forward, the JIA reiterate the analysis provided in the original submission to the effect that there is a significant asymmetry to the costs of under and over investment.

Ensuring reliability and security cannot be left wholly to the compulsion of licensing obligations and NER obligations and network operators must be given an incentive to undertake network improvements. Otherwise, network operators are left in the invidious position of having to comply with the regulatory obligations and lose money.

Therefore, the AER must err on the side of ensuring that adequate infrastructure is present – even if there is a possibility that it may not be fully or immediately used.

This consideration, then, is unequivocally a consideration that links closely with the National Electricity Objective's focus on reliability and security and is a consideration that requires that if in doubt.

The Issues Paper's Present Value Principle which is not found in the legislation

Before moving on down the hierarchy from the Revenue and Pricing Principles, it is relevant to consider a concept that the AER uses in its Explanatory Statement as if it were in the NEL or the NER as a requirement of this review, but which in fact is not: the "Present Value Principle".

The AER's Issues Paper introduced a "Present Value Principle" and the Explanatory Statement proceeded to consider and apply that Principle. There is, however, no explicit legislative authority for the AER to use the Present Value Principle as described in the Issues Paper in this decision making process. The JIA considers that there is a high risk that applying such a principle will lead the AER into error. The JIA's recommendation is to cease to apply that principle and instead apply the explicit provisions of the NEL and NER.

However, if such a principle were used carefully it could assist in assessing whether the proposed WACC parameters comply with the Revenue and Principles in the NEL that a network service provider should be provided with a reasonable opportunity to recover at least the efficient costs that the operator incurs. Used in this way (as a lower order cross-check), it would apply a minimum bound upon the total return on capital arising from the individual parameter decisions. Used in any other way, adherence to the Present Value Principle could see the AER erroneously adopting a package of parameters that are inconsistent with the requirements of the NEL.

Requirement 3: CAPM

Turning to the next requirement in the context of this Review, the NEL is necessarily a high-level document enshrined in legislation. Businesses (both suppliers and users of energy) require more detailed clarity and certainty for the National Electricity Objective's aim of promoting efficient investment to be met. On the other hand, provisions at this level of detail need to be developed

by a process of close consultation with stakeholders and must be capable of change over time. This is the role of the AEMC and the NER.

The relevant rules seek to achieve the National Electricity Objective through the adoption of the CAPM. The CAPM is widely acknowledged as simultaneously:

- the best available tool to analyse market returns on capital; and
- having limitations that must be taken into account when used to determine a rate of return that meets the requirements of the NEL.

The requirement to adopt the CAPM is binding on the AER (**Requirement 3**).

Requirement 4: Prevailing Market Conditions and Comparable Debt

The NER acknowledge that many of the components of the CAPM may not be determined with certainty. Indeed with the current state of finance theory, the JIA and the AER agree that all the parameters are uncertain. The NER provide guidance in this context as follows:

> [T]he AER must have regard to... the need for the rate of return calculated for the purposes of [the Review] to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and the risk involved in providing standard control services (emphasis added).[19]

Here the relevant time at which the "prevailing market conditions" are observed is the time of the decision.

This consideration is primarily focused on establishing the risk-free rate and the market risk premium but it is also relevant to all the other parameters that collectively build up to determine the WACC.

That the prevailing market conditions must be considered in the WACC review and given real weight (not merely consideration) is fundamental. What is the possible purpose of providing for a review of the WACC parameters if the AER were required to consider, but be permitted to give no real weight to, the prevailing market conditions? The requirement to consider and give real weight to prevailing market conditions is Requirement 4.

It is apparent from the proposed Statement that the AER has, in section 2.5 considered, but given no weight to, the global financial crisis on the basis that it must take a "long term view". The JIA consider this to be unacceptable and incorrect in at least three respects:

- the prevailing market conditions are those of the global financial crisis and three businesses are about to lodge revenue proposals to which the WACC parameters will apply;
- there is no indication yet upon which the AER can safely rely as to when the crisis will abate and, by the yardstick of the Great Depression with which the crisis is now compared, the key

[19] Rules 6.5.4(e)(1) and 6A.6.2(j)(1).

immediately observed market conditions may well endure for the whole period until the next reset; and

- there is evidence referred to in the Overview and a range of other chapters of this Submission which suggest that, even after the abatement of the crisis, there will be enduring changes, already now visible as prevailing market conditions. These include a changed appetite of capital providers that has altered the allocation of reward between debt and equity and an upward trend in the MRP for the duration of the period until the next review.

This discussion will return to exactly how the JIA submit Requirement 4 should be met.

The requirement for the AER to consider the comparable cost of debt is very similar to, and substantially overlaps with, the requirements to take account of prevailing market conditions and also the requirement to establish parameters on the basis of an efficient benchmark firm. It is the latter that is discussed next.

Requirement 5: Parameters Based on Benchmark Efficient Firm

> [T]he AER must have regard to… the need for the credit rating levels or the values attributable to, or the methods of calculating, the parameters referred to in paragraph (d) that vary according to the efficiency of the Distribution Network Service Provider to be based on a **benchmark efficient [Transmission/ Distribution] Network Service Provider** (emphasis added).[20]

The benchmark efficient firm is of primary relevance in determining all of the parameters that distinguish the regulated business from all other firms in the economy – those being the beta, the gamma, the credit ratings and the time horizon over which the CAPM should be applied (**Requirement 5**).

Prior to the AER's WACC statement, the efficient benchmark firm was a settled concept. It is a large, stock market listed network service provider. This concept has a very long lineage traceable back to the AEMC's Chapter 6A review, the establishment of the NEM, intergovernmental agreements that implemented National Competition Policy and to the Hilmer Report.

The concept has been used in many previous ACCC and AER decisions. The JIA consider that the concept of a benchmark efficient firm and its meaning cannot now be changed in the course of the WACC review.

Competitive Neutrality

In the National Competition Policy reforms that brought about the NEM, a firm principle has been the concept of competitive neutrality which requires that any advantages from being a government-owned entity be discounted such that the advantage is removed. In other words, the private sector stand-alone company is the benchmark and government companies' differential positions are adjusted - not the other way round.

[20] Rules 6.5.4(e)(3) and 6A.6.2(j)(3).

The Competitive Neutrality Policy and Principles were adopted in 1995 as part of a package of reform agreed between the State governments to extend competition law to the whole economy, and provide for pricing oversight for monopolies and specific inter-connection and inter-state trade in electricity and gas.[21] In particular, clause 3(1) below was adopted as a central tenet of the Competition Policy Reform Act 1995 stating that:

> The objective of competitive neutrality policy is the elimination or resource allocation distortions arising out of the public ownership of entities engaged in significant business activities: Government businesses should not enjoy any net competitive advantage simply as a result of their public sector ownership. These principles only apply to the business activities of publicly owned entities, not to the non-business, non-profit activities of these entities.

Accordingly, the Guidelines published on competitive neutrality issued by the Commonwealth Department of Finance and Deregulation require that government-owned businesses adjust their cost base where they borrow funds at a rate that reflects the credit rating they enjoy as a government-owned business rather than at a rate which reflects the credit rating bestowed upon a privately owned business undertaking for that type of business activity. That is, where government owned businesses are able to borrow funds at a lower rate than those available to privately owned businesses, the government owned business is required to pay into the official public account, the benefit it derives (ie the difference between the interest rate it procured and the benchmark rate – a competitive neutrality fee). The benchmark rate requires obtaining a credit rating as though the business were not publicly owned, which is then used to establish the rate at which the business would be required to borrow if it were operating as a private sector organisation.

In addition, in 1999 the ACCC, in its first regulatory reset for TransGrid under the nationalised regime for economic regulation of electricity transmission, referred to Schedule 6.1 (1) of the National Electricity Code. This schedule provided that the WACC is designed to ensure "that government-owned networks operate under the same financial conditions as networks which are privately owned. That is, it will ensure the returns in the public sector are equal to the opportunity cost of capital in the private sector." While the National Electricity Code has since been replaced by the NER, which does not contain a similar provision, the provision in the National Electricity Code accords with the COAG Competition Principles Agreement, which still applies. Under the COAG agreement, achieving competitive neutrality is a key concern. Therefore, the non-discrimination requirement set out in the ACCC's first TransGrid revenue reset is likely to still apply.

In the AEMC's transmission revenue rule proposal in February 2006, the AEMC held that "a principle of good regulatory design is that the nature of ownership (ie whether public or private) should not affect the outcome of regulatory determinations.[22] The AEMC held in its Draft Determination in the same rule proposal process that "the A rating adopted in the SRP is too high and is unduly influenced by the public ownership of some of the TNSPS."[23]

[21] The Competition Policy Reform Act 1995 – Inter-Governmental Agreements.
[22] AEMC, Transmission Revenue: Rule Proposal Report, 16 February 2006, p 64.
[23] Draft Determination.

The AER has as recently as 31 October 2008 stated (TransGrid and NSW distribution draft determinations):

> The efficient benchmark firm should be a large listed firm and while firms may operate under many different structures to this, compensation should not be provided for any deviation from the benchmark.[24]

The concept of a benchmark efficient firm has been litigated, not in the electricity industry, but in the telecommunications industry[25]. In that industry there are both stand alone mobile operators (eg Vodafone) and conglomerate operators (eg Optus and Telstra) with a range of different service offerings. When regulating mobile service provision, the Tribunal has found that the benchmark firm is one with a reasonable share of Australia's mobile subscribers and does not impute to the benchmark firm support or advantage from its portfolio of other activities.

The JIA note that while the AER appears to accept the above propositions on the benchmark efficient firm, the AER may have been misinformed or has made incorrect assumptions as to whether the data used in their analysis removed conglomerate or ownership effects.

Establishing the benchmark efficient credit rating parameter for the Australian electricity network industry, for example, is much more complex than simply finding the median of all the gas and electricity distribution operators in Australia. This is because there are a number of gas and electricity distribution network operators – some are private standalone businesses, some are owned by governments, and others are large conglomerates owned, managed and operated by conglomerate investors from overseas, including Hong Kong and Singapore.

Further, there is also a reason why "listed" rather than simply non-government businesses have been included in the concept of the benchmark firm. For example, if a conglomerate owning an energy business is able to reduce the businesses' borrowing costs, that implies that the broader corporate group is providing a form of cross subsidy which should be "backed-out" from the data.

It is incorrect, therefore, for the AER to use GOC's S&P ratings in support of its proposed A- credit rating. Also used in support of the A-benchmark credit rating are privately owned businesses that are conglomerates. This causes their credit ratings to be higher than they would otherwise be for a stand alone firm. In this respect neither the GOCs nor the companies with strong parents are benchmark efficient firms.

Requirement 6: Persuasive Evidence

> [W]here the credit rating levels or the values attributable to, or the method of calculating, parameters referred to in paragraph (d) cannot be determined with certainty, [the AER must have regard to]:
>
> (i) the need to achieve an outcome that is consistent with the national electricity objective; and

[24] This same statement is made in many decisions and often more than once in each decision. See for example page 141 of the AER's draft determination for TransGrid.
[25] *Application by Vodafone Network Pty Ltd and Vodafone Australia Limited* [2007] ACOMPT 1 [63].

(ii) the need for persuasive evidence before adopting a credit rating level or a value for, or a method of calculating, that parameter that differs from the credit rating level, value or the method of calculation that has previously been adopted for it.[26]

This requirement was introduced as part of the AEMC's Chapter 6A review. The AEMC's review was triggered by the same legislative package that also introduced the Revenue and Pricing Principles. A key aspect of the AEMC's review of the rules for the economic regulation of electricity transmission services was to enhance certainty for network investment which, of course, is the key relevant aspect of the National Electricity Objective. (**Requirement 6**).

Since the "persuasive evidence test" was originally introduced in the Chapter 6A process, certain features of that framework are informative in understanding the meaning and import of the test.

For the transmission sector, until the review is completed parameters in the NER are "locked in" and there is no ability for the businesses to revisit the parameters during their regulatory resets. The parameters established as part of this WACC review will again be locked in for the next round of revenue resets and cannot be revisited by the businesses until the next WACC review. This is quite distinct from the distribution businesses, who have the opportunity to revisit these parameters in limited circumstances at their next regulatory resets. Consequently it is incumbent upon the AER to be very confident indeed before any downward revisions can be determined.

Exactly the same persuasive evidence test with its high threshold was drawn from Chapter 6A and adopted in Chapter 6, even though the distribution businesses are able in limited circumstances to reopen the WACC question.

Attached to the JIA's initial submission was advice from Gilbert + Tobin on the interpretation and requirements for the persuasive evidence test. The AER rejects that formulation in its Explanatory Statement but does not identify what the AER understands to be the persuasive evidence test requirement.

This absence of clarification results in an inconsistent basis for, and hence application of, the persuasive evidence test. Examples of the inconsistency are:

- the JIA's submissions on gamma were, for a significant part, not taken into account because Professor Gray's work was alleged not to have been subjected to standard statistical tests. Yet Associate Professor Henry's work is accepted by the AER without them;
- Professor Gray's work is not given substantial weight for lack of transparency and verifiability while core aspects of Associate Professor Henry and Lally's work are obscure.[27];
- Professor Grundy and Dr Hird are the only experts to provide empirical evidence on whether low estimates of equity beta derived from stock markets are a reliable basis for estimating the cost of capital. Their empirical evidence is not contested and is confirmed as established fact in Associate Professor Handley's advice to the AER. Nonetheless, the AER concludes that this evidence is not persuasive;

[26] Rules 6.5.4(e)(4) and 6A.6.2(j)(4).
[27] The JIA offered to make Professor Gray available but the AER chose not to take up this offer.

- the persuasive evidence requirement applies before the AER can depart from a previously adopted parameter and, on the whole, that is when the Explanatory Statement applies the test (although in a way that is constantly changing). However, on at least one occasion the AER inverts the test by rejecting the maintenance of the status quo for lack of persuasive evidence. This occurs because the definition of the MRP is changed to accord with changing the term of the risk free rate without subjecting the change in the MRP to the persuasive evidence test and then applying the persuasive evidence test before the MRP can be adjusted back to its original level. To explain this in more detail, the AER recognises that, on average, changing the term from 10 years to 5 years will result in a reduction in the cost of equity unless the MRP is increased by 0.2%. That is, in order to marinating the status quo in the face of changed definition of the MRP the MRP must be increased by 0.2%. Nonetheless, the AER argues against doing so on the basis that there is no persuasive evidence to increase the MRP. In effect, the AER is arguing for a de facto reduction in the MRP (relative to an unchanging definition) on the basis that there is no persuasive evidence for it to maintain the status quo; and

- frequently in the Explanatory Statement the JIA's experts and submissions are subjected to the requirement for "compelling evidence" of the proposition it advances. However, the JIA can find no examples where the AER has subjected its own expert's material to that same threshold, nor any examples of it having found "compelling evidence" before downgrading any of the parameters that it has downgraded.

The JIA is also troubled to see that the AER has misunderstood how to take account of empirical work in the persuasive evidence test. A parameter can be adopted based on a range of evidence from a variety of sources. There is direct observation, empirical estimation work based on statistical regressions or theory.

However, if empirical estimations fail standard empirical tests, then they must be rejected and an alternative basis found for setting the parameter in question. It is also not possible for information drawn from outside the statistical analysis to cure a flaw within it. The Explanatory Statement's approach to Associate Professor Henry's work appears to have been contrary to both those propositions.

The JIA is firmly of the view that the "persuasive evidence" test was intended by the AEMC as a real and substantial threshold before the AER alters a parameter in the review and that the purpose of establishing this threshold requirement was to enhance predictability and certainty. The JIA has put forward to the AER advice from Gilbert + Tobin setting out how the test could be given such real and substantial meaning. In response the AER has proffered no alternative and instead adopted an approach by which the requirement for persuasive evidence changes in different parts of the decision.

This failing has rendered every proposed parameter downgrade flawed and incorrect.

<u>Previously adopted value</u>

In the Issues Paper the JIA was concerned to find a great lack of clarity as to what the AER might regard the previously adopted parameters to be. In the Proposed Statement, the AER has been

considerably clearer, removing irrelevant decisions such as the gas decisions, decisions that were quashed on appeal and decisions that were replaced by Rule provisions.

While the AER and the JIA are largely at one over the previously adopted parameters, there remains a significant point of contention being the equity beta for certain JIA distribution members.

Recall that the review requires by Rule 6.5.4(e)(4)(ii) that there is persuasive evidence before:

> the need for persuasive evidence before adopting a credit rating, level or value for or a method of calculating that parameter that differs from the credit rating, level or value for or a method that has previously been adopted for it.

The above highlights the understanding by the drafters that there is a single previously adopted value for each parameter. There is a good reason for this: as reflected in the National Electricity Objective, a key economic market design principle is that the regulatory framework is non-distortionary between businesses in different locations or using different technologies. It would be perverse indeed if infrastructure investment in some NEM regions were accorded a higher equity beta and therefore a higher incentive to investment than other regions. The effect would be to discourage network investment in those regions and in turn would discourage distributive generation in those regions compared with others and discourage energy dependent economic development in those areas.

The only correct approach is to adopt a single "previously adopted" equity beta and, for the reasons raised in the JIA's previous submissions, this must be an equity beta of 1.0.

In conclusion, the JIA is concerned that across the board there has been an improper and legally flawed lack of consistency in the Explanatory Statement. Core concepts within the NER, such as the concept of the "benchmark efficient firm", "persuasive evidence" and the "previously adopted values" appear to shift in meaning across and within the assessment of each parameter. The JIA submit that the National Electricity Objective and revenue and pricing principles must be applied consistently.

How the requirements of the legislative framework fit together

In the previous section the JIA identified six requirements of the AER in the WACC Review:

1. to perform its function in a way that is likely to enhance the National Electricity Objective generally and the promotion of efficient investment in particular;

2. to decide whether to, and when to, take into account the Revenue and Pricing Principles, most notably the requirement that the businesses be given a reasonable opportunity to recover their efficient costs and err on the side of relatively less costly over-investment rather than relatively more costly under-investment;

3. to use the CAPM formula and identify CAPM parameters;

4. to adopt parameters that are commensurate with prevailing market conditions;

5. to use parameters that are suitable for the benchmark efficient firm being a large listed network service provider; and

6. to find that there is persuasive evidence before departing from a previously adopted value.

In the Explanatory Statement, there is a lack of clarity as to how these requirements apply. The approach in the Explanatory Statement generally appears to have been to select and apply certain requirements and let others fall away. When submissions have squarely raised the need to apply a high level requirement (such as adherence to the National Electricity Objective) the Explanatory Statement states that only a Rule change can reconcile the requirements and therefore the higher level requirement is not given full effect.

> Even if the Sharpe CAPM was so fundamentally flawed as to be inappropriate as a basis for setting regulatory returns (which the AER disagrees with and which has not been adequately demonstrated by CEG), the appropriate response would be a policy response to change the framework, rather than the regulator manipulating the regulatory framework to deal with the alleged fundamental flaws in the framework. As acknowledged by the JIA and CEG, the NER mandates the use of the Sharpe CAPM in determining the cost of equity. The AER is unable to review the use of the Sharpe CAPM. 'Locking-in' the Sharpe CAPM into the NER was one of the measures that was intended to provide greater regulatory certainty to industry stakeholders and other stakeholders.

With respect to the immediately preceding paragraph, the first point to note is that the AER does not appear to fully appreciate what the requirement to use the CAPM within the NER entails. The CAPM is a theory or tool with each parameter having a conceptual meaning. For example, the equity beta represents the extent to which the benchmark business is subject to non-systematic risk. Although an equity beta can be estimated from a regression of market data, the equity beta itself is absolutely not a regression from market data.

The same applies to all the parameters. Values for the parameters can only be inferred either through estimation, theory and, in the absence of any better alternative, reasonable assumption. None of the parameters can be established with certainty and, indeed, the JIA have demonstrated that many are subject to a great deal of uncertainty.

There is every possibility that the equity beta estimate, gamma estimate, term decision for the risk free rate and a range of other proposed parameters are based on regressions, direct observations and theories that are simply poor reflections of the true parameters of the CAPM theory.

A "cross check" with other methods of analysis such as DGM analysis can provide guidance on what approach to identifying CAPM parameters to use (as opposed to the unobtainable "true" value). The cross check is very properly considered as part of the requirements to seek to promote the attainment of the National Electricity Objective and the consideration of the Revenue and Pricing Principles.

If the cross check fails, it is necessary to return and re-evaluate the judgements and discretions used and consider alternative exercises of judgement and discretion that does then result in parameters that satisfy each of the six (6) requirements set out above.

This process is analogous in key respects to that in re Michael.[28] In that case, the legislative structure provided general guidance (like the National Electricity Objective and Revenue and Pricing Principles in this case). It also provided for intermediate levels of guidance (such as the requirements to use the benchmark firm and to have persuasive evidence before a change is made in this case). Finally it included specific guidance (such as the specific requirements to adopt the CAPM). Specifically, it was said:

> [t]he last paragraph of s 8.1 recognises that the objectives (a) to (f) in s 8.1 may conflict in their application to a particular reference tariff determination, in which event the Regulator may determine the manner in which they can best be reconciled or which of them should prevail... [T]he discretionary task of seeking to reconcile conflicting objectives within s 8.1, and even more significantly of determining which of them should prevail, cannot be decided by reference to s 8.1 itself. Of necessity, the Regulator must have guidance outside of s 8.1 in exercising those discretions. In this regard it appears from the structure and provisions of this Code that have been canvassed that s 2.24(a) to (g) would most naturally guide the Regulator in the exercise of the discretions, and was intended to do so.[29]

A similar situation applies in the case of the AER's WACC Review. The JIA submit that every time there is uncertainty requiring discretion of judgement as to which level or value to adopt for a parameter (for example whether a statistical regression is safe, whether an adjustment to a parameter should be made or whether to disregard the empirical material in favour of theory), the AER must determine that question in accordance with the requirements higher in the regulatory hierarchy (ie ultimately by reference to the National Electricity Objective).

In other words, where the specific guidance (of section 8.1 in re Michael) is not comprehensive such that the Regulator must exercise judgement and discretion, the Regulator must turn to the general principles and objectives of the NER (being section 2.24) to guide the exercise of its discretion.

The nature of the various levels of guidance is such that the entire package of parameters must be tested against prevailing market conditions, the revenue and pricing principles and against the objective.

In conclusion, the JIA consider that in its Explanatory Statement the AER has not fully undertaken its task. While the AER surveyed the evidence and proposed CAPM parameters, it then failed to complete its task by subjecting the proposed parameters to the equally important tests of whether the entire package meets the requirements of the Revenue and Pricing Principles and the National Electricity Objective. Had it done so, the AER would have found that these additional requirements were not met and it was necessary to return to the parameter estimation exercise and continue to work at the task until the estimates did meet all the requirements. The JIA consider that, having fully completed its task, the AER would not have been persuaded by the evidence to downgrade any of the parameter values put forward in its proposed Statements and would have applied greater insight into the MRP/gamma issue.

It is this global checking exercise that this Chapter of the Submission presents next.

[28] Re Dr Ken Michael Am; Ex parte Epic Energy (WA) Nominees Pty Ltd & Anor [2002] WASCA 231.
[29] Ibid [85].

Overarching assessment required by the NEL

As discussed above, the adequacy of a package of WACC parameters cannot be properly assessed only by a series of assessments of individual parameters in isolation from the others. The combined package of values and methodologies must also be assessed against the overarching economic criteria found in the National Electricity Objective and the Revenue and Pricing Principles by having regard to the combined impact of each parameter on the total compensation for the cost of capital.

Unless the overall combined effect of individual parameter assessments is kept at the forefront the individual assessments are likely to fail to deliver an adequate overall total compensation of the cost of capital. In our view, this is what the AER proposed Statement does in relation to the cost of equity specifically and in relation to the cost of capital in general.

The impact of the proposed Statement is to reduce the assumed cost of equity relative to current parameters by something of the order of 1.6 percentage points in cash terms based on December 2008 CGS yields. This is a 19 percent reduction in the cash compensation for the cost of equity compared to current NER parameters.[30] However, this proposed reduction in the compensation for the cost of equity comes at a time when:

- the compensation for the cost of equity under the existing NER parameters is already at an all time low (due to all time low CGS yields) – a market fact that can be expected to persist for the foreseeable future; and

- the actual cost of capital (equity and debt) observed in the market place is at an all time high level – a market fact that can also be expected to persist for the foreseeable future.

The effect of this is that the existing NER cost of equity is already substantially under compensating investors for the true cost of equity. That is, the existing NER cost of equity is setting the cost of equity below the return available to investors for alternative investments of a similar risk. The further effect of the proposals in proposed Statement would be to substantially widen this already significant gap.

The current historically high cost of equity reflects a general repricing of risk in capital (both debt and equity) markets following the losses made in the US subprime mortgage market and compounding effects in global financial markets. It is equity markets and the cost of equity that has been hardest hit by the current financial crisis. This is only to be expected as equity holders are the residual claimants on all profits and, consequently, any increase in the riskiness of debt must have been preceded by an even larger increase in the riskiness of equity (partial losses on debt only start to occur once equity investors have effectively lost everything).

[30] The total (including the value of imputation credits) estimated cost of equity under the existing NER in December would be 10.2% (risk free rate of 4.2% + equity premium of 6%). However, in cash terms this must be reduced by the assumed value of imputation credits. At a gamma of 0.5 and a corporate tax rate of 0.3 this requires that 10.2% be divided by 1 + 0.5*0.3/0.7 = 1.21. This gives cash compensation for the cost of equity of 8.4%. However, under the draft decision proposals the total cost of equity falls to 8.7% (risk free rate of 3.9% based on 5 year CGS instead of 10 year CGS yields + equity premium of 4.8% which is 1.2% lower to reflect the reduction in beta from 1.0 to 0.8 while the MRP of 6% is retained). To convert this to a cash cost of equity, this must be divided by 1.28 to reflect the proposed gamma of 0.65 (1.28 = 1 + .65*0.3/0.7). This gives cash compensation for the cost of equity of 6.82%. The difference between 8.44% and 6.82% is 1.62 percentage points. As a percentage of 8.44% this is a 19% reduction.

Notwithstanding this, the proposed Statement repeatedly makes references suggesting that the impact of the current financial crisis is being felt mainly in debt markets. For example, the proposed Statement states:

> Overall, while it is clear that the current conditions in financial (**particularly debt**) markets are far from favourable, market-based evidence from a number of sources strongly suggests that, rather than creating risks, the regulatory regime insulates energy network businesses from market volatility.[31] [**Emphasis added**.]

The AER repeats similar statements on page 4, 32, 33 and 34. It is unclear how the AER arrived at the conclusion that the repricing of risk had been felt mostly in debt markets. No basis for this conclusion is provided and it runs counter to both theory (as described above) and the facts.

In this regard the relevant facts are that equity prices have fallen dramatically raising the dividend yield firms must offer to attract equity. As CEG notes, a rising dividend yield is symptomatic of an increased cost of equity in precisely the same manner as rising interest rates is symptomatic of an increase in the cost of debt.[32] Both are caused by a fall in asset prices relative to the stream of income they offer (dividends for equity and coupons for debt) as a result of investors demanding higher compensation for the risks attached to that income stream.

The RBA reports that the dividend yield for the Australian stock market has almost doubled since the early evidence of the US subprime mortgage crisis in August 2007[33] became apparent (rising from 3.63% to 7.03% in December 2008).[34] This has been associated with a dramatic 38% fall in the ASX 200 index of the Australian stock market over the same period.

Importantly, utilities have not been immune from the dramatic repricing of risk in equity markets. CEG notes that over the period from August 2007 to December 2008 the average share price of Australian regulated businesses has fallen by the same amount as the general S&P 200 index has fallen.[35] Unless one believes that the expected profitability of regulated businesses has fallen by 38% in the same period then one must accept that there has been an increase in the required return on equity demanded by investors and that this explains the fall in equity prices.

By way of illustration, the IMF stated in the context of falling equity prices during the financial crisis that:

> Falling equity prices made raising new capital increasingly expensive, often prohibitively so… (October 2008, World Economic Outlook page 7).

The RBA has also noted a dramatic increase in the volatility of the Australian stock market. Writing in its November 2008 Statement on Monetary Policy the RBA states:

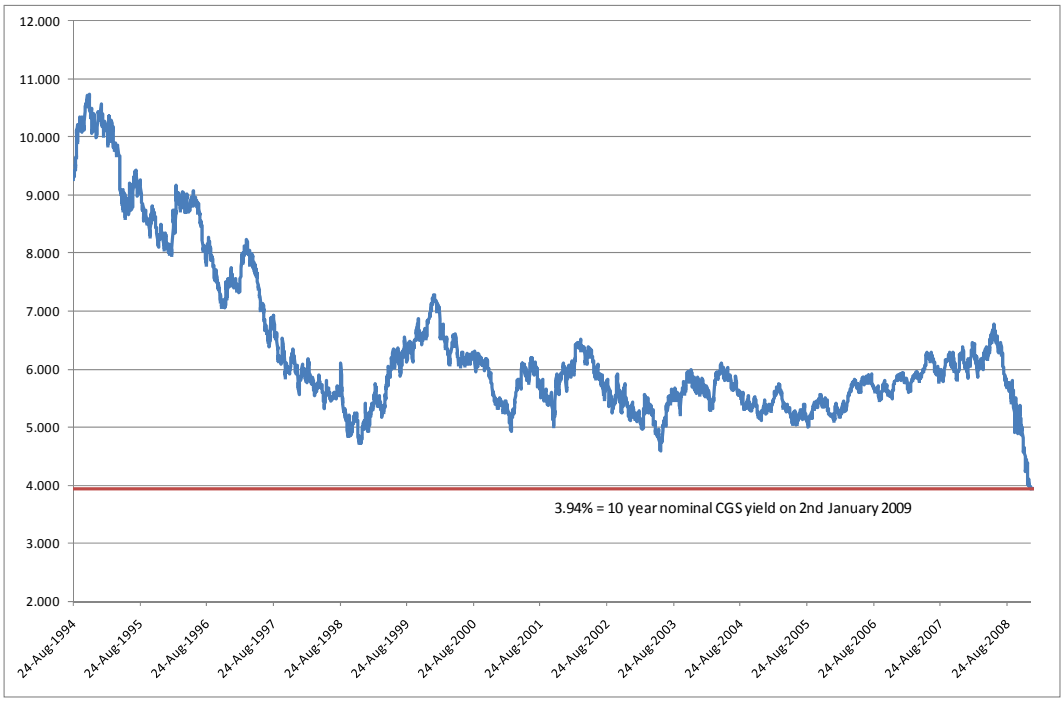
> Over the past month, aggregate daily share price movements have averaged just over 3 per cent – about five times above the pre-crisis average of 0.6 per cent (Graph 57). Volatility has been

[31] Page iii of Explanatory Statement.
[32] CEG, *Forward looking estimates of the equity premium*, January 2009, para [54].
[33] CEG reference this as the beginning of the credit crunch associated with losses in the subprime mortgage market becoming apparent. See footnote 17 at paragraph 62 of CEG, *Forward looking estimates of the equity premium*, January 2009.
[34] Reserve Bank of Australia (RBA), Table F7 of RBA Bulletin.
[35] CEG, *Forward looking estimates of the equity premium*, January 2009. See paragraph 62.

elevated since late 2007. This is an exceptionally long period of heightened volatility, with almost one-half of the 40 largest daily price movements since 1980 occurring this year.

However, the "flight from risk" associated with an increasing cost of corporate equity/debt has been mirrored by a "flight to safety". The demand for government debt has risen dramatically with the effect that nominal CGS yields have fallen dramatically. CGS yields are currently at unprecedented low levels and there is no sign of any imminent recovery in these yields. This is illustrated in Figure 2.2 below which is reproduced from a report by CEG.[36]

Figure 2.2: Nominal 10 year CGS yields over time



Source: RBA data

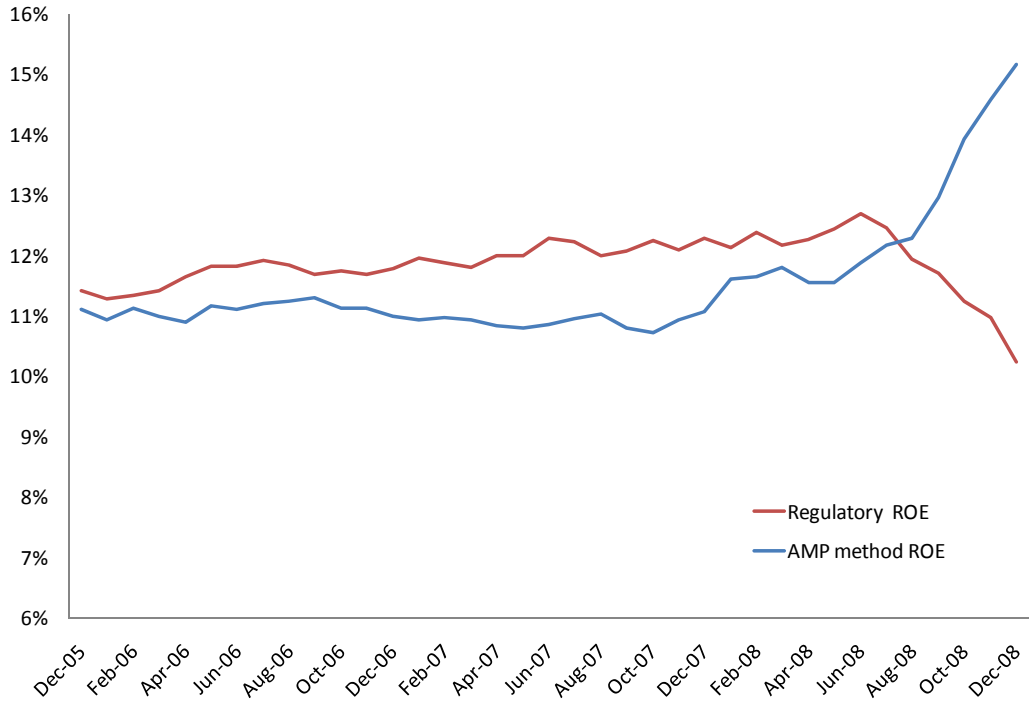
The effect of this fall in 10 year CGS yields is that the current NER compensation for the cost of equity is at similarly low levels.

Importantly, this means that just at the time when the cost of equity was increasing to historically high levels the NER compensation for the cost of equity has been falling to historically low levels.

This is illustrated in **Figure 2.3** below which estimates the forward looking market cost of equity based on a method used by AMP Capital Investors (and is reproduced from a report by CEG).[37] This method asks what long term MRP needs to be added to CGS yields in order to ensure the discounted value of future dividends from the stock market is equal to the prevailing share prices (market capitalisation of the stock market).

[36] CEG, *Forward looking estimates of the equity premium*, January 2009. See Figure 4.
[37] The AMP methodology and assumptions are outlined in CEG, *Forward looking estimates of the equity premium*, January 2009. This figure is a reproduction of Figure 5 in that report.

Figure 2.3: Recent movements in the regulated and market return on equity (excluding proposed Statement)



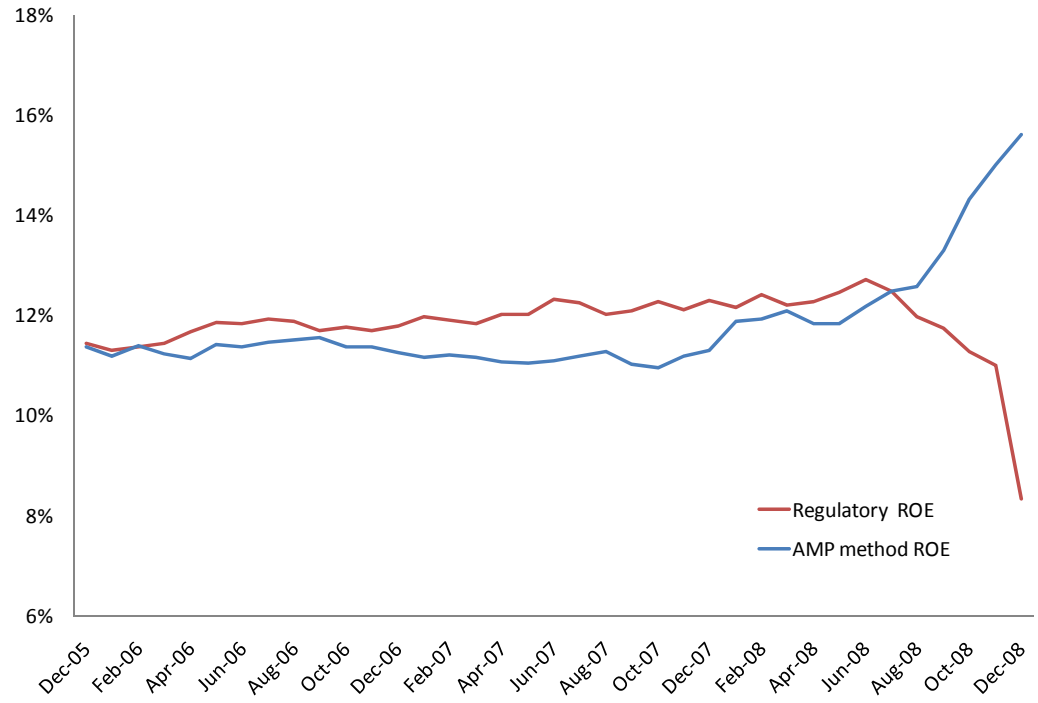
The AER proposed Statement notes that the cost of equity derived using forward looking estimates was commonly below the NER cost of equity (assuming a beta of 1.0).[38] This is consistent with **Figure 2.3** above from CEG which shows the NER cost of equity being marginally above the forward looking cost of equity associated with a consistent application of the AMP method through time. However, this ceased to be true in mid 2008 and the NER cost of equity has gone from being marginally above to dramatically below the forward looking average cost of equity in the market place. In fact, CEG estimates the prevailing market risk premium in 2008 was around 12% which is double the current NER MRP. Similarly, Officer and Bishop use a different methodology to estimate the short term forward looking MRP to be around 16-18%.[39] The Officer and Bishop estimate is expected to be higher than the CEG estimate because it is a short to medium term estimate based on information derived from short to medium term futures markets. By contrast, the CEG estimate of the current MRP is an estimate of the prevailing long term MRP.

[38] See page 173 of the Explanatory Statement
[39] Officer and Bishop, Market Risk Premium, page 7

The fact that estimates of the prevailing short and long term MRP are so significantly above the current NER is an important background to the proposed Statement. The proposed Statement did not analyse this issue at all and seems to have restricted itself to a simple (incorrect) assertion that the current difficult conditions in financial markets will abate.

The effect of the proposed Statement, if implemented, would be to widen the gap between the prevailing market cost of equity and the regulatory cost of equity. This is dramatically illustrated in Figure 6 of CEG's report which is the same as **Figure 2.3** above except it includes a 1.6% reduction in the regulatory cost of equity in the month of December 2008 to reflect the effect of the proposed Statement if implemented.

Figure 2.4: Recent movements in the regulated return on equity (including proposed Statement)



Source: RBA data, CEG analysis

Figure 2.4 above illustrates the combined effect of historically unprecedented low CGS figures and the proposed changes to the NER parameters in the AER's proposed Statement. It contrasts this with an estimate of the average return on equity actually required by investors in the equity market today. Importantly, the implementation of the proposed Statement would take the regulatory return on equity well below both the high current prevailing cost of equity and the prevailing cost of equity prior to the advent of the US subprime financial crisis in August 2007 (when the price of risk was at historically low levels).

As described above, utilities are not immune from this repricing of risk. CEG has performed a similar analysis of the average forward looking cost of equity for six businesses that derive the

majority of their revenues from regulated activities.[40] They use a dividend growth model to estimate the equity risk premium (relative to CGS) for these same firms. The results are summarised in **Table 2.1** below.

Table 2.1: Proposed equity risk premium (ERP) relative to DGM based ERP - November 2008

Firms	Proposed ERP	Implied ERP with assumed nominal dividends growth rate post 2013 of:			
		Inflation (2.5%)	Zero (0.0%)	Negative 5%	Negative 17.1%
Aust Pipeline Trust	4.8%	12.4%	11.0%	8.3%	2.7%
DUET	4.8%	15.8%	14.5%	12.1%	7.2%
Envestra Limited	4.8%	15.8%	14.6%	12.2%	7.3%
Hastings Div Utils	4.8%	14.7%	13.4%	10.9%	5.8%
SP AusNet	4.8%	11.8%	10.3%	7.6%	1.8%
Spark Infrast. Grp	4.8%	14.9%	13.4%	10.4%	4.0%
Average	**4.8%**	**14.2%**	**12.9%**	**10.3%**	**4.8%**

Source: CEG Analysis, Bloomberg data

This DGM analysis takes the average of analysts' forecasts of dividends (reported by Bloomberg in November 2008) out to 2013 and a CEG assumed growth rate in dividends beyond 2013. CEG then estimate the discount rate that will equate this future dividend stream with the prevailing average share price in November 2008. Finally, they subtract the average yield on 5 year CGS in November to calculate the implied forward looking equity risk premium (ERP) for these utilities relative to the 5 year CGS yield.

At the AER's proposed equity beta of 0.80 and market risk premium of 6.0%, the proposed ERP for utilities is 4.8% (0.8*6.0%). The implied forward looking MRP estimated by CEG depends on the post 2013 growth rate assumed by CEG. If dividends are assumed to grow in line with inflation (2.5%) beyond 2013, the average implied ERP is 14.2% - **which is three times the AER's proposed ERP**. Notably, in order to arrive at the AER's 4.8% estimate one must assume that dividends will fall by 17.1% pa for every year in perpetuity after 2013.

CEG argue that the more realistic way to explain these results is that the market is applying an ERP to utilities that is in line with the MRP it is applying to stocks in general. Consistent with the earlier discussion of CEG and Bishop and Officer's work, this is demonstrably well above 4.8%.

There are a number of ways in which current market conditions should, in the JIA's opinion, have fed into the proposed Statement. First, it should have caused the AER to, if anything, set the MRP at or above the long run historical average MRP. Instead the proposed Statement did the opposite and set the MRP below the long run historical average. Importantly, the proposed Statement did so at least in part on the basis that forward looking estimates of the MRP in 2006 and before were below the long run historical average and below 6%. On this basis the proposed Statement concludes on page 174:

> Regard to cash flow measures of the MRP does not provide persuasive evidence to depart from the previously adopted MRP of 6 per cent.

[40] CEG, *Forward looking estimates of the equity premium*, January 2009.

In fact, the AER failed to propose an increase in the MRP to offset the effect of changing the term of the risk free rate from 10 to 5 years – despite acknowledging that this failure to adjust the MRP amounted to a de facto reduction of the MRP by 0.2% based on historical averages (0.3% in December 2008).[41] That is, the AER actually implemented a de facto reduction in the MRP – despite the prevailing MRP being well in excess of the NER MRP.

Second, the AER should have used a comparison with currently prevailing forward looking costs of equity to "sanity check" the total impact of its proposals. As already noted, when put together these changes lead to a reduction in the cash compensation for the cost of equity of around 1.6% based on December 2008 CGS yields. This constitutes around a 19% reduction in the cash cost of equity compared to the existing parameter values. The JIA considers that the AER should not have countenanced such a large reduction in compensation of equity holders at a time when equity holders were clearly already being under compensated.

The only possible basis for imposing such a large reduction would be if the AER could confidently forecast that the price of risk in equity markets would fall dramatically in the next few years. However, as noted by CEG, this magnitude of reduction would require a forecast that the price of risk will not only fall back to its pre crisis levels **but that it will actually fall below its pre-crisis levels**. CEG argues that this is inconsistent with the views of most commentators that the recent repricing of risk will result in the price of risk being higher for the foreseeable future.[42] In this regard CEG quotes, the European Central Bank stated in June 2008.[43]

> In this vein, the sub-prime-related turmoil has acted as a catalyst for a broader, and in many instances necessary, reappraisal and repricing of risk.

There are many world political and financial sector leaders who have made statements concerning the severity, duration and impact of the global financial crisis. 'The impact of the global financial crisis' in the Overview to this submission above contains a selection.

Finally, the proposed Statement should have had regard to the divergence between its proposals and forward looking estimates of the cost of equity when assessing some of the possible weaknesses in the proposed Statement's basis for its proposals. The proposed Statement finds reason to treat as "unpersuasive" a range of evidence on why MRP should be higher, the term of the risk free rate should remain at 10 years, and why gamma and equity beta should not be reduced. In many cases the JIA does not believe that, even if each parameter is examined in isolation, the AER has reached this conclusion on a sound basis. Nonetheless, the evidence the AER treats as unpersuasive is more consistent with the prevailing cost of equity than the evidence the AER finds persuasive for a change in the opposite direction. The fact that the AER's proposals would cause the gap between the actual and NER cost of equity to widen rather than narrow is a powerful basis for believing that, on average, the AER has weighted the available evidence incorrectly. That is, it strongly suggests that the AER has placed undue weight on

[41] As noted by CEG, this effectively involved a decision to reduce the expected compensation relative to the *status quo*. That is, maintenance of the *status quo* (in terms of compensation for equity providers given the changed definition of the MRP) required an increase in the MRP. Nonetheless, the AER argued that not maintaining the *status quo* was justified as there was no persuasive evidence to change the MRP of 6%. Effectively, the AER justified a failure to maintain the *status quo* (in the face of a change definition of the MRP) on the basis that there was no persuasive evidence to do so. See CEG, *Term of the risk free rate under the NER*, January 2009.

[42] CEG, *Forward looking estimates of the equity premium*, January 2009. See section 3.3.

[43] European Central Bank, *Financial stability review*, June 2008, page 11.

evidence that supports a reduction in the cost of equity and insufficient weight on evidence that does not.

In conclusion, in its Explanatory Statement the AER has not kept in the forefront of its assessment the aggregate impact of its individual parameter selections. The aggregate impact would put the total return on equity significantly out of step with prevailing conditions and the need for the businesses to be adequately renumerated to promote efficient investment. By focusing too intently on the individual parameter considerations, the proposed Statement fails to meet the overarching requirements of the NEL.

3 Gearing

Introduction

The JIA supports the AER's conclusion that there is no persuasive evidence to depart from the currently adopted benchmark gearing level of 60 per cent and that, if combined with other appropriate parameters, a gearing level of 60 per cent would also meet the other requirements of the Rules, the Pricing Principles and the National Electricity Objective.

However, the JIA has several issues regarding aspects of the methodology applied by the AER in reaching its conclusions which should be addressed. These methodological issues do not change the conclusion that 60 per cent gearing remains appropriate.

AER's Draft Position and Evidence

Overall, the AER does not consider there to be persuasive evidence to depart from the currently adopted benchmark efficient level of gearing of 60 per cent. The AER considers that its position is supported by the most recently available reliable empirical evidence and that its position generates a forward looking rate of return commensurate with prevailing conditions in the market for funds.

Issues in Explanatory Statement

Consistent with its submission in response to the AER's Issues Paper, the JIA supports the AER's conclusion that there is no persuasive evidence to depart from the currently adopted benchmark gearing level of 60 per cent.

The JIA encourages the AER to maintain this position in the Final Statements for electricity transmission and distribution businesses.

Notwithstanding the above support for the AER's position, the JIA wishes to raise several issues in this chapter regarding some aspects of the methodology used by the AER in reaching its conclusions on the benchmark level of gearing. The issues to be raised by the JIA are largely based on the advice of the Allen Consulting Group (**ACG**). This report is attached.

These issues are discussed below.

Net Versus Gross Debt, Debt Structuring and Shareholder Loans

Net Versus Gross Debt

The AER concluded that it was inappropriate to use net debt (total debt less cash or cash and marketable securities) to estimate the benchmark level of gearing on the basis that "this amount must be removed into equity otherwise the level of gearing cannot reach 100 per cent".[44]

In response, ACG[45] consider that application of the "net debt" concept is the appropriate approach and not that applied by the AER, as a benchmark efficient network service provider[46] is assumed to hold only physical assets. If such a business were to hold more cash, they could potentially hold more debt, which is not consistent with the benchmark.

In addition, ACG note that unless the 'net debt' approach is applied, the asset equity beta would be inaccurately estimated, as:

> the systematic risk of cash is zero, and the observed equity equity beta will reflect a weighted average of the operating asset equity beta and the (zero) cash equity beta.[47]

The JIA recommend that the AER apply the "net debt" concept to estimate the benchmark gearing.

Debt Structuring ("Look through" Gearing)

In its comparison between different gearing approaches, particularly in relation to Spark Infrastructure, the AER concluded that it was not clear whether the Bloomberg approach or ACG's "see through" gearing analysis (which takes account of vertical ownership structures with debt located at different levels in the structure) best informs the AER about the gearing level for a benchmark efficient service provider.[48]

In response, ACG consider that it is essential that differing layers of debt be taken into account, and that it is incorrect not to do so. ACG note that this is because:

> the purpose is to derive an asset equity beta for the fundamental activity – and so if the activity for which the equity beta is estimated has multiple layers of debt, then the effect of all layers of debt needs to be removed to obtain the asset equity beta for the fundamental activity.[49]

ACG argue that the AER's reliance on Bloomberg's market gearing is a concern unless the structures and nature of the securities which underpin Bloomberg's reported numbers are also investigated.

[44] AER (2008), Explanatory Statement, p69.
[45] ACG (2009), Commentary on the AER's Analysis of Gearing Levels, p4.
[46] As defined in AER (2008), Explanatory Statement, p56 and AER (2008), NSW Draft Distribution Determination 2009-10 to 2013-14, p190.
[47] ACG (2009), Commentary on the AER's Analysis of Gearing Levels, p4.
[48] AER (2008), *Explanatory Statement*, p74.
[49] ACG (2009), *Commentary on the AER's Analysis of Gearing Levels*, January, p11.

Loan Notes

The AER is of the view that ACG had obtained the market value of the stapled security and reduced this by the corresponding book value of debt (or net debt where applicable).[50]

In response, ACG has indicated that the AER view above is not correct as there is no market value for Envestra loan notes. These loan notes are part of a stapled security and cannot be traded separately from Envestra shares.

In addition, ACG indicated that the small difference between the book value derived from the June 2007 Balance Sheet by the AER ($98.96m) and the value ACG calculated ($102m) was due to ACG sourcing the book value of the loan notes from the Envestra website and multiplying their per share value of $0.12 as at 31 May 2007 by the number of shares on issue at the time[51]. The differential is due to an accounting offset for the outstanding balance of capitalised equity raising transaction costs.

The JIA considers that while the AER appears to endorse the practice of removing the book value of loan notes, the AER's discussion on the book and market values of loan notes clouds the issue. The JIA concurs with ACG that:

> ... in the interests of clarity, the AER should make a clear statement that it agrees with the approach adopted by Standard and Poors, that the book value of loan notes, which have distinct equity characteristics or are part of a stapled security should be removed from the book value of debt in the balance sheet.[52]

The JIA recommends that the AER make a statement to clarify its position on loan notes.

Market vs Book Value of Gearing and Comparator Selection

Market vs Book Value of Gearing

During periods of volatile interest rates, the AER considers that the book values of debt and equity may diverge from their corresponding market values[53]. In light of these observations, the AER concluded that:

> Accordingly, in these circumstances, the AER considers that the book value of gearing may act as a proxy for the market value of debt and equity to obtain a benchmark efficient level of gearing[54].

The JIA and ACG do not consider the AER's logic on this matter to be persuasive. While it is agreed that divergence can occur under these circumstances, it does not follow that the book value of gearing should be applied. Given the market value of equity can be directly observed from the share price of the traded security, there is no justification for using the book value of equity as a proxy for the market value. Further, as ACG point out:

> The problem with observing gearing levels at times of significant (equity) market movement is that the observed gearing level may not be the target or long term level because it takes time to

[50] AER (2008), *Explanatory Statement*, p71.
[51] ACG (2009), *Commentary on the AER's Analysis of Gearing Levels*, p13.
[52] ACG (2009), *Commentary on the AER's Analysis of Gearing Levels*, p13.
[53] AER (2008), *Explanatory Statement*, p74.
[54] AER (2008), *Explanatory Statement*, p74.

> change debt levels (in either direction). This again says that gearing should be observed over a period rather than at a single point in time – it does not say that the book value of equity should be used. At best, the book value of equity is the board's view of the market value – and hence is one step removed from the actual value in the market place. At worst it is an historical accounting artefact[55].

The JIA believe that book values of equity should not be used as a proxy for market values where market values can be directly observed.

Comparator Businesses

The AER disagrees with the JIA's position that government owned businesses should be excluded from the sample of comparator businesses for estimating market gearing levels on the basis that the JIA did not also propose that businesses with private parents be excluded. Essentially the AER argues that, for consistency reasons, either all the businesses associated with parent ownership (government owned or private parents) should be removed from the sample or all should remain in the sample.

The JIA remains of the view that government owned businesses should be excluded from the comparator business sample for the purposes of calculating the benchmark level of gearing. As ACG points out[56], the key issue the AER needs to recognise is that it is not possible to observe the market value of a government owned business's equity. That government owned businesses may also be subject to constraints which limit their abilities to achieve commercial gearing levels and the practical fact that reliance would inevitably be placed on accounting measures of gearing used in government owned entities will further distort the estimation of market gearing.

However, unlike government owned businesses, listed private businesses are subject to normal commercial pressures and have an observable market value for equity. This makes them very suitable for comparator purposes.

<u>DUET</u>

The JIA also notes that while the AER[57] has included DUET in its sample of comparator businesses, it also notes that it would consider removing DUET from the sample if it can be demonstrated that a large proportion of its assets related to international activities. The AER then makes the statement that it is unclear what could be defined as significant international investments.

In response to this matter, the JIA refer the AER to DUET's website: www.duet.net.au. On the basis of publicly available information, the JIA notes that DUET's asset portfolio as at 30 June 2008 includes, among other things, a 29% interest in Duquesne Light, a Pennsylvanian energy business. This equates to 25% of DUET's total investment portfolio. Duquesne Light operates 1,081 circuit km of transmission lines, 26,420 circuit km of distribution lines and cables and services approximately 587,000 customers over a network area of approximately 2,070 square km.

[55] ACG (2009), *Commentary on the AER's Analysis of Gearing Levels*, p14.
[56] ACG (2009), *Commentary on the AER's Analysis of Gearing Levels*, p17.
[57] AER (2008), *Explanatory Statement*, p78.

In the absence of any indication from the AER as to what it considers would constitute "significant international activities", the JIA notes that accounting standards[58] provide guidance on materiality, which constitutes an amount equal to or greater than 10 per cent of the appropriate asset base. Using this definition, DUET's ownership interests in Dusquesne Light represents material international activities. Assuming materiality and significance are similar concepts, the JIA argues that DUET should be excluded from the sample for the purposes of calculating the benchmark level of gearing.

Issues Raised by Other Stakeholders

The JIA notes the MEU's claim that the notional (average) business is geared to 70% rather than the historically assumed 60%.[59] The MEU's figures appear to have been calculated on the basis of a simplistic total liabilities / total assets ratio from published financial accounts.

The JIA considers that such a measure of gearing levels is misleading and inappropriate as it does not reflect the gearing relevant to regulated activities only.

The AER appears to share this view, noting that there are a number of liabilities and assets which do not directly relate to the funding of business requirements by TNSPs and DNSPs or which are transitory in nature and that adjustments to the observed level of debt are required to remove any debt that does not relate to a business' regulated activities.[60]

JIA Conclusion

The JIA support the AER's conclusion that there is no persuasive evidence to move from the currently adopted benchmark level of gearing of 60 per cent for regulated electricity transmission and distribution businesses, particularly in the current financial climate.

If a 60% gearing level were combined with other appropriate parameters, it would meet the other requirements of the Rules, Pricing Principles and National Electricity Objective, in particular:

- the requirement that the 60% be based on a benchmark efficient distribution or transmission business;
- it would enable the businesses to have a reasonable opportunity to recover their efficient costs; and
- all the facets of the National Electricity Objective could be met including promoting efficient investment.

Nonetheless, the JIA has concerns with aspects of the AER's methodology in reaching its conclusions. Specifically, for the purposes of establishing a benchmark level of gearing for a "pure play" network business, the JIA consider that:

[58] Accounting Standard AASB 1031 – Materiality.
[59] MEU Submission, AER Issues Paper, p25.
[60] AER, Explanatory Statement, p67.

- application of the "net debt" approach is more appropriate than a "gross debt" approach;
- it is essential that differing layers of debt be taken into account;
- the AER should make a statement to clarify its position that the book value of loan notes should be removed from the book value of debt in the balance sheet;
- there is no justification for using the book value of equity as a proxy for the market value; and
- government-owned businesses and DUET should be excluded from the comparator business sample.

4 Nominal Risk Free Rate

Introduction

The JIA have a number of serious concerns with the conclusions and points made in Chapter 6 of the AER Explanatory Statement dealing with the nominal risk free rate. The JIA have gathered additional evidence to support its case and have asked its expert advisers to respond to some specific questions and their response is attached to this document.

In summary, the JIA's concerns are that:

- the AER has fundamentally misinterpreted the evidence before it, in particular the evidence from Deloitte on businesses' actual debt raising practices; and, therefore
- has come to key conclusions that are not supported by the evidence; and
- proposed changes which depart from well established regulatory and commercial practice.

On the basis of existing and new evidence, the JIA view is of the view that the there is not persuasive evidence before the AER to justify a shift from the existing 10 year term of the risk free rate. Furthermore, once correctly interpreted the evidence strongly supports the status quo.

AER Draft Position and Evidence

The AER has formed the preliminary view in the Explanatory Statement that there is sufficient persuasive evidence to depart from the previously adopted 10 year risk free rate term assumption in estimating the nominal risk free rate for use in the Sharpe CAPM (**CAPM**). The AER reasoning is as follows:

1. there is a possibility of over-compensation resulting from the use of a risk free rate that exceeds the duration of the regulatory period;
2. a report prepared by Deloitte[61] purports to support the notion that there is no evidence to suggest that energy network businesses will seek to issue long-term debt as a matter of preference;
3. the regulatory regime "insulates energy network businesses from market volatility";
4. a term of the risk free rate proxy that matches the length of the regulatory period (ie the yield on the 5 year CGS) better reflects the financing strategies of regulated energy network businesses;
5. a 10 year term for the risk free rate proxy is expected to violate a "present value principle" that the AER also referred to in its Issues Paper; and
6. an MRP of 6% is consistent with a 5 year term assumption for the risk free rate.

[61] Deloitte, *Australian Energy Regulator, Refinancing, Debt Markets and Liquidity*, dated 12 November 2008.

The JIA Response

The JIA does not agree with any of the reasons summarised above because:

- the AER has fundamentally misinterpreted the evidence before it, in particular the evidence from Deloitte on businesses' actual debt raising practices; and, therefore
- the AER has proposed changes which depart from well established regulatory and commercial practice based on key conclusions that are not supported by the evidence.

The JIA response is structured to provide:

- a discussion on the deficiencies in the AER analysis and conclusions with regards to the market evidence ('Market Evidence');
- the consequences of this regarding the GasNet Tribunal Decision ('The GasNet Tribunal Precedent');
- a discussion of current regulatory and commercial practice ('Generally Accepted Regulatory and Commercial Practice');
- a discussion of the AER's other key conclusions and evidence ('Other related issues')
- a conclusion outlining a summary of the JIA position.

The factual and analytical underpinnings of this Chapter are:

- a report from Dr Tom Hird of CEG; and
- statements from the corporate treasurers of four of the businesses.

The latter statements are direct evidentiary accounts of how debt raising is actually undertaken by real businesses rather than expert analysis of what businesses might or might not do in theory. The JIA Statements provide an unequivocal, full factual basis upon which the AER can now make the final decision.

In contrast, the AER has relied upon a report by Deloittes that provides the AER with data calculated using backward engineering of financial statements or from unnamed and, therefore, unverifiable "market makers".

Market Evidence

The term of the risk free rate and the term of the investment horizon are implicitly linked. Investors, when considering the universe of investment alternatives available to them, apply a consistent framework to inform their investment decisions. The framework within which these decisions are made is invariably a long term one.

To this end, the JIA presented evidence to the AER that energy network businesses prefer to issue long-term debt, notwithstanding the standard regulatory period being 5 years. The JIA submitted that the average term to maturity of debt, at the date of issuance, for a selection of energy network businesses[62] was 11.4 years[63].

[62] CitiPower & Powercor, ETSA Utilities, SP Ausnet, Envestra and APA Group.
[63] JIA Submission pp68-69, September 2008.

In response, the AER commissioned Deloitte to examine available data on a similar sample of energy network businesses as employed by the JIA, including that for short term debt on issue (ie bank bills), to estimate a weighted average term of debt portfolios.[64] Deloitte presented data on the weighted average **remaining** term of debt from 2007 Annual Reports. That data purported to show that 56% of debt had a weighted average term to maturity of 5 years or less[65].

The JIA has serious concerns with:

- the AER's initial assumptions underlying the question to the consultants;
- the interpretation of this evidence; and
- the quality of the evidence itself.

The JIA also presents further evidence in support of its original position that businesses issue debt at a maturity in excess of 10 years on average.

These are addressed below.

The AER's initial question to Deloitte

The AER appears to have made a fundamental error in asking Deloitte to assess the weighted average **remaining** term of debt. It is the term to maturity of the debt at the time of issuance that is the relevant metric for the CAPM framework, as this illustrates the time period for which the debt was actually issued (ie preferred term to maturity). The average remaining term of debt will typically be substantially less than the term to maturity at the time of issuance.

The AER interpretation of the Deloitte evidence

The AER has misinterpreted the evidence presented by Deloitte. As stated above, Deloitte estimates the weighted average remaining term of debt as instructed to do so by its terms of reference. This weighted average suggests the average time to maturity for existing debt of private regulated businesses is likely to be around five years. On the basis of this finding, the AER goes on to state on page 119 of the Explanatory Statement:

> Therefore if energy network businesses have a natural preference to issue long term debt, the JIA would expect the weighted average debt portfolio to be around ten years or greater, given that the spread on ten year bonds is compensated via regulated prices.

This is simply incorrect. If businesses issued long-term debt (with a relatively smooth profile), say at 10 years, you would actually expect the weighted average debt portfolio to be around five years not ten. That is, an average will always be below the actual maturity at which the debt is issued. This basic mathematical relationship can be illustrated with a simple example.

Assume a business with $10m in outstanding debt consisting of ten bonds each of which had ten years to maturity when issued. Further, imagine that one of these bonds falls in each of the next ten years (consistent with the firm issuing one of the bonds in each of the last ten years). This debt portfolio will consist of one bond with one year to maturity, one bond with two years to maturity, one bond with three years to maturity and so on up to ten. The average term to maturity of this portfolio will be five years but the average term to maturity at the time of issue was ten years.

[64] Deloitte, *Australian Energy Regulator, Refinancing, Debt Markets and Liq*uidity, dated 12 November 2008, p 27.
[65] Deloitte, *Australian Energy Regulator, Refinancing, Debt Markets and Liquidity*, dated 12 November 2008, Table 8, p 27.

In fact an analysis performed by CEG using some simple assumptions and basic rules of thumb with regard to smoothed debt profiles shows the Deloittes data actually suggests that an average energy network business issues debt with maturity of 12 years.[66] The JIA notes that this is broadly in line with its own evidence presented in its original submission of an average term to maturity of debt, **at the date of issuance,** of 11.4 years.

Therefore, the AER's has no basis for the statement on page 120 of the Explanatory Statement:

> In sum, based on the available information the AER considers there is no evidence to suggest that network businesses will seek to issue long term debt as a matter of preference;

or the AER's key conclusion on page 134 that:

> A term of the risk free proxy which matches the length of the regulatory period (ie 5 years) better reflects the financing strategies of regulated energy network businesses.

In fact, the above statement is incorrect. The JIA submits that the evidence presented by Deliotte is consistent with the original JIA submission that businesses issue debt with longer then 10 years maturity on average and the JIA submission that the average term to maturity at issuance is 11.4 years.

The quality of Deloitte evidence

The JIA notes that Deloitte did not verify its report with any of the network businesses concerned. Therefore, it is not surprising that significant errors have been made by Deloitte in compiling data from intermediate sources and drawing conclusions from it regarding typical company practice. In particular, the data presented in Table 8 of the Deloitte report has numerous errors both of fact and in the conclusions drawn. Some of these problems are as follows:

- Deloitte have relied on data that generally shows the contractual undiscounted principal and interest cash flows of a firm's debt portfolio, which is not a debt maturity profile as inferred by Deloitte. In the Envestra 2008 Annual Report Note 2(c)(ii) (page 42), the less than 1 year amount of $16.4m attributed to Capital Indexed Bonds is an estimate of the interest amount payable over the next financial year and does not include any repayment of principal upon maturity. Similarly, the less than 1 year amount of -$4.7m attributed to Swaps is the net amount to be paid to swap counterparties over 2007/08 and does not reflect any external debt balances. The consequence of the misinterpretation of the data is that as the terms increase (ie greater than 1 year to less than 5 years, greater than 5 years to less than 10 years and greater than 15 years), the interest amount increases exponentially while the principal balances stay constant, which distorts the results of what the AER is trying to measure (maturity profile). This is a fundamental error and demonstrates that the AER's conclusions about 5 year maturity profiles are not supported by the evidence.
- The data for Citipower and Powercor include "trade and other payables". This is not senior debt.
- More seriously for Citipower, Powercor and ETSA, the data presented by Deloitte include subordinated debt that exists at the holding company level. At the regulated entity level these balances are equity and clearly should be excluded, and either way these balances are not senior debt.

[66] CEG, *Term of the risk free rate under the NER, A report for the joint Industry Associations*, January 2009.

- Loan Note principal expected to be repaid has been included in the debt amounts. Loan Note balances are not relevant to the assessment of the issuance term of a debt portfolio, the least of which being that they have equity like characteristics, such as non-deductibility of interest payments and a virtually permanent component of the capital structure (ie 50 year term to maturity).
- Foreign currency debt balances reflect "fair value" and not the principal value upon which interest is paid. This will bias the weightings in the calculation.

For the above reasons, the total balances presented by Deloitte do not correspond to the actual balance sheet entries for all these entities.

Further market evidence presented by the JIA

The JIA now provides two authoritative sources that explain the debt raising practices of privately owned network companies (this submission also discusses the relevance of Government owned enterprises). Firstly, full portfolio details on the term to maturity of debt at issuance for selected companies. Secondly, statements from several Treasurers in network companies explain the rationale for their debt raising strategies.

The JIA collected full portfolio details on the term to maturity of debt at issuance, with the intent of addressing the concerns of the AER with respect to completeness, using the same selection of energy network businesses as Deloitte[67]. The data presented below has been reconciled back to each entity's balance sheet for the financial year ending 2007, again consistent with the Deloitte approach. The average term to maturity of debt, at the date of issuance, for a selection of privately owned energy network businesses, was 10.1 years. The results are presented below and corroborate the previous JIA position that energy network businesses prefer to issue long-term debt to manage refinancing risk and match the term of the debt with the lives of the assets to the greatest extent possible.

Table 4.1: Conclusions from Deloitte's analysis

Business	Ownership	Amount ($m)	Average Term	Average Term
Distribution Business	Ownership	Amount	To maturity To maturity	At At issuance
CitiPower & Powercor	Private	2,532.0	5.65	10.40
ETSA utilities	Private	2,353.5	7.11	10.81
SP AusNet	Private	3,662.8	4.47	7.27
Envestra	Private	1,960.9	10.91	14.39
Totals		10,509.1	6.55	10.14

The above table demonstrates that the conclusions drawn from Deloitte's analysis – namely that network companies do not have a preference for longer term debt – is incorrect. Furthermore,

[67] APA were unable to provide the data by the due date for lodging the submission. It will be provided to the AER at a later date but it is not expected to materially alter the conclusion.

testimony from company Treasurers, supports the analysis presented above. The JIA submission, therefore, is that the AER's conclusion on this matter is in error.

As noted above, statements from network companies' Treasurers support the financial data presented above. In particular, the Treasurers' statements explain the rationale for each company's debt raising practices and strategies. The overwhelming common factor is the task of managing "refinancing risk". Refinancing risk raises a number of issues for network companies which are summarised below:

- Refinancing risk is the risk that a business cannot replace debt with new funding when it falls due. There are many instances of refinancing risk and when a firm cannot refinance, it usually fails as a business and is put into administration. It occurs when the amount of maturing debt exceeds market appetite and cannot be replaced at maturity.
- Shareholders are unwilling to carry excessive refinancing risk.
- Credit ratings agencies may place companies on "credit watch", downgrade or remove credit ratings if the refinancing risk is perceived to be too high.
- All the businesses have Treasury Policies that govern the Treasurer's refinancing strategies which seek to manage refinancing risk and minimise the total economic costs of the debt portfolio, including transaction costs and commitment fees on undrawn facilities.
- All the Treasurers explain in detail how and why there is a very strong objective is to obtain long-dated debt if it can be obtained at acceptable prices. To do otherwise would be imprudent and consequently contrary to generally accepted commercial practice and precedent. Although all have mixed portfolios, each company has successfully maintained a long-dated average tenor to their portfolios.

Importantly, the statement from Andrew Noble from CitiPower and Powercor explains the disadvantages of moving to shorter term debt:

> A further disadvantage of issuing short term debt is that you have more regular debt issues requiring significant financial and non financial resources for contract negotiations, legal fees and other transaction costs. It is inefficient as compared to issuing longer term debt.

The Treasurers' statements are consistent with the Deloitte findings that:

> Typically private companies borrow on the longest tenor available … This would then be hedged during the reset period via an interest rate swap for the duration of the regulatory period[68];

and

> Historically, most energy regulated companies would try to achieve debt funding for as long as possible, 10-15 years, and hedge the interest rate risk to lock in a fixed rate for the regulatory term (5 years) using interest rate swaps[69].

The JIA Conclusion

The further evidence submitted by the JIA on this matter has very important implications regarding the AER's conclusion that a 5 year term should now be adopted. In essence, if regulation led companies to change their debt raising practices, network businesses would be

[68] Deloitte, op cit, p13.
[69] Deloitte, op cit, p 30.

less able to manage refinancing risk effectively. As a matter of fact, supported by statements from company Treasurers, a move to a shorter debt term would therefore lead to higher overall financing costs. Contrary to the AER's Explanatory Statement, therefore, the current debt refinancing arrangements minimise financing costs and, in turn, the costs of providing regulated network services.

The JIA's submission is that the AER must give appropriate weight to the debt practices of network companies. In doing so, it can be reasonably assumed that network companies currently face strong incentives to minimise refinancing costs, and therefore that current practice is best practice. The JIA submits that the AER would create additional transaction costs and risks for network companies if it moved the term of the risk free rate to 5 years. Such an outcome would be contrary to the National Electricity Objective.

Treatment of Government Businesses

Notwithstanding the firm conclusions reached above, the JIA notes that the analysis presented relates only to privately owned network companies. This raises the question as to whether government-owned businesses should play a role in setting the efficient benchmark for debt raising costs.

The JIA considers that the inclusion of data from government-owned regulated network businesses in this instance is not correct because, as discussed in Chapter 2 of this submission, debt is not raised for the government owned businesses by them directly and the practices can be expected to differ, and do differ, from those of the efficient benchmark firm. The proposition that their data should be used in the manner proposed in the Explanatory Statement is at odds with good regulatory practice and previous AER statements. For example, the AER stated in its 21 November 2008 NSW Draft Distribution Determination:

> The efficient benchmark firm should be a large listed firm and while firms may operate under different structures to this, compensation should not be provided for any deviation from the benchmark. [Page 190]

To explain and substantiate this point, the JIA explain that the government-`owned businesses raise capital through their State treasuries. These treasuries have a host of assets in diverse parts of the economy for whom they raise funds from ports, rail systems, airports and other commercial and quasi commercial operations to less commercial assets such as schools and hospitals. They also have freedoms (although these should not be overstated) when compared with private sector businesses when raising debt. These factors combined mean that the governments do not face refinancing risk in the same way that benchmark corporate treasuries do. As a result, some features of their debt raising are quite unlike those of corporate treasuries and other features are much more similar. Interestingly, as the demands for capital in the electricity sector increase substantially and becomes significantly more predominant in the over-all debt pool, the practices of these State treasuries are changing to reflect more and more the practices of the benchmark efficient firm (although they will continue to have differences due to the diversity in their portfolios).[70]

[70] Note that this does not mean that government-owned corporations face any inappropriate advantages (or disadvantages) vis a vis their private sector counterparts. The Competitive Neutrality requirements and practices ensure that this is not the case. However the point here is that their practices in debt raising cannot be taken as data from which to identify the practice of the benchmark efficient firm.

The JIA submits that information about the debt financing practices of government-owned regulated network businesses is not relevant to, or replicable by, a large listed energy network business. As observed by Deloitte (see below), the shorter debt profiles of government businesses reflects their ability to access debt markets and refinance with much greater certainty.

Relying on the data from the privately owned network service provider is more than adequate for the AER to form a conclusion because, as set out above, there is both a diversity of numeric material and a detailed qualitative explanation from each of the four treasurers as to why long-term debt raising is the only viable approach for the efficient benchmark network service provider.

The conclusions that can be drawn from the above analysis are as follows:

- The AER wrongly concluded that there is no evidence that energy network businesses will seek to issue long-term debt as a matter of preference. The JIA submission provides statements from company Treasurers that confirm long-standing commercial practice regarding debt raising strategy.
- The JIA has provided maturity at issuance data for privately owned energy network businesses. This data supports the JIA's previous submission showing that businesses issue long-term debt as a matter of preference, and at 30 June 2007 the average term to maturity at issuance was 10.1 years.
- The data provided to the AER in Table 8 of the Deloitte report is not average term to maturity (weighted or otherwise) and the AER has drawn incorrect inferences from this data regarding the term to maturity of debt at the time of issuance.
- The implication from the JIA's submission is that the AER is incorrect in concluding that moving to a 5 year term for debt would lead to lower costs for customers. In fact, it would lead to higher debt raising costs, including transactions costs, and higher refinancing risk.

The GasNet Tribunal Precedent

In relation to gas transmission, when the ACCC used a mixture of 5 and 10 year terms for GasNet, the matter was appealed to the Australian Competition Tribunal. It determined that a 10 year term should be used for the risk free rate throughout the CAPM formula. [71]

There were two important reasons 10 year term to maturity was used for the risk free rate in the 2003 GasNet decision. The first reason was consistency within the CAPM formula.

> While it is no doubt true that the CAPM permits some flexibility in the choice of the inputs required by the model, it nevertheless requires that one remain true to the mathematical logic underlying the CAPM formula. In the present case, that requires a consistent use of the value of rf in both parts of the CAPM equation where it occurs so that the choice was either a five year bond rate or a ten year bond rate in both situations.

This is important because any term of maturity decision needs to be suitable for each use of the risk free rate. The second reason interrogated not just the consistency in inputs but looked at

[71] Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6, 23 December 2003

whether in fact the 5 year or 10 year term was more appropriate. The Tribunal found that it is commercial practice to use longer dated debt and equity instruments in this industry.

> The timescales are dictated by the relevant underlying facts in each case and for present purposes those include the life of the assets and the term of the investment ... the Tribunal is satisfied that the use by GasNet of a ten-year Commonwealth bond rate to determine a Rate of Return on equity . . . was a correct use of the CAPM and was in accordance with the conventional use of a ten year bond rate by economists and regulators where the life of the assets and length of the investment approximated thirty years in the MRP calculation and the risk-free rate. The use of the CAPM with these inputs in the Tribunal's view, produces a Rate of Return on equity which s8.31 treats as one commensurate with the relevant market conditions and risk for the purposes of s8.30.[72]

The AER has challenged the relevance of this finding on page 120 of the Explanatory Statement, which states:

> In sum, based on the available information, the AER considers there is no evidence to suggest that network businesses will seek to issue long term debt as a matter of preference. In the AER's view, it appears that the evidence upon which this current assessment has been made was not before the Tribunal at the time of making its conclusions in the GasNet decision.

The JIA has shown in the previous section that these finding are in fact based on a fundamental misinterpretation of evidence by the AER. The JIA has also provided further evidence that network businesses will seek to issue long term debt as a matter of preference.

The JIA submits that there is no longer any basis to maintain that there is a material difference in the information available and presented to the Australian Competition Tribunal in relation to GasNet, and the information available to the AER now. Therefore, there is no basis upon which a different view can be taken.

The AER also notes on page 118 of the Explanatory Statement:

> ... that the Tribunal in its GasNet decision did not specifically discuss or address the possibility of over-compensation resulting from the use of a term for the risk free rate that exceeds the length of the regulatory period. It appears that, that specific issue was not argued before the Tribunal. As discussed below, there is evidence to suggest that regulated network businesses will in fact be overcompensated on average with a 10 year term given that cash flows and rates of return are reset at the end of each regulatory period.

The AER's argument relies on the fact that they believe the businesses issue short term debt but are compensated for long term debt in the regime. Again, as outlined in the previous section, the evidence shows the businesses issue debt at a similar maturity to that assumed in the current regulatory regime (10 years). Therefore, there is no evidence of overcompensation. This issue is more comprehensively addressed in Section 5 below.

The JIA submits that there is no evidence of overcompensation upon which the Australian Competition Tribunal can base a different view.

Furthermore, it is a matter of concern that the AER is essentially reopening the decision of the Australian Competition Tribunal. The AER is seeking to overturn the decision of the Australian

[72] Australian Competition Tribunal, Application by GasNet Australia (Operations) Pty Ltd [2003] ACompT 6, 23 December 2003

Competition Tribunal and the strong regulatory precedent on this issue without persuasive evidence to do so.

Generally Accepted Regulatory and Commercial Practice

Regulatory Practice

The AER states on page 127 of the Explanatory Statement that the use of the yield on 10 year Government Bond as the proxy for the CAPM risk free rate was largely established by the Australian Competition Tribunal in its 2003 GasNet decision:

> The currently adopted methodology under the NER for estimating the risk free rate is based on a 10 year term assumption. In turn, the NER methodology has been consistently adopted by all regulators in the Australian energy sector since the Tribunal's 2003 GasNet decision (including the ACCC and the AER).

This is factually incorrect as all jurisdictional regulators who were responsible for distribution decisions used the 10 year Government Bond as the proxy from the CAPM risk free rate prior to 2003. This practice was well established before the Gas Net Decision (see **Table 4.2** below).

Table 4.2: Use of 10 year term as risk free rate

USE OF 10 YEAR TERM AS RISK FREE RATE	Risk free rate term	Date	Regulator
AGL Gas Networks Limited Access Undertaking (as varied) Determination Independent Pricing and Regulatory Tribunal of New South Wales	10 Years	July 1997	IPART
Final Decision Access Arrangement for AGL Gas Networks Limited Natural Gas System in NSW	10 years	July 2000	IPART
Regulation of New South Wales Electricity Distribution Networks Determination and Rules Under the National Electricity Code	10 years	December 1999	IPART
Final Decision Access Arrangement for Envestra Limited's South Australian Natural Gas Distribution System	10 years	December 2001	SAIPAR
Electricity Distribution Price Determination 2001-2005 Volume 1 Statement of Purpose and Reasons	10 years	September 2000	ORG/ESC
Access Arrangements – Multinet Energy Pty Ltd & Multinet (Assets) Pty Ltd Westar (Gas) Pty Ltd & Westar (Assets) Pty Ltd Stratus (Gas) Pty Ltd & Stratus Networks (Assets) Pty Ltd Final Decision	10 years	October 1998	ORG/ESC
Final Decision on the AlintaGas Mid-West and South-West Distribution Systems	10 years	June 2000	INDEPENDENT GAS PIPELINES ACCESS REGULATOR WESTERN AUSTRALIA
Final Decision Proposed Access Arrangements for Gas Distribution Networks: Allgas Energy Limited and Envestra Limited	10 years	October 2001	QCA

USE OF 10 YEAR TERM AS RISK FREE RATE	Risk free rate term	Date	Regulator
Final Determination Regulation of Electricity Distribution	10 years	May 2001	QCA
Investigation into Electricity Supply Industry Pricing Policies Final Report	10 years	November 1999	Office of the Tasmanian Electricity Regulator

Commercial Practice

In addition to its use for regulatory purposes, the CAPM is widely used in commercial practice to estimate the cost of equity for a range of purposes, namely pricing and investment appraisal (ie acquisitions, capital expenditure).

The term of the risk free rate used in the CAPM is invariably ten years as this is the generally accepted benchmark. This is because under the CAPM, investors' expectations are based on a long-term forward looking horizon. Ten year bonds are used as the proxy because they are the longest liquid maturity available in the Australian market. Evidence for this view is taken from Grant Samuel, one of the most prominent independent corporate advisory groups in Australia and New Zealand. Grant Samuel use the CAPM in a range of corporate finance advisory roles for energy network businesses, and other unregulated enterprises, such as:

- strategic advice;
- mergers and acquisitions;
- equity and debt capital raisings;
- corporate restructurings; and
- valuations.

Grant Samuel are renowned for their Expert Valuations, which provide an expert opinion as to the fair and reasonable value[73] to be attributed to an enterprise, and have been involved in many of the largest transactions in Australian and New Zealand corporate history[74] Grant Samuel consider that ten years is the generally accepted benchmark term to maturity for the risk free rate in the CAPM as applied in Australia.

> **The ten year bond rate is a widely used and accepted benchmark for the risk free rate.** [emphasis added] Where the forecast period exceeds ten years, an issue arises as to the appropriate bond to use. While longer term bond rates are available, the ten year bond market is the deepest long term bond market in Australia and is a widely used and recognised benchmark.[75]

Further support for this view can be garnered from other independent experts who use the CAPM to fairly and reasonably value commercial enterprises, for example Deloitte and Leadenhall Australia:

[73] This is consistent with the NER clause 6.5.2 as it can be mathematically re-arranged to equate to a "return required by investors in a commercial enterprise".
[74] http://www.grantsamuel.com.au/
[75] Grant Samuel, Expert Valuation SP AusNet Explanatory Memorandum, p211.

> The 10-year bond rate is a widely used and accepted benchmark for the risk free rate.[76]

and

> The 10 year Commonwealth Bond rate is commonly used as a surrogate for the risk free rate.[77]

Indeed, in its submission to the AER on this topic the Major Energy Users group supported the view that ten years is the generally accepted benchmark for the risk free rate in the CAPM.

> Historically, the Commonwealth government (**CGS**) 10 year bond rate has been used as the basis for the "risk free" rate for investment . . . The 10 year CGS has been consistently used as the benchmark from which MRP has been calculated from the share market.[78]

Notwithstanding the general agreement on this issue between the JIA, energy users and independent experts, the AER has chosen to diverge from commercial and regulatory practice and propose a 5 year term to maturity for the risk free rate. The AER does not have sufficient evidence to justify using methodologies that conflict with commercial practice and regulatory precedent.

The JIA views generally accepted commercial practice as persuasive evidence of the return required by investors in a commercial enterprise and supports the continued use of the 10 year term assumption for the risk free rate.

Other related issues

In this section the JIA address other issues arising from the AER's Explanatory Statement. The comments are set out under separate subheadings below, which respond to specific contentions which appear in the Explanatory Statement.

There is no over compensation resulting from the use of a risk free rate that exceeds the regulatory period

A key argument underpinning the AER conclusion relates to the belief that businesses are being overcompensated for risk through the use of a ten year term for the risk free rate. The argument is summarised in their paper through a quote from Professor Martin Lally on Page 126 of the Explanatory Statement:

> In the presence of a liquidity premium in the term structure of interest rates, the allowed price is greater than it would otherwise be. This increased allowance is inappropriate because the regulated firm is being compensated for bearing interest rate risk for a period beyond the review term, when it does not face that risk due to the resetting of the output price to reflect interest rate changes.

The AER appears to accept this argument, however, the key underlying assumption of this argument is that the businesses are in fact raising debt with a maturity less than or equal to the regulatory period.

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[76] Deloitte: Sunshine Gas Limited: Independent expert's report, September 2008, p 87.

[77] *Leadenhall Australia Ltd: Independent Expert's Report for Chariot Internet,26 June 2001, p 33.*

[78] Major Energy Users Inc, *AER Review of Parameters for Weighted average cost of capital (WACC) AER Issues Paper, A Submission from Major Energy Users Inc, In conjunction with some members of National Consumers Roundtable on Energy*, September 2008, p38.

As outlined in previous sections, the evidence shows the businesses issue debt at a similar maturity to that assumed in the current regulatory regime (10 years). Therefore, there is no evidence of overcompensation. That is, the businesses actually incur the costs the current regulatory regime assumes.

The JIA submits that the evidence conclusively shows there is no overcompensation for the regulated businesses under the existing regulatory regime.

Incentive Regulation

In its Explanatory Statement the AER concluded:

> As with most aspects of an incentive-based regulatory regime, the methodology for determining the cost of debt is a benchmark assumption against which incentives are created for regulated businesses.[79]

Obtaining debt is not just a pricing issue, there are many other considerations not captured in the AER's debt analysis (such as counterparty appetite, market capacity and refinancing risk). Therefore the AER should be mindful of providing incentives to energy network businesses to debt finance efficiently. Setting the risk free rate with a long tenor is a key aspect of incentive regulation as it allows businesses to manage refinancing risk and adopt strategies which best take advantage of market conditions and their risk appetite.

No Consideration Given to the Cost of Equity

As discussed in section 2 the AER erroneously concluded that the average term to maturity for debt issued by energy network businesses was 5 years, or less. Using this conclusion the AER then proceeded to estimate that setting the cost of debt allowance with reference to a 10 year term to maturity, relative to a 5 year term to maturity, over compensated energy network businesses by around 40 basis points based on historic averages[80]. The data presented by the AER in Table 6.8 of the Explanatory Statement shows that the more recent difference between the cost of debt with a 10 year term to maturity (for a credit rating of BBB), relative to a 5 year term to maturity, is immaterial at around 2 basis points. Given the present spread between 5 and 10 year yields, the JIA does not accept that over compensation for the cost of debt would result from the use of a risk free rate with a term that exceeds the regulatory period.

More broadly however, the JIA is profoundly concerned that the AER's consideration of the issue of the term of the risk free rate, along with its overall consideration of the cost of equity has not had regard to the cost of equity now prevailing in the market. Indeed, the JIA is concerned that the energy network businesses would be under-compensated if a risk free rate with a term 5 years was used to calculate the WACC.

More broadly however, the JIA is profoundly concerned that the AER's consideration of the issue of the term of the risk free rate, along with its overall consideration of the cost of equity has not had regard to the cost of equity now prevailing in the market. Indeed, the AER failed to conduct any assessment of the cost of equity when derived using the CAPM with a risk free rate based on a 5 year term to maturity relative to the standard approach of using a risk free rate with a 10 year term to maturity.

[79] Explantory Statement page 109.

[80] The purported 40bp over-compensation on the cost of debt translates into an additional 24bp in the WACC.

Using a 20 day average of the yield on 5 year CGS[81], an equity beta of 0.8 and MRP of 6%, the cost of equity determined in accordance with its proposed parameters would be 8.38%. This number can be stress-tested against some very simple market measures to determine whether the AER's proposal satisfies the requirement of clause 6.5.4(e)(1) of the Rules (which states that in conducting its WACC review, the AER must have regard to the need for the rate of return calculated to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and the risk involved in providing regulated services.)

An indication of the minimum cost of equity for energy network businesses prevailing in the market can be calculated simply as the distributions to shareholders (eg dividends, repayment of loan notes etc) divided by the current share price. This is an indication of the absolute lower bound of investors' required returns because it does not include any allowance for maintenance of the real value of the initial equity investment, or any capital growth. The table below sets out an estimate of the lower bound cost of equity for various businesses, based on the simple ratio defined above.

Table 4.3: Estimate of the lower bound cost of equity for various businesses

Energy Network Business	Absolute lower bound Prevailing Cost of Equity
SP Ausnet	12%
DUET	13.5%
APA Group	9.6%
Envestra	18%
Spark Infrastructure	12%
Average	13%

Given that the prevailing capital market conditions indicate that the absolute lower bound cost of equity for energy networks is likely to average around 13%, it is clear that the AER's proposals would significantly under-compensate electricity network businesses for the prevailing cost of equity. This inference is supported by the reactions of equity market analysts to the AER's WACC proposals. For instance, on 12 December 2008, Macquarie Bank stated:

> This is a negative surprise to us and the market and in JIA's view runs inconsistent with recent commentary by the AER … .There is no doubt the market will be disappointed in this decision. At a time when investors are nervous enough about levels of debt in these businesses, this is the last thing the market needed.

and on 11 December 2008, Goldman Sachs JBWere stated:

> The draft is disappointing and underlines the JIA's caution around the more highly geared vehicles. Overall the WACC parameters set are below the JIA's expectations . . . If the decision is

[81] The 20 day average yield on 5 year CGS to 16 January 2009 was 3.58%.

> not changed, it will make it more difficult for industry to obtain debt and equity to fund future investment

In light of these observations, it is worth examining a report commissioned in December 2008 by the AEMC in relation to the Review of Energy Market Frameworks in light of Climate Change Policies. In that report, S3 Advisory have examined the impact of the global financial crisis on the availability and cost of capital for energy infrastructure. The report noted that:

> debt providers are now reducing their risk exposure and requiring equity providers to take more of the risk, therefore increasing equity risk premiums[82];

and

> there will be an institutionalizing of a more conservative approach to the provision of capital in response to the current credit crisis which will transfer risk to equity and increase the risk premium attached to investment in general and for the energy sector.[83]

In preparing the report, S3 Advisory interviewed a range of market participants, debt and equity providers, rating agencies and other. In relation to the cost of equity, the JIA also consider that a number of other key points made by S3 Advisory are relevant to the AER's current review, namely:

> It is clear the significance of the current credit crisis and the limit it is likely to place on access to and cost of capital should not be underestimated as it establishes a new paradigm in which investment must be considered and will have a significant influence throughout the period till 2020[84];
>
> The magnitude of the credit crisis will leave a step change to a more conservative approach to capital allocation which is likely to last a generation reducing debt allocation and requiring additional equity to be committed to projects . . . Where the equity capital is available it will come at a higher price as a result; and
>
> ... the potential of a reduced regulatory WACC and the potential under funding of network augmentations create considerable uncertainty for some investors and may delay allocation of capital to the sector[85].

These and other points made in the S3 Advisory report are reiterated here to highlight that, contrary to the AER's current thinking, the credit crisis has created an entirely new environment within which capital allocation and the costs of raising debt and equity need to be considered.

The AER will be aware that at the WACC Public Forum held on 17 December 2008, the Financial Investor Group[86] presented detailed information demonstrating that:

- the AER's WACC proposals would not provide a forward looking return on equity that is commensurate with prevailing conditions in the market for funds, contrary to the express requirements of the National Electricity Rules;
- consequently the AER's proposed WACC would being insufficient to encourage the substantial investment required in the electricity networks; and

[82] S3 Advisory (2008), Financing of future energy sector investments in Australia, December, p7.
[83] S3 Advisory (2008), Financing of future energy sector investments in Australia, December, p13.
[84] S3 Advisory (2008), Financing of future energy sector investments in Australia, December, p12.
[85] S3 Advisory (2008), Financing of future energy sector investments in Australia, December, p15.
[86] Financial Investor Group Presentation, Public Forum, 17 December 2008. AER website.

- the global credit crisis has triggered a rising trend in the cost of equity.

Market based evidence strongly indicates that the cost of equity derived using the CAPM with the AER's proposed equity beta of 0.8, MRP of 6% and a risk free rate based on a 5 year term, as proxied by the yield on CGS, significantly understates the cost of equity prevailing in the market. Reverting to standard commercial practice of using a risk free rate with a 10 year term to maturity will help redress this under-estimation problem. However, as noted in detail elsewhere in this submission, an allowance for "convenience yield" on the risk free rate, upward revisions to the proposed MRP of 6% and equity beta of 0.8 are also required so that the AER can fulfil is statutory obligations under the NER and provide a regulatory cost of capital reflective of that prevailing in the market for investment in a commercial enterprise with commensurate levels of risk.

The conclusions that can be drawn from the above analysis are as follows:

- There is no evidence to indicate that energy network businesses will be over compensated with a 10 year term to maturity for the risk free rate.
- The cost of equity prevailing in the market is significantly higher than the cost of equity calculated using the AER's proposed 5 year term to maturity for the risk free rate, MRP and equity beta values. The market based evidence strongly indicates that the proposed regulatory cost of capital will fail to provide return on capital that is commensurate with prevailing conditions in the market for funds, contrary to the express requirements of the National Electricity Rules.
- There is no persuasive evidence to depart from the 10 year term to maturity for the risk free rate. This then dictates that the review cannot opt for any other bond rate. Nevertheless, the evidence goes even further to support a continued use of the 10 year term to maturity for the risk free rate that the Rules require. Persuasive evidence in fact exists that the cost of capital derived using the AER's proposed parameters and methodology will under-compensate energy network businesses and not provide a reasonable opportunity to recover at least the efficient costs, which is contrary to the National Electricity Objective and clause 7.A of the NEL.

An MRP of 6% is consistent with a 5 year term assumption for the risk free rate

The MRP is measured as the difference between the return on equity and "the" risk free rate (and presented as a premium added to "the" risk free rate). The MRP can therefore only be defined in terms of what the practitioner defines as the risk free[87]. As outlined previously, standard practice is to use a 10 year term to maturity for the risk free rate in the CAPM. The MRP must be consistent with this assumption. There is little, if any, independent empirical analysis where an MRP is calculated using a 5 year term assumption. Consequently, there is no evidence to support the AER's desire to use an MRP calculated with a 5 year term assumption.

There are also problems with the logic underpinning the AER's conclusion that there is no "persuasive evidence" for altering the MRP. While the AER is not proposing to alter the value of the MRP (retaining it at 6%) it is proposing to alter the definition (defining it relative to 5 year CGS rather than 10 year CGS). The Explanatory Statement makes clear that applying a 6% MRP with the proposed new definition (relative to a 5 year CGS) is equivalent to reducing the MRP by 20bp based on the current definition of the MRP (relative to 10 year CGS). In CEG's view, this is demonstrably a de facto reduction in the MRP and cannot reasonably be justified on the basis

[87] CEG, *Term of the risk free rate under the NER, A report for the joint Industry Associations,* January 2008, p4-5.

that there is no "persuasive evidence" not to impose a de facto reduction in the MRP (simply because the headline value is unchanged at the same time the definition is changed).

The AER also relies on the fact that forward looking estimates of the MRP are below 6% as part of its basis for not making the appropriate compensating increase in the MRP of 20bp. The JIA note that the most recent of the studies relied on by the AER is now more than two years old. Were these studies redone today using current market evidence, they would result in a market risk premium of well above 6%. With this basis removed there is no reason not to amend the MRP in a manner that preserves its economic contribution to the WACC when the term of the risk free rate is altered.[88]

The proposed move to an MRP measured relative to the 5 year CGS appears to be another instance where the AER is modifying practices used in commercial practice, and/or creating a methodological approach devised to achieve outcomes consistent with its own objectives and not reflective of commercial practice. In the JIA's view generally accepted commercial practice is the requisite persuasive evidence for the continued use of the 10 year term assumption for the MRP. A detailed analysis of the MRP conflict with a 5 year CGS assumption is provided in the CEG report titled, *Term of the risk free rate under the NER, A report for the joint Industry Associations*, dated 21 January 2009 and Chapter 4 of this submission.

The regulatory regime "insulate energy network business from market volatility"

The Explanatory Statement puts far too much weight on the effect of the regulatory regime and its purported effects of insulating energy network business from market volatility. It is the nature of the business profile (eg essential services, long lived assets) that is the most significant driver of the inherent stability of the cash flows. It is this stability of the cash flows that makes energy network businesses a relatively attractive lending proposition. It is worth noting that not all characteristics of energy network businesses are attractive to lenders. In most industries, the business assets include land, inventory of materials and products and machinery. There is a often a readily accessible secondary market for all those items whereas if a lender forecloses on an energy network business its assets are predominantly comprised of installed pipes, wires and specific purpose easements which cannot easily be removed and resold by the lender in Australia or overseas.

Turning to the regulatory regime (which is not amongst the tangible or intangible assets of the business to which lenders can look for repayment), the regime can either positively or negatively impact the relative attractiveness of the sector to capital providers. Regulated businesses face this risk at the expiration of each regulatory period when prices and revenue are re-determined.

What is clear, however, is that the AER Explanatory Statement on WACC has detracted from the relative attractiveness of the sector. Upon release of the proposed WACC parameters Standard & Poor's put investors on notice that the whole sector is likely to be downgraded if the Explanatory Statement on WACC parameters were to stand in the Final Decision:

> Standard & Poor's Ratings Services said today that Australia's electricity network companies are likely to face lower cash flow if the Australian Energy Regulator's (**AER**) draft review of the sector's weighted average cost of capital (**WACC**) parameters were implemented as proposed. The aggressive capital structures of Australia's rated network companies mean they have limited tolerance at existing ratings for material reductions in cash flow; hence, this leaves them vulnerable to a lowering in credit ratings by one notch. The draft nature of the AER's review

[88] CEG, *Term of the risk free rate under the NER, A report for the joint Industry Associations*, January 2008, p4-5.

> means it is difficult to make any meaningful assessment at present. The final decision by the AER on WACC parameters is due for release in March 2009, and Standard & Poor's plans to make an assessment of the implications on ratings at this time.[89]

The regulatory regime itself creates regulatory risk. For example, in long term assets with a economic life of 40 years, if you considered an asset originally invested in 1969, over the last 40 years the asset and its owner would have experienced many hundreds of changes to the legislation at Federal, State and Local government levels, and policy initiatives by differing levels of government (eg Full Retail Contestability, Carbon Pollution Reduction Scheme, etc.). In addition, had the business been regulated over this entire period, there would have been over the eight regulatory determinations (based on 5 year periods between price reviews). Each one provided opportunities for the incumbent Regulator to adjust their form of regulation, rates of return, asset values and modelling assumptions.

This creates considerable uncertainty for owners of, and investors in, regulated businesses. For example, in its submission to the ESC's review of Gas Access Arrangements in Victoria, BBI stated:

> The perception of regulatory risk, even if the resulting price change is relatively small, has the potential to undermine the confidence of infrastructure owners and investors and deter essential investment.[90]

Given this it is difficult to attribute any net benefits from the regulatory regime per se. A pertinent example is the lack of regulatory certainty surrounding the cost recovery mechanism for the Carbon Pollution Reduction Scheme (**CPRS**) and the enhanced national Renewable Energy Target (**RET**) is also affecting investors perceptions of risk for the energy sector as a whole.

Although not explicit, it appears that the AER is relying on advice contained in the Deloitte report to conclude that "despite the current turbulence in financial markets the outlook appears positive for regulated energy network businesses"[91]. This is a naive view about the state of capital markets, the presence of refinancing risk and how they are treating highly geared entities. The Final Report to the AEMC, *Financing of future energy sector investments in Australia: The potential effects of the Carbon Pollution Reduction Scheme and Renewable Energy Target*, by David Green, S3 Advisory highlights the current and expected future realities in the domestic and global capital markets. The key themes from these reports are:

- investors set the cost of capital taking into a wide range of information, not just the theoretical application of the CAPM;
- there has been a step change in the capital markets attitude to risk, which will make capital more costly and difficult to attract. These changes are likely to remain in place until 2020;
- there is not enough capital in the world to finance all of the required infrastructure;
- debt rationing will continue to occur in Australia and around the globe;
- de-leveraging is occurring with equity expected to be substituted for debt;
- as the cost of debt increases so does the cost of equity;

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[89] Standard & Poor's, Australian *Energy Regulator's Draft WACC Decision Leaves Companies Vulnerable To Downgrades*, 12 Dec 2008.
[90] Babcock and Brown Infrastructure (2007), Submission to ESC's Gas Access Arrangement Review 2008-2012, p5.
[91] AER Draft Decision, p105.

- the cost of capital has increased and will continue to increase;
- debt financiers are seeking to reduce risk but the cost of debt will continue to increase;
- Australia is a price taker for capital and will need to compete on a global basis for scarce capital;
- Australian banks will not be able to fund all of upcoming energy sector refinancing requirements;
- refinancing risk is increasing;
- the Australian government guarantee on Australian bank debt is having the effect of crowding out lower rated borrowers; and
- capital will still be difficult to attract and if the regulatory cost of capital is insufficient then capital will be deployed elsewhere.

Comments made in the report include:

> Australia's domestic banks are unlikely to either have the interest or the capital to provide all of the debt required in the financing of the energy sector in Australia. Given the small number of local banks their balance sheets need to be allocated for a number of purposes and across a number of sectors.[92]
>
> Overall the JIA are likely to move to a new paradigm for the finance sector following the settling of the current credit crisis, resulting in a more conservative approach to evaluating investments and the introduction of new liquidity structures with Banks being more conservative in their approach to lending. Illustrative of this is an expectation that, the distinction between debt and equity will become clearer eg pseudo debt instruments such as mezzanine debt will increasingly be treated by the Banks as equity. Debt providers will simply not be willing to expose themselves to risk yet will require a higher return for their capital than has been the case in recent years.[93]
>
> There is a consistent view from Financial Market Practitioners interviewed, that following the required work out of the current financial market turmoil and a return to freer levels of liquidity in financial markets, there will be a return to more conservative investment practices by capital providers. As such, it is expected that the consequences of the current financial market stress will leave a step change effect in the way in which investors allocate and price their capital which could last a generation.[94]
>
> However, it is the entity with the capital to commit that ultimately makes the decision based on its risk reward criteria and the range of opportunities open to them for investment. Tools such as WACC and CAPM are no substitute for the reality of the investor's decision process and allocation of risk to reward of an investment.[95]
>
> In considering the allocation of and cost of capital going forward, it is clear the significance of the current credit crisis and the limit it is likely to place on access to and cost of capital should not be underestimated as it establishes a new paradigm in which investment must be considered and will have a significant influence throughout the period till 2020[96]

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[92] S3 Advisory, *Final Report to the AEMC, Financing of future energy sector investments in Australia: The potential effects of the Carbon Pollution Reduction Scheme and Renewable Energy Target*, December 2008, p27.
[93] S3 Advisory, op cit, p24.
[94] S3 Advisory, op cit, p23.
[95] S3 Advisory, op cit, p19.
[96] S3 Advisory, op cit, p12.

> As financial capital is largely free to move within global markets, investors can compare the risk premium of an investment on a consistent basis regardless of the location of the investment.[97]

The AER cannot consider but give no weight to these issues (as the Proposed Explanatory document has done in section 2.5) because they are critical issues in assessing the "prevailing market conditions" referred to in Rule 6.5.4(e) and Rule 6A.6.2(j)(1). Further, the "regulatory risk", (where regulatory authorities fail to acknowledge the real world and impose uneconomic constraints on business that have the effect of increasing, rather than reducing risk) would also result in other requirements not being met such as the Market Objective because there would be a sub-optimal promotion of efficient investment hampering the achievement of the long term interests of users of electricity.

The Cost and Availability of Bank Debt

The AER state that:

> Deloitte advises that bank debt is available in the current market, primarily over a 3 year term, and with indicative pricing for BBB+ corporates of the bank bill swap rate (**BBSW**) plus a premium of 165 basis points. In addition, establishment fees for bank facilities have increased significantly to 50-80 basis points[98].

This pricing is not achievable for BBB+, or even an A- corporate in the current market. The pricing from two recent Australian Bank bond issues has been provided below. Risk free AAA rated debt is being issued by Australian banks at between 180-190 bp over BBSW after taking into account the 70bp guarantee fee payable to the Australian government. For example:

> Commonwealth Bank issued A$300 million of five-year government-guaranteed bonds, priced at 120 basis points over BBSW
>
> National Australia Bank added A$500 million to its five-year government-guaranteed bond, priced at around 110 basis points over BBSW[99]

Further this represents the banks' marginal cost of wholesale funding and is a direct input into the pricing of bank debt. It represents the starting price to which banks will then add an additional spread to compensate for the credit and other risks.

The Deloitte report[100] briefly and inconclusively discusses capacity in some debt markets, The report's discussion of the domestic bond market is hypothetical as this market is closed. The JIA would like to state that it is not possible to raise $12.6 billion in any and all Australian debt markets within a 5-40 day window, nor has it ever been possible. This is evidenced by the diversified debt portfolios of privately owned distribution businesses.

The report specifically fails to discuss capacity in the bank debt market, indeed the report almost implies that the necessary funding can be supplied by this market. Again the JIA would like to state that the bank debt market is not able to satisfy the entire debt financing requirements of private energy network businesses. Banks' credit lines are constrained and many JIA members are already pushing up against these credit limits. Indeed with credit growth slowing, even contracting, distribution businesses will need to compete for a larger slice of a smaller pie in

[97] S3 Advisory, op cit, p19.
[98] AER Draft Decision, p102.
[99] Reuters, 7 January 2009.
[100] Deloitte, *Australian Energy Regulator, Refinancing, Debt Markets and Liquidity*, dated 12 November 2008.

order to maintain the bank debt funding currently on foot. For example, according to news service Reuters:

> Australian private sector credit shrank for the first time since 1992 in December as foreign banks cut lending to local companies amid the global credit crunch. Figures from the Reserve Bank of Australia (RBA) on Friday showed total credit fell by 0.3 percent in December, well below a forecast of a 0.5 percent rise, after rising 0.4 percent in November. Finance for businesses fell 1.1 percent, the first decline since December 1992. [SYDNEY, Jan 30 (Reuters)]

Foreign banks provided around half the funding for syndicated bank debt facilities in Australia prior to the credit crisis. The majority of these foreign banks are retreating to their home markets leaving a significant funding gap in the Australian bank market. At present, the only real alternative debt market open to Australian distribution businesses is the US private placement market. In this market BBB+ domestic utilities are currently paying 475 to 500bps over equivalent US Treasuries[101] for 5 year debt, converting this back to Australian dollars translates to a cost of funds of 525 to 550 bps over the equivalent risk free rate. These levels should be considered a floor, as a foreign borrowers need to "work harded" to access this market.

Hedging of interest rates

The AER state that:

> On the basis of the available evidence it appears reasonable to expect that interest rate exposure on a large existing debt portfolio can be largely hedged away over the averaging period.[102]
>
> The AER understands there are a number of ways that regulated energy network businesses can hedge future debt requirements ex-ante. For example, a business could create a synthetic forward borrowing contract with a bank, with the fees charged by the bank based on the difference between the bank's borrowing and lending rates. Alternatively a business could enter into a contract with a bank to borrow in the future a certain amount at the regulated cost of debt.[103]

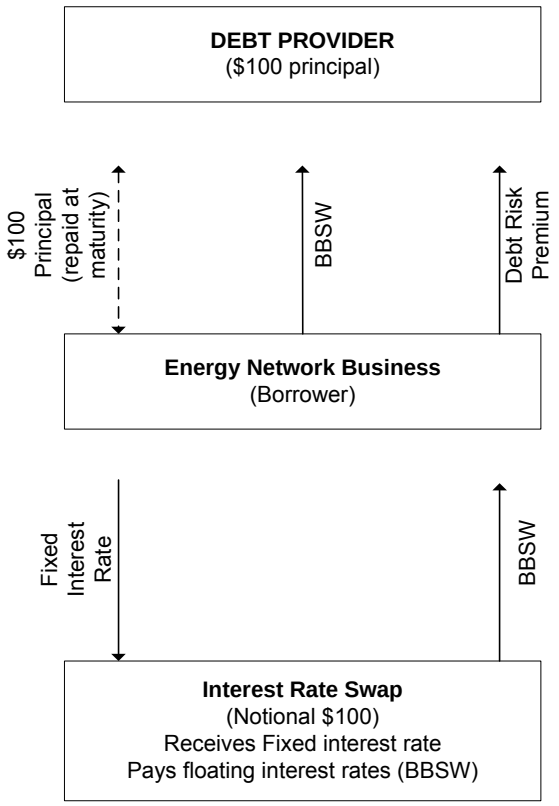
These statements are not accurate and misrepresent what actually occurs when energy network businesses hedge interest rate risk. The Treasury statements collected by the JIA are particularly instructive on this point. All agree that hedging of a kind is possible – but not in the way the AER has assumed – and that it is commonly undertaken (although for prudent, professional Treasury reasons it will not always be appropriate to hedge). The following discussion is based primarily on the evidence in the Meredith Statement, but it is corroborated by the other statements.

There are two components to the regulated cost of the debt, the base rate (generating interest rate risk) and the credit margin over the risk free rate (credit spread risk). The interest rate on the principal is usually the floating rate consisting of a base rate, such as BBSW, plus a credit margin plus establishment fees. The interest rate risk relates to the base rate (**BBSW**) differing to that used by the regulator for regulatory WACC purposes. The credit margin and fees cannot be hedged with derivatives. In essence, the interest rate risk is that the base rate (**BBSW**) will diverge too far from the risk free rate (**CGS**) used in the regulatory WACC to generate revenue. Energy network businesses employ interest rate swaps to manage interest rate risk, see **Figure**

[101] For example Duke Energy, a BBB+ rated issuer, raised 5 year funds in the US public market at 475 over US Treasuries in late January. Note the public market sets a floor for comparable private transactions.
[102] AER Draft Decision, p104.
[103] AER Draft Decision, p106.

4.1 diagram below. The net effect is that the borrower pays a fixed base rate plus the credit risk margin.

Figure 4.1: Interest rate hedging



DEBT RISK PREMIA

1. Reflects conditions prevailing at time of issuance
2. Cannot 'hedge' Debt Risk Premia with an Interest Rate Swap
3. Debt Risk Premia is payable irrespective of whether or not base rate (ie BBSW) is hedged.

Assumptions:

- Energy Network Business borrows $100 at floating interest rates from Debt Provider. The Energy Network Business repays the principal at maturity and interest at designated periods over the term of the borrowing;
- The floating interest rate payable by the Energy Network Business to the Debt Provider is the Debt Risk Premium + BBSW; and
- Energy Network Business fully hedges the interest rate risk associated with variations in BBSW. Enters $100 interest rate swap (notional value) with hedge counterparty, where the Energy Network Business pays the hedge counterparty a fixed rate and receives BBSW.

There are, however, uncompensated costs associated with hedging future capex/debt requirements due to commitment fees and forward rates being higher than prevailing rates given a normal yield curve.

While regulated energy network businesses can and do broadly align their interest rate risk to the regulatory benchmark, credit spread risk is something a privately held regulated distribution business simply cannot align to benchmark, either in the physical market or synthetically. The report commissioned by Deloitte accepts this reality. Furthermore, regulated energy network businesses are unable to arrange debt financing out of a future date costlessly, the market simply does not permit this. Commitment fees are payable to financiers in return for them agreeing terms to a facility to be utilized in the future. These fees are approximately 50% of the credit margin multiplied by the facility limit.

To the contrary, businesses need to refinance existing debt no less than 6 months prior to maturity in order to prudently manage their refinancing risk (and also to satisfy rating agency requirements). This attracts a cost that is not recognized in the regulatory framework. Further the AER makes reference to examples where companies have locked in the future cost of debt, suggesting these strategies incur a premium. Indeed they do, the cost of undrawn facility balances is approximately 50% of the debt margin (ie commitment fee), again this is not recognised in the regulatory framework, and is a cost all prudent businesses must incur in order to manage basic liquidity risks.

The regulatory regime, and WACC methodology, takes a simplified approach to estimating the cost of debt and equity. In terms of obtaining and servicing debt, there are many nuances and other activities undertaken in the course of operating a commercial enterprise that are not captured in the regulatory regime. The example given above of having to maintain available lines of credit is but one of these activities where there are costs incurred over and above the costs that would be captured by using a 5 year risk free parameter in the simplified approach to assessing the cost of capital that is used in the regulatory regime. These costs can be significant and must ultimately be recovered in the regulated revenue stream.

Conclusion

In conclusion, on the substantive points raised by the Explanatory Statement, the JIA evidence shows:

1. the evidence presented by the JIA conclusively shows that energy network businesses will seek to issue long-term debt as a matter of preference;
2. this is supported by the AER's own Deloitte evidence when it is interpreted properly;
3. a term of the risk free rate proxy that matches the length of the regulatory period (ie the yield on the 5 year CGS) is contrary to the financing strategies of benchmark regulated energy network businesses which do not include the government-owned businesses;
4. there is no over compensation resulting from the use of a risk free rate that exceeds the duration regulatory period; and
5. the regulatory regime is not one that "insulates energy network businesses "from market volatility".

The JIA also consider the AER's analysis to be incomplete in that:

- it is not correct to focus almost exclusively on debt-related matters to justify its proposed movement away from the previously adopted value because the parameter adopted must be suitable for each use within the CAPM formula; and
- the AER's Explanatory Statement would depart from well established commercial and regulatory practice of using the 10 year term to maturity as the proxy for the risk free rate in the Sharpe CAPM.

Consequently, the following is true:

- there is no persuasive evidence to depart from a 10 year term for the risk free rate;
- to adopt a shorter duration would not provide a reasonable opportunity for the benchmark business to recover its efficient costs of capital; and

- the achievement of the Market Objective would be hampered by the adoption of a 5 year parameter because it would fail to properly promote efficient investment.

Accordingly, the Rules and the NEL require that the 10 year term for this risk free rate be maintained.

5 Market Risk Premium

Introduction

The JIA have a number of concerns with the conclusions and points made in Chapter 7 of the AER Explanatory Statement dealing with the most appropriate forward looking MRP. The JIA have asked the JIA's expert advisers to respond to some specific questions and their response is attached to this document.

In summary, the JIA's concerns are that:

- the current economic environment is one where the forward MRP over the period until the AER's next WACC review is well above 7%, making investment providing an equity return based upon a 6% MRP unattractive; and
- the AER's arguments and conclusions outlined in Chapter 7 are not supported or justified by the evidence before the AER.

> The JIA view has not changed that the MRP should be 7%, where imputation credits are assumed to have a value of 0.2 or above. In the current economic environment the MRP is well above even this amount, however, the JIA are of the view that the long term forward looking MRP is 7%.
>
> It is clear that the AER has not correctly reviewed the evidence and submissions and has come to an incorrect conclusion that the MRP is over stated at 6%. The AER have not presented substantive or persuasive evidence to support this conclusion. The JIA are of the view that persuasive evidence is before the AER that the forward looking MRP is at least 7%.

The JIA again emphasises the interrelated nature of the MRP, risk free rate, equity beta and gamma. The recommended 7% value for MRP is predicated upon an unadjusted 10 year CGS for the risk free rate, a equity beta of 1 and a gamma of 0.2 or above.

JIA's Original Position and Evidence

The JIA key positions were and continue to be:

- the previously adopted MRP value for both electricity transmission and distribution service providers is 6 per cent;
- the adoption of a 6 per cent MRP (rounded down to an integer value), assuming no value is attributable to imputation credits, is supported by an array of secondary estimation sources including:
  - historical average MRP estimated over a variety of periods;

- surveys of financial professionals, including Chief Financial Officers, Independent Expert Reports and other users of financial data;
- forward looking estimates of the MRP; and
- comparisons with the measured historical MRP of other open economies;

- the best source of a forward looking MRP is a long term average of historical MRPs. Over the period 1958 to 2007 the historical arithmetic average of the MRP was 6.7 per cent, if there is no value placed on a return to investors for imputation tax benefits;
- if the currently adopted value of gamma (ie, 0.5) was included in the post 1987 historical MRP, the best estimate of the MRP rises to 7 per cent.

The key piece of evidence presented in support of this position was a paper by Officer and Bishop.

The JIA has submitted that the most appropriate value of the MRP is 7%, where the value of gamma is at least 0.2. Given the value of gamma contemplated by the AER in its Proposed Statement (0.65), the JIA reaffirms its view that the most appropriate estimate for the forward-looking MRP is 7%.

AER's Draft Position and Evidence

The AER's key conclusions are as follows:

1. Rather than placing sole weight on any particular measure of the MRP, it is common practice to have regard to each measure, tempered by an understanding of the strengths and weaknesses of each measure, in determining a "final" MRP. The AER considers this is an appropriate approach in the context of having had regard to the need for persuasive evidence, and is consistent with past regulatory practice.

2. The AER states that historical excess returns:

   - "grossed-up" for a utilisation rate of 0.65;
   - interpreted in view of the 20 basis points as the likely difference if they had been estimated relative to 5 year CGS; and
   - over a range of estimation periods that the AER considers appropriate (1883- 2008, 1937-2008, 1958-2008);

   fall within the 6 to 7 per cent range (specifically, 6.1 to 6.7 per cent), with some more recent estimates below this range.

3. The AER also notes various reasons mentioned in this chapter as to why historical estimates are more likely to overstate forward looking expectations of the MRP, rather than understate it. These include:

- Brailsford et al identify a number of data quality issues with the pre-1958 data that the authors consider likely to bias up estimates using data from this period. This means the above estimates over the 1883-onwards and 1937-onwards periods are more likely to overstate, than understate, a forward-looking MRP;

- the use of historical equity returns will bias upwards the return on the CAPM market portfolio, which includes all assets in the economy and is not limited to equities. This means that the above estimates for any period are more likely to overstate, than understate, a forward looking MRP; and

- these estimates include several significant and positive one-off or unexpected events that are unlikely to be repeated. That means historical estimates over the periods considered are more likely to overstate, than understate, a forward looking MRP.

4. Survey measures strongly indicate that a MRP of 6 per cent is by far the most commonly adopted value of market practitioners.

5. Cash flow measures generally support an MRP of around or below 6 per cent.

Based on this information, the AER does not consider that there is sufficient persuasive evidence to justify a departure from the previously adopted MRP of 6 per cent, and that this figure is likely to be a reasonable estimate of a forward looking rate of return commensurate with prevailing conditions in the market for funds. Accordingly, the AER considers that there is no persuasive evidence to depart from a MRP of 6 per cent, and that a MRP of 6 per cent is consistent with the National Electricity Objective.

JIA Response to AER Draft Position

The JIA response is structured to provide:

- consideration of the impacts on the forward looking MRP as a result of the current financial crisis;

- respond to each of the key points (outlined in the previous section), on which the AER has based its conclusion; and

- JIA's conclusions arising from the evidence and analysis provided.

Forward looking MRP and the Prevailing Economic Environment

The JIA is concerned that there has been a structural change in the economic climate and an increase in the forward looking MRP. As the Reserve Bank of Australia notes in its November 2008 Statement on Monetary Policy:

> World financial markets have come under severe stress in the period since the last Statement. Strains in credit markets escalated in early September, and the period since then has been marked by further large declines in equity prices and exceptional volatility across a range of markets. (page 1)

While the AER and regulators have, in part, recognised this change through the increase in the cost of debt, **they have not recognised the increased risk and, therefore, increase in the cost of equity**. The JIA is of the view that there is no practical possibility of the forward looking MRP averaging as low as 6% over the period of the AER's current WACC review. As a consequence, maintaining an assumption of 6% MRP in circumstances where the forward-looking MRP is substantially higher will drive investment away from regulated networks.

Consideration of the forward looking MRP is particularly important in light of the requirement in Clauses 6A.6.2 (j) and 6.5.4 (e), for transmission and distribution respectively, that the AER must have regard to:

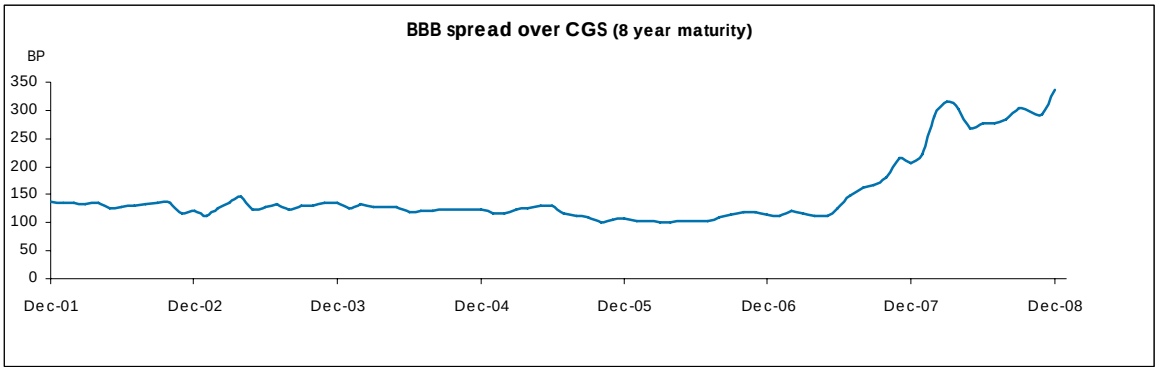
> The need for the rate of return . . . to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and the risk involved in providing prescribed transmission services (standard control services);

Both debt and equity investors are facing large risks in the current economic climate. Interest rate spreads are high reflecting increased risk faced by debt investors. Not only have interest rate spreads risen but debt markets are drying up. Consequently businesses are facing challenges in both raising and rolling over debt.

The increase in risk faced by investors is apparent in both debt and equity markets. In this environment the current short to medium term forward-looking MRP is clearly well over 6%, when measured against the 10 year CGS. This is explained in the remainder of this Chapter.

The rise in interest rates in debt markets is evident in **Figure 5.1**. This shows the rise in spreads on BBB corporate bonds over Commonwealth Government Securities since early 2007. The 8 year maturing bonds were chosen simply because they provide a relatively long unbroken history of yields. Ten year maturing bonds, for example, have not traded recently. The average yield for the 8 year maturing bonds over the period from December 2001 to December 2006 is 122 basis points. For the calendar year 2008, the average spread has been 295 basis points – well above the prior average.

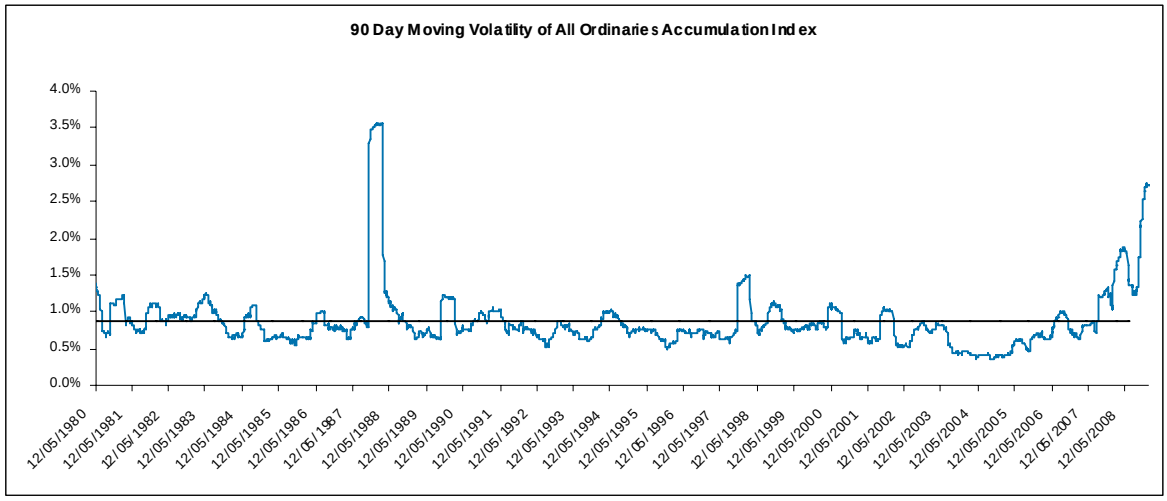
Figure 5.1: Spread of yield on 8 year Corporate BBB bonds over risk free rate



Source: Bloomberg

Officer and Bishop present evidence of a large increase in the risk faced by share investors[104]. **Figure 5.2** of the paper (reproduced below) shows that the volatility (and, therefore, riskiness) of the stock market has been rising since mid-2007 (since it is a rolling average, the rise commenced earlier consistent with what occurred in debt markets) and is at its highest level since 1980 apart from the 1987 stock market crash. Given this increase in risk, investors' required returns have risen. Unless investors can expect to earn these higher returns, there will be a reluctance to invest. As a consequence, both theory and the evidence presented demonstrate that the forward MRP must have risen.

Figure 5.2: Volatility of All Ordinaries Accumulation Index



While the AER and regulators have, in part, recognised the increase in the cost of debt though allowing a current spread (Figure 2.1 in the AER Explanatory Statement (p32)), **they have not recognised the increased risk and, therefore, increase in the cost of equity.**

As outlined below, the AER's proposed 6% MRP does not reflect the current high level of overall market risk in both debt and equity securities pricing. The AER effectively assumes that the current high MRP will move below its postulated 6% level sometime in the future so that an average of 6% will apply over the longer term. Based on the evidence, the JIA do not believe this to be reasonable assumption, either over the long term or certainly over the medium term (including the period to which this current WACC decision will apply). Again, the Reserve Bank of Australia noted the longer term downside risks to the world economy in its November 2008 Statement on Monetary Policy (many of which have since been realised):

> With the ongoing stresses in financial markets, it is possible that the deterioration in the external environment could continue. Even if this did not occur, the effects on domestic activity of the deterioration that has already occurred could be deeper or more persistent than expected in this outlook. In particular, a more rapid unwinding of the resources boom than has been assumed would have significant negative effects throughout the economy, resulting in softer growth in domestic incomes and spending . . . Furthermore, there is a risk that developments in capital markets could result in a sharper than foreshadowed reduction in the availability of credit to Australian households and businesses, thereby exacerbating the slowing in domestic activity. (page 68)

[104] Officer, B and S Bishop "Market Risk Premium: Further Comments" January 2009.

Officer and Bishop[105] point to evidence from both the debt and equity market that signifies that the current short to medium term MRP is well above the 6% proposed by the AER and the 7% proposed by the JIA.

Officer and Bishop refer to research by JF Capital Partners that derives a short term MRP in the order of 18% based on the implied volatility in an option of the ASX 200 index. This research assumes a constant required return per unit of risk so that, given the increase in market risk, it follows that the forward MRP is high.

Officer and Bishop also derive a forward MRP based on a view implicit in the current yield on 8 year corporate bonds. They show that if the equity beta of debt has not changed, then the current 8 year BBB bond pricing implies an MRP of 15%. Alternatively, if the MRP remained at 6%, then the pricing is consistent with a debt equity beta of approximately 0.5. While the former is more likely, the result must be one or the other or some combination of the two.

In considering the forward looking MRP, the AER also quoted research performed by Professor Kevin Davis using the dividend valuation model at the aggregate level to estimate an MRP[106]. This approach provides a forward looking MRP. Research by CEG[107], has updated these estimates using the Professor Kevin Davis methodology (also Lally and AMP Capital). This leads to a forward looking MRP of around 12 13%. Again this is consistent with other forward looking MRP data and the JIA's evidence and position.

Interpretation and Use of 2008 MRP Data

In its conclusion, the AER observes that the inclusion of more recent data lowers the historical MRP. This is supported by the Officer and Bishop analysis which notes that the addition of the 2008 year MRP outcome has a big impact on the historical MRP. **Table 5.1**, provided by Officer and Bishop, shows the impact of adding the 2008 year under various assumptions about the value of imputation credits.

Table 5.1: Historial MRP

From	To	MRP with no FTC	With Imputation Credits 0.5	With Imputation Credits 0.65	Adj by 20 bp to 5 year CGS
1958	2007	6.7	7.1	7.2	7.4
1958	2008	5.7	6.0	6.1	6.3

Crucially, the AER's observation and the above data highlight the challenges and risks of using the historical MRP alone as a best estimate of the forward looking MRP required by investors. In particular, the actual market returns in 2008 did not reflect investors' expected returns for that year, nor does it indicate investors' required returns in future years. In fact, the sharply negative returns in 2008 will naturally place strong upward pressure on the cost of equity through an increase in the MRP. As highlighted by Officer and Bishop and illustrated by the most recent

[105] ibid.
[106] AER Explanatory Statement p 143-144.
[107] CEG, "Forward looking estimates of the equity premium – for regulated businesses and the market as a whole", January 2009.

forward looking cash flow modelling, the decline in equity returns reflect either a downgrade of the expected cash flows for all stocks and/or an increase in the average discount rate. They argue that the most likely scenario is that expected cash flows have declined and the discount rate has increased. Consideration of the impacts of 2008 can, therefore, only lead to the conclusion that the forward looking MRP has increased, certainly over the period subject to the AER's WACC review.

In addition, the AER presents the following quote from Gray and Officer on page 170 of the Explanatory Statement which supports a cautious approach to adding the 2008 year:

> However, the fact that there is no adequate theory underlying the variability of the MRP makes it dangerous to adjust an MRP estimate because another year or two or three of data alter the estimated mean.

In light of this statement, the JIA asked Officer and Bishop to advise whether the inclusion of 2008 data is sufficient to change the view expressed in their original report and whether the prevailing conditions in the market might suggest, if anything, that the forward looking MRP is expected to be considerably higher than 6%. Officer and Bishop's response to the latter question is clear from the discussion above, that the short to medium term forward looking MRP is well above 6% and, therefore, their view that that the long term MRP should be 7% remains unchanged. Officer and Bishop also clearly state that, consistent with the quote from Gray and Officer above, the addition of 2008 data does not change their view.

In conclusion, the advice of the pre-eminent experts in this field is that the MRP should be 7% if the value of imputation credits is greater than 0.3. Therefore, JIA's submission is that the MRP should be 7%.

Do Historical Estimates Overstate the MRP?

The AER repeatedly states that it considers the historical data to over state the MRP. The AER summary of its commentary on page 171 is quoted below.

> The AER also notes the numerous reasons mentioned in this chapter as to why historical estimates are more likely to overstate forward looking expectations of the MRP, rather than understate it. These include:
>
> - Brailsford et al (2008) identify a number of data quality issues with the pre-1958 data that the authors consider likely to bias up estimates using data from this period. This means the above estimates over the 1883-onwards are more likely to overstate, than understate, a forward-looking MRP;
>
> - the use of historical equity returns will bias upwards the return on the CAPM market portfolio, which includes all assets in the economy and is not limited to equities. This means that the above estimates for any period are more likely to overstate, than understate, a forward looking MRP; and
>
> - these estimates include several significant and positive one-off or unexpected events that are unlikely to be repeated. That means historical estimates over the periods considered are more likely to overstate, than understate, a forward looking MRP.
>
> Based on this information, the AER does not consider there is persuasive evidence to depart from the previously adopted MRP of 6 per cent, and that this figure is likely to be a reasonable

> estimate of a forward looking rate of return commensurate with prevailing conditions in the market for funds.

The JIA does not accept that the correct interpretation of **all** evidence before the AER leads to such a conclusion, as explained below.

Brailsford et al data quality matters

The JIA's original submission noted that Brailsford et al carefully examined market and CGS return data prior to 1958 and that their study has been published in a refereed journal. As a consequence, the MRP historical data prior to 1958, published by Officer, may be over stated for the reasons the paper articulates. However, the AER note Brailsford et al identifies two further potential sources of biases:

- use of an equal weighted rather than valued index; and
- an upward bias in the dividends included.

The former is assumed to arise because of evidence that smaller stocks tend to provide a higher return than larger stocks (called the "small firm effect") and an equally weighted index gives more weight to these stocks than a value weighted index. Thus, it is argued, the market return will be biased upwards.

With regard to the first source of bias – that is, the use of an equal rather than value weighting of stocks in the period prior to 1958 – no data or statistical analysis is provided in the paper. Therefore, the inferences drawn from this observation are speculative and unproven. The AER's conclusion that the historical MRP is over stated is therefore also speculative and cannot reasonably be used to substantiate the AER's conclusions regarding MRP.

With regard to the second potential source of bias, Brailsford et al note on (page 80) that the extent of an adjustment to the Lamberton series (the source of the market return data) used by Officer "is a very difficult question to answer directly". However, they estimate an adjustment factor using a number of different sources. The paper notes;

> … that an adjustment factor in the range 0.65-0.75 would be defensible. The JIA cannot be more specific, but note that there is no strong evidence to suggest that the JIA should diverge from the currently used adjustment factor. Nonetheless, what this issue reveals is that the data and the equity premium obtained thereof should be treated with caution. (page 81)

Contrary to the AER's conclusion, therefore, the above quotation illustrates that the currently used adjustment factor is acceptable. The JIA therefore considers that the AER substantially overstates on page 149 the significance of Brailsford et al's findings and the inferences that can be drawn from their work:

> The AER notes that of the two significant biases identified by Brailsford et al in the pre-1958 data series commonly adopted in Australian studies, the authors only attempt to correct for one of the biases. Additionally, of the bias that is corrected for, the correction factor applied is on the boundary of what the authors consider a defensible range, meaning a conservatively small downwards correction is made. Therefore, in using the approach from Brailsford et al, returns from pre-1958 are still highly likely to overstate the market return from this period.

JIA conclusion

While there is an argument that the data should be treated with caution, there is nothing in the Brailsford et al paper to suggest that their adjusted data is either under- or over-estimated. Therefore, the JIA does not believe the AER's conclusion is reasonable, or that it can be inferred from its own consultants report that:

> the above estimates over the 1883-onwards [as presented in Table 7.3 and based on Brailsford et al data] are more likely to overstate, than understate, a forward-looking MRP.

Use of equity returns from stock market rather than all asset returns as market proxy

The AER present an argument that the stock market return, used to develop an historical MRP series, will overstate the market return for all assets. The basis for this view appears to be that unlisted assets (including bonds) will be of lesser risk than listed assets and therefore offer a lower rate of return. Consequently, if the JIA could measure a risky asset portfolio return, inclusive of all risky assets whether traded on the ASX or not, it would be lower than the stock market return and the market risk premium would be lower. The argument as presented is also speculative and is not supported with any evidence. To illustrate this point, JIA notes the following.

- It could equally be asserted that inclusion of non-listed / non traded assets in the economy would increase, rather than reduce, market returns. In particular, unlisted private companies are typically smaller than the average listed stock in the stock market. Small stocks are high yielding / high risk stocks (see Brailsford et al p79) and valuers generally add premiums to CAPM derived required returns to reflect additional risks (eg marketability) on the grounds that they are higher risk than the listed counterparts. Thus, it can be hypothesised that inclusion of these investments will increase the market-required return, meaning the MRP based on listed stocks will be under-stated not over-stated.

- Further, it could be argued that non-listed assets are represented indirectly through listed equities. For example, the return from investment in debt is represented on the stock market through the equity returns on banks, insurance companies and other listed vehicles. Property and other investment returns are also reflected in the stock market returns of listed vehicles through companies owning real estate, property trusts and listed funds, for example.

- As a practical matter, it is impossible to include all assets in the calculation of market returns or to estimate their likely impact with any reasonable degree of accuracy. For example, human capital is an important asset that could not readily be included in the analysis of MRP or equity beta.

A further issue is whether the weighting of the returns from all these investments made by listed companies is different from that in the stock market return and whether the combined effect on the required rate of return of network assets is different from that obtained under a listed stock analysis alone.

A review of the, admittedly, scant and mixed evidence does not lend weight to the AER's assertion. For example, Stambaugh finds:

> This study investigates the sensitivity of tests of the CAPM to different sets of asset returns. Tests are conducted with market portfolios that include returns for bonds, real estate, and consumer durables in addition to common stocks. Even when stocks represent only 10% of the portfolio's value, inferences about the CAPM are virtually identical to those obtained with a stocks-only portfolio.[108]

A further point to be made in response goes to consistency in the AER's analysis. The AER attempts an incomplete analysis. The AER attempts to estimate the required return on equity for electricity networks. Under the CAPM, the risk premium for these assets is a function of ***both*** the market risk premium ***and*** the equity equity beta relative to the market portfolio. If the AER is to consider an argument based around the measurement of the complete asset market portfolio and what is included in it then it should also analyse the impact of using the complete asset market portfolio on equity beta (relative risk) as well. The two combined will determine the overall risk premium to equity for network businesses.

If the hypothesis asserted by the AER, that the overall market return was lower due to the inclusion of non-trading assets, then it does not follow that the risk premium for a class of risk assets (eg network assets) will be lower. The relative risk of these assets (ie the equity beta) can be hypothesised to be larger – the subset of electricity network assets' variance will not change but it is likely that, relative to a lower risk total market portfolio, the equity beta will be higher. Overall the required rate of return may not change or may even increase. The JIA submit that it is inappropriate to consider only one aspect of the CAPM equation as the AER appear to have done.

<u>JIA conclusion</u>

The AER analysis is partial at best and fails to consider the impact of excluded risk assets on the equity beta as well as on the market index (and MRP). Further, the implication that the MRP is biased upwards due to excluded asset classes is not supported by any empirical evidence or literature. The JIA has supplied a literature reference, which finds no evidence of any such bias.

Consequently, on evidence presented to date, the AER cannot reasonably assert an upwards bias in the historical MRP on this point.

One-off events

The AER comments on several one-off events identified by Hathaway (2005) and Hancock (2005) that could bias the historical MRP upwards. The AER implies from this, that there are more historical events that lead to an "overstatement" of the forward looking MRP than an "understatement". This is clear in the AER's concluding comments:

> ... it may not be appropriate to make explicit adjustments to historical estimates of the MRP. . . . However these authors have identified several significant unexpected or one-off historical events

[108] Stambaugh Robert F. 1982, "On the exclusion of assets from tests of the two-parameter model: A sensitivity analysis". Journal of Financial Economics, 10 237. Note, Stambaugh considered an index comprising a number of non listed assets but did not include unlisted private companies or human capital returns. Further he tested the implications of the CAPM rather than the MRP per se.

> that are likely to bias upwards historical estimates as a proxy for a forward looking MRP. Accordingly, historical estimates should be interpreted in this knowledge. (page 168)

In coming to this conclusion the AER does not acknowledge the considerable evidence of events that can lead to an under-statement of the MRP. For example, the advice provided by Gray and Officer (2005) and Bishop (2007) that one-off events that "bias the MRP downwards" can also be identified.

Examples of such one-off events include the impact of terrorist attacks, a 1 in 126 year credit crunch like 2008 and the October 1987 stock market crash. If weight is to be given, albeit implicitly, to events that provide an historical MRP greater than the average, then surely weight should also be given to those below the average. The AER appear to ignore any of these entirely.

The outcome of even implicitly adjusting for alleged one-off events that are upside-related, leads naturally to looking for arguments that are downside-related. The JIA end up with a debate based on opinion rather than fact or a well developed theory of the determinants of an MRP.

JIA conclusion

If **all** the evidence before the AER is considered, in particular the ample evidence of one-off events that suppress the historical MRP, there is not conclusive evidence either way that one-off historical events bias the historical MRP in either direction.

Forward Looking Cash Flow Based Models

The JIA acknowledge and support the need to examine multiple sources of information to assist in forming a view about a forward looking MRP. Further, the JIA largely agree with the AER that cash flow based estimates of the forward looking MRP should be viewed cautiously. Nonetheless, such studies can and should play an important role in informing the AER on the reasonableness of its proposed parameters.

The JIA note that the AER acknowledges a number of potential sources of views on the MRP assessed in this way, including the then current 8.6% (now 8%) provided by Bloomberg[109]. It also notes some quite dated work from Davis (1998) and Lally (2002) and a more recent estimate of 4.5-5% from AMP Capital (2006) at the height of the financial asset bubble. The historical Bloomberg data supplied by the JIA does not conflict with the conclusions reached in these studies. However, it does illustrate that the use of out of date data is largely pointless in assessing the **current** forward looking MRP in current market conditions.

To illustrate this point, JIA asked CEG to reproduce the AMP methodology using current market data[110]. The AMP methodology now produces an estimate of the forward looking MRP of around 12% (assuming an equity equity beta of 1). Again this is consistent with the relatively large increases in the forward MRP estimate in Bloomberg over 2007 and 2008. Furthermore, it

[109] Officer and Bishop note that the Bloomberg data is not adjusted for the value of imputation credits and therefore, underestimates the forward looking MRP by up to 110bp.
[110] CEG, "Forward looking estimates of the equity premium – for regulated businesses and the market as a whole", January 2009;

would not be unreasonable to assume that an update of Davis and Lally's analysis would show a similar movement (again illustrated in the CEG paper). The JIA invites the AER to test this statement with the authors themselves.

Therefore, The AER's conclusion on page 174 that cash flow based measures support an MRP of "around or lower than 6%" is simply not sustainable with the most recent evidence. This is true regardless of which of the cash flow analyses cited by the AER is preferred.

JIA conclusion

The JIA agrees that cash flow based estimates of the forward looking MRP should be viewed cautiously. In particular, the use of dated studies with regard to an inherently forward looking calculation is inappropriate in current market conditions.

Most importantly, the most recent evidence from cash flow based models supports a forward looking MRP of well above 7% over the period relevant to the AER's WACC review.

AER Use of Survey Data

The AER states that survey data provides evidence that should carry significant weight in its deliberations:

> Survey measures generally have the benefit of being forward looking and may better reflect prevailing market conditions for funds compared to long term historical averages. Both are desirable attributes and relevant considerations in this review. (page 178)

In the current market conditions, the JIA concurs with the AER's view that survey data may prove to be a better guide to a forward-looking MRP compared to historic data. It is debateable, however, whether survey data is superior to market-based assessments of the forward-looking MRP. Nonetheless, given the importance of this data to the AER's conclusions on MRP, particular attention needs to be given to the AER conclusion reached from its use. The AER concludes on page 178:

> Surveys measures strongly indicate that a MRP of 6 per cent is by far the most commonly adopted value of market practitioners.

This conclusion raises three issues about the AER's treatment of the survey data which calls into the question the key conclusions the AER reached in its draft Statement. These are:

- that the AER presents and considers only half the relevant conclusions from the survey evidence when reaching its conclusion;
- the selective reporting of the survey data itself, leading to a misleading impression of a downward bias from 6%; and
- concerns regarding the reliability of the Capital Research survey.

Current market practice revealed in the survey data

The JIA agrees that the survey measures strongly indicate that a MRP of 6% is by far the most commonly adopted value of market practitioners. However, the AER omits an equally important finding from the surveys. That is, survey measures also strongly indicate that a gamma of zero is by far the most commonly adopted value of market practitioners. In fact it is more common than the use of a 6% MRP. For example:

> The majority of respondent companies said that they did not adjust for imputation credits when estimating equity beta or the market risk premium (85%), or when carrying out project evaluations (83%). (Truong, Partington & Peat (2008) page 114)

And,

> Importantly, none of the reports which applied the CAPM made any adjustment for the value of imputation tax credits. (KPMG (2005), page 13)

The JIA notes that, when the implications of the survey data are examined in full, the surveys strongly support the original JIA position that an MRP of 6% can only be sustained on the evidence before the AER **in combination with a low or zero gamma**.

An alternative approach would be to gross up the survey material for the value of imputation credits assumed by the AER (0.65). The JIA submit is that this adjustment would require an MRP of 7%.

Selective reporting

The JIA note some apparent selective reporting which potentially misrepresents the survey evidence. For example, the text (page 175) reports that

> … Truong et al (2008) found that, of the firms that responded to the survey, 47 per cent adopt an MRP of 6 percent and 22 percent adopt an MRP of less than 6%.

However, the AER fails to note that 26% (possibly 31%) use an MRP of greater than 6%. Further, it is reported that from the KPMG survey that:

> … 97 percent adopted an MRP of between 6.0 and 7.0 per cent.

This is not strictly correct. The report reveals that 100 percent adopted an MRP of 6% or greater with 85 percent using 6-6.5% and 15 percent using an MRP of 7% or greater. The JIA also note that Table 7.5 is a repeat of Table 7.4 and, therefore, does not reveal this misinterpretation of the findings with regards to the KPMG survey. This error appears to lead to statements such as that below appearing in the conclusion on page 178, namely:

> … different authors illustrate that the majority of market participants adopt a MRP of 6%, or sometimes less than this estimate.

In fact, a balanced assessment of the correct survey evidence provided by KPMG suggests the opposite conclusion should be drawn. That is, the majority of market participants adopt a minimum MRP of 6%, or sometimes **more** than this estimate.

Capital Research Survey

The AER focuses on 3 surveys which were discussed in the expert paper commissioned by the JIA, and add another prepared by Capital Research. The AER recognises that the surveys are useful crosschecks for an MRP that has essentially been informed by historical MRPs.

Before commenting upon the overall summary and conclusions about the survey evidence, the JIA note the survey data summarised in Table 7.6 captured by Capital Research from "broker's dailies" and used in a commentary on Telstra's WACC. The JIA reviewed the commentary prepared by Capital Research and cannot find an articulation of the sample selection process and method. The survey appears to cover the period 2001 to 2006 yet only reports 11 observations. The JIA cannot assess the basis for the data or sample selection. In these circumstances, the JIA consider that this material should be put aside until the results can be verified or the sample selection process described to provide comfort that the results are derived from a random process.

JIA conclusion

The JIA considers that the AER must modify its conclusion with regards to survey data to read:

> Surveys measures strongly indicate that a MRP of 6 per cent **in conjunction with a gamma of zero** is by far the most commonly adopted value of market practitioners. (page 178)

In addition, the JIA notes that these surveys were completed well before the full impact of the current financial crises became apparent. Therefore, surveys completed in today's market conditions are much more likely to indicate an MRP above 6%. This observation is strongly supported by the market data on the forward looking MRP.

Further Statements by the AER that are incorrect

1. The AER endeavour to argue that there is a difference in view within the JIA submission and with its consultants (Officer and Bishop) about the relationship between a value for gamma and the argument that the MRP should be 7% (see page 140). It also comments that the JIA submission does not define a "materially positive value of gamma".

   Given the AER recommendation that a value of gamma of 0.65 should be used, the AER should be in no doubt that the JIA views the MRP as 7% under these circumstances.

   Furthermore, to be clear, the JIA is of the view that an MRP of 7% is appropriate for a value of imputation credits of 0.2 and above.

2. The AER also makes a statement on page 161 to the effect that the value of imputation tax benefits represents that part of an equity return provided to shareholders by the government rather than the firm" "Accordingly, regulated firms do not need to be compensated for this component of their regulated return".

   This view is not consistent with the regulatory regime. The regulatory process provides a required revenue stream to cover all benchmark operating costs, taxes and a return on and of capital. There is no sense of "compensation" but rather an assessment of what

the revenue requirement is to imitate a competitive market solution. In a competitive market, the return earned for shareholders is a function of the business operations and the risk of those operations and financing risk. Taxes are paid out of the "profit" stream and the shareholders "return" of corporate taxes paid is a function of the taxes the company pays. It is not a return provided by the government, nor is it compensation to the regulated firms. At best it reflects a government decision to introduce an imputation system but the source of the return is the company tax paid not an independent source from general revenue. The revenue requirement needs to produce sufficient revenue for taxes at 30% to be paid and then enable investors to claim back some of the withholding tax paid by the regulated firm.

Consistency in Cash Flows and Rate of Return

The JIA strongly supports the AER's conclusion on page 166 that there should be consistency in the cash flows and the rate of return in accordance with the Officer framework:

> Conceptually the AER recognises the importance of consistency in the cash flows and rate of return which follows the Officer (1994) framework.

Importantly in this regard, the AER also correctly explains that Gray and Hall (2006) show that there is an inconsistency in recent regulatory decisions that must be addressed. In particular, the Explanatory Statement states on page 162 that:

> Gray and Hall (2006) derived a deterministic relationship between the gamma, MRP and assumed tax rate. Using this relationship, the authors argue that the standard values adopted by Australian regulators for these parameters of 0.50, 6.0 per cent, and 30.0 per cent, respectively, are inconsistent as these values imply a dividend yield almost twice that observed in the market. Gray and Hall (2006) argued the most straightforward and complete way to resolve this inconsistency is to set the value of gamma to zero. If gamma is set to zero, the authors claim the MRP can then be based on historical capital gains and dividends alone, while maintaining consistency with the CAPM framework.

However, the AER incorrectly concludes that interested parties do not accept Gray and Hall's concerns, and rather prefer the position suggested by other academics. In particular, the Explanatory Statement asserts on page 163 that:

> The AER notes that no submissions argued that there was an inconsistency between a gamma of 0.5, MRP of 6 per cent and assumed tax rate of 30 per cent, along the reasoning of Gray and Hall (2006). Stakeholders appear to have accepted the counter arguments against the reasoning of Gray and Hall (2006) put forward by Lally (2008) and Truong and Partington (2008), which are discussed below.

The AER's understanding of the arguments made by Lally (2008) and Truong and Partington (2008) is summarised in the Explanatory Statement (page 166) as follows:

> On the other issues presented by Gray and Hall (2006) relating to the alleged inconsistency between a MRP, gamma and assumed tax rate of 6 per cent, 0.5 and 30 per cent, respectively, the AER notes that this assertion has been disputed by Lally (2008), and by Truong and Partington (2008). Lally (2008) noted that there is no inconsistency, as amongst other reasons, the observed and implied dividend yields quoted in Gray and Hall (2006) are not comparable as the observed yields are based on data that largely predates dividend imputation. Truong and Partington (2008) argued that instead of setting the gamma to zero, recognising that retained imputation credits may have a positive value removes the inconsistency.

Professor Gray of SFG Consulting advises the JIA that the inconsistency identified by Gray and Hall has not been satisfactorily resolved by the discussion in the Explanatory Statement or by the AER's conclusions regarding gamma and the MRP. In fact, Professor Gray considers that the inconsistency between the MRP and the value of gamma is even more pronounced by the AER proposing an MRP of 6% and a value of gamma of 0.65. Furthermore, the AER has misunderstood the work of Lally, Truong and Partington and the implications arising from these studies.

The JIA argue that, taking the advice of the JIA's expert advisors, gamma should be at the lower end of the range 0 to 1, and that with a gamma of greater than 0.2, the MRP should be 7%.

Professor Gray's position is summarised below:

- The contribution of Gray and Hall (2006) is to demonstrate that the combination of parameter values typically used by Australian regulators requires a dividend yield that is much higher than that which is observed in practice.

- Specifically, Gray and Hall (2006) show that within the Officer framework estimates of = 0.5 and MRP = 6% and T = 30% require that 18% of the required return on equity must come from franking credits. If, for example, the required return on equity is 12%, a return of 2.2% must come from franking credits. Even if distributed franking credits are valued at 60% of face value, the franking credit yield must be 3.6% (= 2.2% / 0.6). But with every $1 of cash dividends, only 43 cents of franking credits can be distributed even if fully franked. So, even if all dividends were fully-franked, the dividend yield would have to be more than 8% (= 3.6% / 0.43). But observed dividend yields are in the order of 4 5%. Therefore, within the Officer framework estimates of = 0.5 and MRP = 6% and T = 30% require dividend yields that are implausibly high. The dividend yields of Australian firms are simply not high enough to justify setting gamma as high as 0.5.

- Subsequent to the publication of Gray and Hall (2006), there have been two attempts to reconcile the standard regulatory parameter estimates with the dividend yields that are observed in practice Lally (2008) and Truong and Partington (2008). These papers were both published in the same edition of Accounting and Finance. A reply paper, Gray and Hall (2008), appears immediately adjacent to these two papers in the same edition of the same journal. This reply was invited by the Senior Editor of Accounting and Finance.

- In their reply paper Gray and Hall (2008) explain that the proposed reconciliations require the abandonment of the Officer CAPM-WACC framework that forms the basis of the Australian regulatory system. On page 133 they write:

> The JIA have previously documented an inconsistency between the dividend yield implied by the Officer (1994) model with standard Australian regulatory parameters and actual dividend yields of Australian companies. The JIA have shown that, within the Officer framework, this inconsistency can be resolved by setting the assumed value of franking credits [gamma] to zero, consistent with the practice of Australian firms and independent valuation experts. Truong and Partington (2008) and Lally (2008) recognize this same inconsistency and propose alternate ways of resolving it. In this paper, the JIA demonstrate that these proposals are outside the Officer framework. The standard set of regulatory parameters cannot be resolved with observed

dividend yields within the Officer framework. Whichever method is used to resolve the inconsistency, the effect will be an increase in the estimated after-tax cost of equity.

- Gray and Hall (2008) conclude on page 133 that:

  The JIA demonstrate that if the Officer/regulatory model is to be maintained, the inconsistency can be resolved by following commercial practice in setting $\gamma = 0$. Truong and Partington (2008) and Lally (2008) propose alternative ways to resolve the inconsistency. These proposals involve maintaining the regulatory assumption that $\gamma \neq 0.5$ and abandoning the Officer framework.

In light of Professor Gray's further advice, the JIA considers that the AER has misinterpreted the implications arising from the work of Lally (2008) and Truong and Partington (2008). In particular, the inconsistency highlighted by Gray and Hall (2006) remains an important issue to be resolved. Furthermore, it is one of the reasons why the JIA submission has focused on the need for consistent assumptions across the WACC parameters. In summary, the discussion presented above reinforces the JLA's conclusion that gamma should be at the lower end of the range 0 to 1 and that with a gamma of greater than 0.2 and with a view to the current economic environment the MRP should be 7%.

Conclusion

The JIA has reviewed the previous and new evidence before the AER in light of its statement on page 141 that:

> Rather than placing sole weight on any particular measure of the MRP, it is common practice to have regard to each measure, tempered by an understanding of the strengths and weaknesses of each measure, in determining a 'final' MRP. The AER considers this is an appropriate approach in the context of having had regard to the need for persuasive evidence, and is consistent with past regulatory practice.

Historical and forward looking MRP

The JIA agrees with the AER assessment on page 170 that historical excess returns:

- 'grossed-up' for a utilisation rate of 0.65;
- interpreted in view of the 20 basis points as the likely difference if they had been estimated relative to 5 year CGS; and
- over a range of estimation periods that the AER considers appropriate (1883-2008, 1937-2008, 1958-2008);

fall within the 6 to 7% range (specifically, 6.1 to 6.7%). However, the JIA also notes that, without the inclusion of the 2008 data, the same historical average falls within the range 6.8 to 7.4%.

Furthermore, when the 2008 data included by the AER is assessed in light of recent increases in the forward looking MRP of well above 7%, in both the short to medium term, (as highlighted by Officer and Bishop) and in the long term (as highlighted by CEG's updating of the cash flow measures), the JIA concludes that an MRP of 7% best reflects the long term forward looking MRP.

The JIA also notes that there appears to be acceptance of an integer value for the MRP. On these grounds that the JIA interpret the evidence as clearly supporting 7% rather than 6%. However, if the AER is not persuaded by the evidence before it, a move to a non-integer value greater than 6% must be contemplated.

The JIA can find no merit in the AER assertion that historical estimates are more likely to overstate forward looking expectations of the MRP, rather than understate them. In particular:

- Brailsford et al offers no empirical evidence upon which the AER can rely to reach a conclusion of further upward bias in pre 1958 data;
- the AER has speculated that a broader inclusion of assets in the analysis of market returns would produce a lower MRP. However, in the absence of proper analysis or compelling academic studies, it is equally valid to speculate that the converse proposition that the inclusion of these assets would increase market returns is correct; and
- if all the evidence before the AER is considered, in particular the ample evidence of one-off events that suppress the historical MRP, then the JIA does not believe there is conclusive evidence that one-off historical events bias the historical MRP in either direction.

Cash Flow Analysis

The most recent estimates from cash flow measures (which are inherently a forward looking estimate) consistently show a forward looking MRP well above 7% for the period relevant to the AER's WACC review. This conclusion is valid regardless of the particular analysis method. That is, all studies referenced by the AER, when updated for the most recent data show a forward looking MRP of well above 7%.

Survey Data

Survey data should be treated with caution, especially when the surveys have been conducted prior to the current financial crisis. Nonetheless, the surveys quoted by the AER indicate that an MRP of 6 per cent or above is by far the most commonly adopted value of market practitioners in combination with a gamma of zero. The JIA notes that the survey data strongly supports JIA's original submission that an MRP of 6% can only be sustained by the evidence before the AER in combination with a low or zero gamma.

Therefore, based on a reasonable assessment of the available evidence including:

- an analysis of the historical MRP;
- the effects on forward looking MRP over the medium term from the current financial crisis;
- cash flow analysis; and
- survey data;

the JIA submit that there is sufficient persuasive evidence to justify a departure from the previously adopted MRP of 6% and the parameter must be lifted. As to how much higher the

parameter should be lifted, the evidence demonstrates the best long-term value is an MRP of 7%.

Decision making under the Rules and the NEL

A 7% MRP is, therefore, consistent with:

- the need for persuasive evidence before adopting an MRP that differs from the previously adopted value of 6%;
- the need for the rate of return to be a forward looking rate of return that is commensurate with prevailing conditions in the market for funds and the risk involved in providing standard control services;
- the requirement that the businesses are provided with a reasonable opportunity to recover at least their efficient costs; and
- meeting all the elements of the market objective including the promotion of efficient investment.

6 Introduction

Equity Beta Section and Cost of Equity

The JIA's view has not changed that the equity beta should be 1.0. There is insufficient evidence to depart from this equity beta value.

This view is supported by consideration of:

- statistical evidence and methodologies, in particular, problems associated with this evidence and methodologies for estimating equity beta;
- identified problems with the Sharpe CAPM; and
- observable market data such as that used in the Dividend Growth Model analysis.

The JIA also consider that the AER has no basis for adopting an a priori view that the equity beta for a benchmark electricity business would be less than 1.

The JIA have serious concerns with the conclusions and arguments made in Chapter 8 of the AER's Explanatory Statement, which deals with the most appropriate forward looking equity beta. The AER's arguments and conclusions are not supported or justified by the evidence before the AER.

The JIA remains firmly of the view that the most appropriate estimate for the equity beta is at least 1.0. A decision to reduce the equity beta at the current time – particularly with unreliable data and market volatility at historical highs – risks entrenching a regulatory error that could have significant and adverse consequences for investment.

The JIA recognises that estimating an equity beta value involves synthesising both detailed statistical calculations with subjective judgements. Both of these processes are important. However, in the current Australian economic and financial environment surrounding regulated energy infrastructure businesses, both are problematic. Specifically:

- the detailed statistical calculations are problematic due to:
  - poor data statistical properties arising from minimal market volatility and mergers and acquisitions;
  - a small and only broadly representative sample of proxy companies for the benchmark network company;
  - the fact that, in the current environment, historical data is used as a proxy for forward looking values. While the past may be a reasonable indicator of the future, such information should not be applied without considering whether past values are influenced by a range of factors which may not be relevant to equity beta values going forward;

- conflicting results between some historic equity beta calculations and observed market results, which may be explained by flaws in the Sharpe CAPM;

- conflicting results between some historic equity beta calculations and what may be observed as equity beta expectations based on dividend growth model calculations; and

- subjective judgements are problematic due to the current financial environment, which is impacting both observed returns and expectations of future returns, particularly where short-term indicators are moving out of line with longer term measures.

Equity beta estimation has always been inherently uncertain, notwithstanding the range of techniques that have been employed in an attempt to improve them. Significant caution should therefore be exercised when interpreting empirical estimations of equity betas.

Given these problems, the AER should require very strong evidence before seeking to change the value of the equity beta, particularly given:

- the need for persuasive evidence to change current values; and

- the need for the AER to take a broader view in the context of the current environment in meeting the National Electricity Objective.

More particularly, on the issue of persuasive evidence the JIA considers that the AER's approach is contrary to the "persuasive evidence test" established in the NER. The JIA believes that the AER has failed to provide persuasive evidence for a change to the equity beta value. The JIA believes that the onus of proof for demonstrating that there is persuasive evidence rests with the AER. This issue is discussed in more detail in Chapter 2 of this submission.

The JIA have asked its expert advisers to respond to the AER's position on the equity beta put forward in its Explanatory Statement. The JIA's expert responses are attached to this document and include:

- *Allen Consulting Group* (**ACG**), Australian Energy Regulator's draft conclusions on the weighted average cost of capital parameters; Commentary on the AER's analysis of the equity beta;

- *Strategic Finance Group* (**SFG**), The reliability of empirical equity beta estimates: Response to AER proposed revision of WACC parameters;

- *Competition Economists Group* (**CEG**), Estimating the NER equity beta based on stock market data – a response to the AER Draft Decision; and

- *Competition Economists Group* (**CEG**), Forward looking estimates of the equity premium, for regulated businesses and the market as a whole.

These expert reports are integral to the JIA response and they address in more detail issues raised in this chapter. In addition the reports also raise relevant issues not discussed in this chapter.

This chapter is structured as follows.

- The first section provides an overview and introductory comments.
- The second section outlines the JIA's main arguments relating to the value of the equity beta, which have not changed since its September 2008 submission in response to the AER's Issues Paper.
- The third section outlines the AER's approach relating to the value of the equity beta, including areas where the AER believes the JIA's previous arguments to be lacking in some way.
- The fourth section contains arguments as to why the AER's approach outlined in section 3 is deficient, including responses to areas where the AER had criticised the JIA's approach.
- The fifth section provides a summary of the main arguments and the JIA's conclusions on this matter in light of the AER's Explanatory Statement and the evidence.

JIA's Proposed Equity Beta

In its response to the AER's August 2008 Issues Paper the JIA presented its position that the best estimate of the 60% geared equity beta remains at 1.0, and that there is no persuasive evidence that the equity beta should move from the current value of 1.0.

The evidence in support of this position included reports prepared for the JIA by the Allen Consulting Group (**ACG**)[1], Strategic Finance Group (**SFG**)[2] and Competition Economics Group (**CEG**)[3][4], which the JIA submitted in September 2008. The JIA believes these papers continue to provide important evidence in considering the value of the equity beta.

The JIA's arguments presented in September 2008 are summarised below.

1. Estimating equity betas for Australian energy businesses has been a difficult and uncertain exercise since the commencement of the current gas and electricity infrastructure regulatory regimes in 1998. While Australian regulators have generally approved an equity beta of 1.0, they seem to only partially recognise the problems associated with the data underpinning equity beta and the problems in determining equity betas.

In the mid to late 1990s, when the current model of utility regulation was being introduced there were limited comparables and regulators relied on international benchmarks to derive 60% geared equity betas of 1.2. Since 2001 the number of listed Australian energy infrastructure businesses has increased. However, with merger activity and a range of other events, the set of comparables available for electricity transmission and electricity distribution is both sparse and very imperfect. In particular:

[1] ACG, 2008, Beta for regulated electricity transmission and distribution, Sept 2008
[2] SFG, 2008, The reliability of empirical beta estimates, Sept 2008
[3] CEG, 2008, An analysis of implied market cost of equity for Australian regulated utilities, Sept 2008
[4] CEG, 2008, Estimation of, and biases inherent in the Sharpe CAPM formula, Sept 2008

- many of the comparables only have relatively short time periods in which data can be observed;

- many of the comparables are businesses which primarily focus on non-electricity infrastructure assets, thus potentially compromising their suitability as comparables; and

- the period between 1998 and 2008 was affected by the technology bubble and after this there was a period of low market volatility with consequent poor statistical data properties for estimating equity betas, as reflected in low R2 statistics

Energy infrastructure businesses and regulators have had to estimate equity betas from highly unreliable data. To date, in relation to energy infrastructure, a 60% geared equity beta of 1.0 has generally been used by regulators.

Overall, there has been, at best, only partial recognition of the problems associated with the available data.

2. Prima facie central estimates of equity beta suggest that the value is between 0.7 and 0.9. When 95% confidence intervals are applied to these estimates they indicate that the true equity beta value could very well include 1.0.

The JIA's consultant, ACG, provided a range of estimates of both Australian and US equity betas and considered a range of matters that affected the reliability of these estimates. These considerations included the removal of outliers, the period of the data sample, adjustment for leverage, the effect of unusual events, adjustments to improve the precision of estimates and adjustments to US data to improve the comparability of US results with Australian results.

The Explanatory Statement suggests limitations to the usefulness of confidence intervals and this point is addressed in Chapter 2. They must be relevant under the persuasive evidence test whenever the AER is basing its parameter estimates on statistics.

ACG calculated 95% confidence intervals for the results in order assess the reliability and robustness of the results.

These estimates of confidence limits only account for the level of scatter of the data points and not other sources of statistical variation that impact on the representativeness of the central estimates. An understanding of the statistical properties of the estimates is crucial to informing any judgement about the confidence that can be placed in their accuracy, which are being made from the available data.

ACG provided estimated ranges of equity beta for both Australian and US firms using the most representative data. The estimates vary between 0.65 to 0.9 for Australian firms and 0.5 to 1.1 for US firms. ACG[5] concludes that the US estimates are broadly consistent with the Australian data, but that the Australian estimates of 0.7 – 0.9 should be adopted as the central estimates that reflect the regression analysis. In light of the range of the central estimates, the problematic nature of the data and that in a significant number of cases the 95 % confidence

[5] ACG, 2008, op cit pages 55-57

intervals included an equity beta value of 1.0, an equity beta of 1.0 cannot be excluded from the possible range of results with a high degree of confidence.

In undertaking this analysis ACG recognised that for a variety of reasons the results are open to interpretation because of the poor quality of the data, significant variability of the results over time, wide confidence limits and problems with the adequacy of the confidence limits estimated.

ACG concluded that in light of the unreliability of the data and the width of the confidence limits, there is no persuasive evidence to change from the current value of 1.0 for the equity beta.

3. The reliability of equity beta estimates for Australian electricity infrastructure businesses is very low and when the very significant statistical problems with the data are recognised, this is reduced even further. The central estimates of equity beta using standard techniques, such as used by ACG, will be biased downwards. Further, the range within which those estimates can be relied on is wider than the standard techniques indicate. That is, there is a high probability that these results under-estimate the true value of equity beta.

This means that the range of 0.7 – 0.9 for central estimates, as outlined in the section above, must be increased to take account of this bias. Consequently the confidence intervals widen significantly, highlighting the case that there is no persuasive evidence to depart from an equity beta value of 1.0.

The JIA's consultant, SFG, provided financial and statistical analysis to assess the extent to which the equity beta estimates and confidence intervals undertaken using the standard techniques employed by ACG could be relied on, given the reliability problems with the data.

SFG considered measures of the reliability of the equity beta estimates in particular the R2 statistic. SFG identified that the R2 statistic has two roles:

- to provide a measure of the extent to which variation in the dependent variable (individual company returns) are related to the independent variable (market returns); and
- to provide a measure of the "signal to noise ratio" and the consequent reliability of the estimate. That is, where R2 is low there is an increasing likelihood that the estimate will not be correct because the financial "signal" is obscured by statistical "noise".

SFG demonstrated conclusively that where the R2 statistic is low there is a very high probability that the estimate will be biased downwards. That is, if the R2 statistic is low the equity beta value should be adjusted upwards to reflect the very high probability that the equity beta is being underestimated.

SFG provided clear empirical evidence supporting this point and demonstrated that the low R2 statistics and low equity betas were a prevalent feature of the data sample period since 2001.

SFG also highlighted the problems associated with relying on confidence intervals when R2 statistics are low. The level of uncertainty about the estimates associated with a low R2 also

apply to the confidence intervals associated with these statistics. These confidence intervals will need to be widened where R2 statistics are low.

SFG further highlighted that there is additional uncertainty surrounding equity beta estimates in instances where the data being used in the analysis is of poor quality. Data may be of poor quality when imperfect comparator businesses are used, data sets are available for only short periods and the data sets are impacted by a range of business specific events. All of these factors impact on the data sets being used to determine equity betas.

In the absence of utilising any recognised techniques for adjusting equity beta estimates (such as the Blume and Vasicek adjustments), SFG recommends that the problems should be dealt with by:

- widening confidence intervals;
- shifting the equity beta estimates upwards; and
- affording little weight to estimates under certain conditions.

4. Current market evidence about the cost of equity derived using the dividend growth model (DGM) provides strong indications that either the market risk premium was substantially higher than 6 %, assuming an equity beta of 1.0, or conversely an equity beta of higher than 1.0 is assumed (with a market risk premium of 6 %). This has been used as a crosscheck to ensure that an equity beta of 1.0 is in line with financial market conditions.

The JIA's consultant, CEG, provided estimates of the required return on equity (**ROE**) using current market data applied to a dividend growth model (**DGM**). These estimates indicate, using very conservative dividend growth assumptions, that:

- an equity beta of 1.2 was implied by the then current market data using an assumption that the MRP is 6.0%; and
- an equity beta of 1.0 was correct using an assumption that the MRP is 7.0%.

Under more realistic dividend growth assumptions:

- the MRP is substantially higher than 6%, assuming an equity beta of 1.0; or
- the equity beta was substantially higher than 1.0 assuming a MRP of 6%.

The overall conclusion from the DGM analysis is that there is very strong evidence that either:

- the equity beta estimates less than 1.0 are too low; or
- the equity beta is an inadequate explanatory variable for the true cost of equity; or
- more likely, both.

5. There are known problems with the Sharpe CAPM approach which mean that adjustments must be made to the equity beta estimate to derive a more accurate estimate of the actual risk adjusted return on equity. While regulators have approved equity betas of 1.0, the problems of the Sharpe CAPM have not been evident, and consequently have not been identified and addressed. If the shortcomings of the Sharpe CAPM are properly recognised and adjusted for, an equity beta of 1.0 is the best estimate.

As detailed in Chapter 2, the CAPM is a tool used in the Rules to establish an efficient return on equity that meets the National Electricity Objective and Revenue and Pricing Principles. The CAPM in the Rules must be read and interpreted as such.

The JIA's consultant, CEG, provided a thorough review of the development of the CAPM since the first version of it was derived by Sharpe and Lintner. In particular, CEG highlight the work of Black et al, Merton and Fama and French and the high level of acceptance of this work by financial economists.

CEG identified the theoretical problems with the assumptions underpinning the Sharpe CAPM and how these problems can be adjusted for. CEG also replicated the original research by Black et al using Australian data. This demonstrated that the Black et al results hold firm in the Australian context.

CEG confirmed the findings in other markets that the sensitivity of equity returns to equity betas derived from stock market data is very low.

CEG also provided a simple mechanism that adjusts for equity beta derived from stock market data. Once this adjustment is applied to all the estimates of the equity beta, it strongly reinforces the conclusion that there is no persuasive evidence that the equity beta that will deliver the requirements of the Revenue and Pricing Principles should depart from 1.0.

6. In summary the JIA position was and still remains that:

Equity beta estimates are highly unreliable. Once adjustments are made to the equity beta estimates for the significant deficiencies in the data and consequent unreliability of the estimates, the estimate will not be significantly different from 1.0.

Current DGM analysis strongly indicates that an equity beta of higher than 1.0 is more likely even under conservative assumptions. There are two conclusions that can be made. Either:

- the equity beta estimates are too low; or
- the equity beta is an inadequate explanatory variable for the true cost of equity.

The latter conclusion is supported by understanding the substantial weaknesses of the Sharpe CAPM approach in explaining the true cost of equity. By considering more recent and improved CAPM models it is possible to apply the Sharpe CAPM to more accurately estimate the true cost of equity. This can be done through a simple adjustment to the measured equity beta.

7. Taking all of the evidence and reasoning provided above, cumulatively there is no persuasive evidence that the equity beta should change from 1.0. In fact there is evidence that the equity beta may exceed 1.0. Therefore 1.0 represents the most appropriate estimate.

The Explanatory Statement's Proposed Equity Beta

In its Explanatory Statement the AER[6] concludes that the equity beta should be 0.8, there being, in its view, persuasive evidence to revise the value of the equity beta parameter downwards. In reaching its conclusions the AER used reports from Associate Professor Handley and Associate Professor Henry.

In reaching its conclusions the AER discounts the reasoning and evidence of the JIA. The AER's reasoning and evidence is as follows.

1. A qualitative assessment of factors affecting regulated electricity infrastructure businesses leads to the conclusion that these businesses have less non-diversifiable risk than the market, and therefore the equity beta should be less than 1.0.

The AER[7] compares the businesses to the rest of the market and rightly concludes that these business assets are less risky (in terms of systematic risk) than the rest of the market.

One of the key factors influencing the AER in reaching its conclusion is the perceived benefits of the regulatory system in moderating systematic risk including:

- ex ante capital approvals;
- no asset stranding; and
- as regulated energy businesses have a five year pass through of debt costs they are less exposed to the effects variations in borrowing cost. However, the JIA would note that this is only to the extent that the businesses' actual cost of debt equates to the regulated cost of debt.

2. The AER[8] identifies issues raised in its issues paper, issues raised by the JIA, and empirical evidence as matters it has considered in reaching the conclusion that an equity beta of less than 0.7 could be reasonable.

In working through this reasoning the AER[9] considers the following issues:

- Methodological issues:
  - discrete vs continuous returns, and uses continuous returns[10];

[6] AER, 2008, Explanatory Statement, review of the weighted average cost of capital (WACC) parameters, December 2008, page 252.
[7] Ibid, pages 188-195.
[8] Ibid, pages 195-240.
[9] Ibid, pages 195-240.
[10] Ibid, pages 199-200.

- the method of levering and delevering. The AER believes either the Monkhouse method or the simpler version used by ACG and Henry is acceptable[11];
- the treatment of outliers. The AER uses LAV and considers that the re-weighted OLS assists in assessing the impact of outliers[12];
- unrepresentative periods and length of the estimation period[13]. The AER adopts the period from 1 January 2002 - 1 September 2008;
- observation frequency. The AER adopts weekly observations; and
- use of portfolio betas and median and mean estimates.

- Data issues:
  - the appropriateness of comparables used. The AER[14] adopts a significantly narrower set of Australian comparables than those used by the JIA and ACG. The AER[15] references US estimates;
  - issues related to the effect of thick and thin trading. To address the impact of "thin trading" the AER[16] has adopted Henry's use of the Dimson approach over the Scholes-Williams approach. Henry notes that there is very little distortion due to thin trading. While the AER raises the issue of thick trading as being likely to bias the results upward, Henry does not, presumably because he does not anticipate that this is likely to be an issue;
  - confidence intervals. The AER recognises the need for the use of adjustment techniques for better estimates of confidence intervals, but concludes that as confidence intervals are less likely to represent the true point estimate, the AER[17] would not have regard to confidence intervals in its decision on the parameter value of the equity beta;
  - the meaning of the R2 statistic. The AER[18] considers that simulation analysis, as undertaken by SFG, cannot be applied as a method for the estimation of equity beta and adjustments to equity beta where R2 is low cannot be applied. Furthermore the AER[19] considers that R2 is not a measure of the statistical reliability of the equity beta estimate and that reliability is better assessed using sequential and recursive estimates, Hansen's test and confidence intervals; and
  - stability of estimates over time. The AER[20] considers that the Hansen test is more useful than graphical approaches but makes no definitive conclusion about stability. Henry[21] is

[11] Ibid, pages 201-203.
[12] Ibid, pages 203-207.
[13] Ibid, pages 205-209.
[14] Ibid, pages 195-198.
[15] Ibid, page 198.
[16] Ibid, pages 212-213.
[17] Ibid, pages 216-219.
[18] Ibid, pages 214-216.
[19] Ibid, page 216.
[20] Ibid, pages 219-220.

clearer in his conclusions recognising the instability of the model, but that the instability is more associated with the error term rather than the estimate of the coefficients of the model.

- Use of adjustments to overcome problems with data:

The Blume adjustment:

  – The AER[22] does not consider the use of the Blume adjustment is appropriate in the context of Australian energy infrastructure stocks, because it cannot address the general imprecision of equity beta estimates and it may lead to an upward bias;

The Vasicek adjustment:

  – The AER[23] does not consider the use of the Vasicek adjustment is appropriate in the context of Australian energy infrastructure stocks because there are other methods for addressing the precision of the beta estimates.

The equity beta estimates derived by the AER following the above considerations are as discussed below.

- Individual company equity beta estimates were derived by the AER's consultant, Henry, using weekly frequencies for the period 2002 - 2008 for a set of 9 Australian comparables. The results are shown below along with the ACG estimates using monthly frequencies for the period 2003 – 2008 for the same set of 9 Australian comparables:

Expert	Range	Averages
Henry	0.10 – 1.01	0.43 - 0.58
ACG	-0.06 – 1.29	0.49 - 0.61

- Portfolio equity beta estimates were derived by the AER (2002 – 2008), but in deriving these estimates the AER does not consider Henry's portfolio analysis. The reason is not given. Henry[24] reports portfolio equity beta estimates between 0.39 and 0.68, and reports that the equity beta estimates for the most recent period (March 07 – Sept 08) are considerably higher (0.66 – 0.68) than those for the longer period from January 2002 to September 2008 (0.39 – 0.49). The results are shown below along with the ACG estimates for (1990 – 2008) and (2003 – 2008):

[21] Henry, 2008, Econometric advice and beta estimation, Nov 2008, pages 8-9
[22] AER, 2008, op cit, pages 222-226
[23] Ibid, pages 226-230
[24] Henry O.T., Econometric advice and beta estimation, November 2008, page 8

Analysis	Range
ACG -(1990 – 2008)	0.65 – 0.80
ACG - (2003 – 2008)	0.64 – 0.65
AER – (2002- 2008)	0.44 – 0.46

The AER[25] relies on Henry's assessment of stability in relation to his portfolio analysis, including the Hansen's test, which is undertaken to assess whether there is parameter stability.

- Individual and portfolio equity beta estimates were derived by the AER for a group of US companies:

Observation frequency	Range	Averages
Weekly	0.51 – 1.67	0.82 - 0.84
Monthly	0.16 – 1.66	0.75 - 0.87

The AER[26] then concludes that from all of the estimates outlined above that an equity beta estimate of less than 0.7 could be reasonable.

3. The AER considers the evidence presented by CEG that simply using the Sharpe CAPM without adjustment will underestimate the cost of equity where equity betas are below 1.0. The AER primarily dismisses this evidence on the basis that the NER mandates the use of the Sharpe CAPM, but also due to misconstruing Handley's and CEG's advice.

The AER[27] forms the view that it should not to have regard for inadequacies in the Sharpe CAPM, because of:

- the widespread use of the Sharpe CAPM by past regulators and companies; and
- the fact that no industry association objected to the use of the Sharpe CAPM when the Chapter 6A and Chapter 6 frameworks were being developed.

The AER[28] responds to CEG's report on the inadequacies in the Sharpe CAPM by relying on a report by Handley, which:

- indicates there is no consensus about how to interpret the empirical evidence;
- interprets CEG's Australian empirical analysis as meaning that there is no significant relationship between the equity beta and equity returns and therefore little, if any, useful information can be obtained from the CEG's analysis.

The AER[29] interprets the JIA and CEG work as a recommendation to adopt the Black CAPM.

[25] AER, 2008, op cit, pages 219-220
[26] Ibid, page 240
[27] Ibid, pages 241-248
[28] Ibid, pages 241-248
[29] Ibid, page 248

Following this discussion the AER then adopts an equity beta parameter value of 0.8, which is 0.12 to 0.36 higher than the AER empirical equity beta estimates outlined above. The AER suggests[30] that by using this seemingly arbitrary adjustment the Sharpe CAPM's inadequacies are taken into account, but the AER does not explicitly demonstrate how it has done so.

4. The AER then considers the DGM analysis of CEG, which provided sound evidence that the current cost of equity is substantially higher than would result from the use of an equity beta of 1.0. The AER[31] concludes that this is not persuasive evidence.

The AER[32] relies on the advice of Handley who identifies two serious limitations with CEG's DGM analysis:

- limitation 1: there is a requirement to verify that the dividends reflect the free cash flows of the business; and
- limitation 2: DGM analysis is sensitive to the input assumptions.

This leads the AER to the conclusion[33] that DGM is only useful as a "back of the envelope" valuation and analytical technique.

The AER[34] also makes further points against the DGM analysis including:

- there is a reliance on assumptions about markets being perfectly priced and forecasts accurately reflecting market expectations;
- the coincidence of the timing of data is important for reliable results and the AER notes that data is not exactly coincident;
- there may be questions as to the reasonableness of analysts forecasts and whether they reflect market expectations; and
- there may be issues with the comparability between equity betas implied from DGM analysis of US electricity businesses and equity betas implied from the DGM analysis of Australian businesses.

5. Overall, based on the arguments outlined above, the AER considered that there was sufficient persuasive evidence to justify a departure from the previously adopted equity beta of 1.0. The proposed new equity beta value is 0.8. The AER considers this value is an estimate of a forward looking equity beta value which is supported by persuasive evidence.

[30] Ibid, page 243
[31] Ibid, page 251
[32] Ibid, page 249
[33] Ibid, page 249
[34] Ibid, page 250

JIA's response to issues raised by the AER in its Explanatory Statement and why the AER should accept the JIA's original submission

The JIA's response is structured to respond to points on which the AER has based its conclusion and is based on evidence and analysis provided in the JIA's advisers' reports. These reports address in more detail the issues which are raised below and also raise further issues relevant to the determination of an equity beta value.

In addition to these detailed arguments, the JIA is also concerned that there is potentially a structural change in the economic and financial climate occurring, as outlined by some of the comments in Chapter 1 of this submission. The JIA believes that the significant uncertainties presented by the global financial crisis have not been recognised in the increased risk, and therefore cost, of equity.

The focus of this chapter is on the AER's analysis, including the errors in its statistical analysis, flaws in reasoning in relation to the JIA's evidence and the methods for drawing final conclusions. However, the market context within which this analysis is being undertaken suggests that particular caution must be taken in interpreting the results of any analysis, and that compelling evidence must be provided to justify a departure from the established parameter value of 1.0.

1. The AER made an ex ante qualitative assessment of factors affecting regulated electricity infrastructure businesses leading to the conclusion that the equity beta for these businesses should be less than 1.0.

In making this intuitive, qualitative assessment of non-diversifiable risk and the value of the equity beta, the AER has made a fundamental error of financial theory in concluding that the equity beta for an electricity infrastructure business must be less than 1.

The AER sought to consider, at a qualitative level, where an appropriate equity beta may lie through a qualitative assessment of the factors that affect non-diversifiable risk.

The AER is correct, in terms of business risk, that electricity infrastructure businesses are less risky than many other businesses in the market, and this is reflected in the electricity infrastructure business' asset betas. However, for the purposes of making a valid comparison of the relative non-diversifiable risks of business, the comparison must either be a comparison of asset betas (that is, a comparison of business risk only) or geared equity betas (that is, a comparison of business risk for a given level of financial risk), with the comparison at the same level of gearing. The AER has not done this.

The equity beta of the market is 1.0 at the average level of gearing of the market (or market gearing), which is currently approximately 35%. At 60% gearing the equity beta of the market is calculated by the JIA at approximately 1.6. As such an equity beta of 1.0 at 60% gearing is already substantially below the market equity beta at 60% gearing. Therefore it is not possible to conclude that an equity beta of 1.0 for businesses at 60% gearing is too high.

SFG[35] identified the cause of this error as being confusion about financial risk:

> After correctly noting that the equity beta is made up of two components (the risk of the firm's business activities [asset beta] and the amount of financial leverage), the AER then proposes that the benchmark firm would score lower on both components. That is, the JIA submission is that the benchmark firm has a lower asset beta than the average firm, but higher financial leverage, and these two effects will tend to cancel each other in terms of their impact on equity beta. By contrast the AER argues that the benchmark firm will score lower than the average firm on both components and that this gives rise to an a priori belief that the benchmark firm must have an equity beta less than 1.0 (the equity beta of the average firm).

The ex ante conclusion that the equity beta of electricity infrastructure businesses should be less than 1.0, before any further analysis, is clearly flawed as this conclusion only appears to take into account asset risk and ignores financial leverage risk. Importantly, in reaching such a conclusion before undertaking its empirical analysis, the AER runs the risk of compromising its own objectivity in the assessment of the empirical analysis.

One of the factors in the AER[36] reaching its conclusion was the role of the regulatory system in moderating risk. In relation to regulatory risk the AER[37] suggests that the regulatory regime reduces risk. The JIA believes that the regulatory regime increases risks to regulated businesses, and that this argument by the AER is not robust.

The AER argued that the regulatory regime has features, such as the pass through of the cost of debt, that reduce exposure to risk. They do not provide quantitative evidence to support this position.

While the regulatory system does allow for benchmark costs to be reflected in prices, this typically occurs every five years. Businesses will then be exposed to differences between their actual and forecast costs, including debt costs.

The AER do not address the additional risks that regulation imposes. Regulated businesses face a range of regulatory risks, which often skew or truncate returns. The returns the regulated businesses may earn are generally not allowed to exceed the regulated rate of return while the businesses remain exposed to the risk of financial under performance, which may arise, for example, when efficient costs are higher than those allowed by the regulator.

The JIA believe that regulatory risks are largely asymmetric, and as asymmetric risks, they are not normally distributed. They therefore do not fit easily within the CAPM framework.

2. The AER[38] claims to take into account issues which suggest an equity beta less than 0.7 could be reasonable.

In general, the data underpinning equity betas is subject to very high levels of statistical error. Measurements may vary widely depending on numerous factors including the data source, time periods, data sampling frequency, levering and delevering methods, and the set of comparables

[35] SFG, 2009, *The reliability of empirical beta estimates: Response to AER proposed revision of WACC parameters*, page 10.
[36] AER, 2008, op cit, pages 192-195.
[37] Ibid, page 194.
[38] Ibid, page 240.

selected. These errors and problems occur prior to any consideration of whether an equity beta based on a past data set is the best proxy for a forward looking equity beta.

These data problems are generally recognised by practitioners. For example, in relation to general beta measurement, Grant Samuel[39] state:

> ... there are very significant measurement issues with betas which mean that only limited reliance can be placed on such statistics. Even measurement of historical betas is subject to considerable variation.

In considering equity beta calculations the JIA believes that the AER, while considering statistical errors and problems with data sets, did not adequately take them into account.

In deriving its equity beta estimates, the AER[40] has relied exclusively on standard techniques for regression analysis of market data. Its analysis includes a number of statistical flaws, some of which are significant, that lead to incorrect conclusions about a value for the equity beta.

These flaws include those flaws in methodology, as outlined below.

Period of estimation

The periods of estimation used by the AER are too short, especially in light of the very significant data inadequacies for the period the AER has adopted. In particular, the AER's rationale[41] for not including data prior to the tech bubble lacks rigour.

The AER's rationale is that prior to the tech bubble the only comparable is AGL (and briefly Envestra), and the lack of other comparables means such a heavy weighting towards AGL is inappropriate, particularly when it had a large proportion of non-regulated activities. There are a number of errors in this superficially appealing logic.

Firstly, a majority of AGL's activities were in fact regulated. AGL's retail business has been regulated and, to a significant degree, still is. Full retail contestability (**FRC**) did not start until 2002. Even now, substantial parts of the customer base take, or can take, "safety net" tariffs even with FRC in place. To the extent that AGL had non-regulated businesses, they were a small proportion of its assets and cash flow. Data relating to AGL would therefore reflect its regulated infrastructure business.

Secondly, AGL has been regulated since 1935. The form of regulation applied until 1990 had been rate of return regulation. Thereafter, the form of regulation applied was CPI-X price path regulation. While it represents the only available comparable until 1997 it has an established history of regulation and expectation on the part of investors. Not surprisingly its beta had been stable and can be considered reasonably reliable (based on confidence intervals and R2

[39] Grant Samuel 2007, *Financial Services Guide And Independent Expert's Report in relation to the Proposed Acquisition of the Alinta Assets from Singapore Power International Pte Limited*, November 2007, Appendix 1 Selection of discount rates p5.
[40] AER, 2008, op cit, 231-240.
[41] Ibid, pages 208-209.

statistics)[42]. It therefore provides a strong basis for prior expectation about the equity beta for regulated energy businesses. SFG[43] highlights this point and demonstrates this clearly with its graph of AGL equity betas from 1980 to 1990, a time when AGL was regulated under rate of return regulation.

Given the very real statistical problems with the post tech bubble data and the resulting poor reliability of equity beta estimates, the pre tech bubble estimates for AGL should be given serious consideration and included in the data sets used in calculating beta estimates. Moreover, it should be recognised as an important reference point when assessing appropriate equity betas for electricity infrastructure businesses.

In its response to the AER's explanatory statement ACG[44] comments on the value of using long term beta estimates, which included AGL and Envestra, in addition to short term estimates, stating:

> The JIA advised the ESC to take account of the long term estimates together with the short term ones, notwithstanding the weight accounted for by AGL and Envestra.

Similarly, SFG[45] comments on the AER's non-consideration of pre-tech bubble data:

> I do not suggest that these estimates alone would provide a robust and reliable basis for estimating the beta of the benchmark business. However, it is my view that these estimates are relevant to the estimation of the equity beta for the benchmark firm and should be considered. This is especially the case where the other data that is available is scant and incomplete and produces output that is implausible.

The AER's rejection of data from before the bubble does not reflect an objective consideration of the need to use all possible information, especially when the other data available is so poor. In light of the opinions of SFG and ACG, and the JIA's reasoning, the rationale for simply taking data from 2002 is superficial and should be revisited.

Observation frequency

The use of weekly data over monthly data by Henry and the AER is a reflection of the paucity and scarcity of the data. Effectively Henry has been forced to use weekly data as opposed to monthly data because there is insufficient data to derive meaningful results. The use of weekly data will derive less accurate results than those derived from monthly data. In its report in response the AER's Explanatory statement SFG states[46]:

> Due to these problems with the availability of data, Henry (2008) uses returns sampled at the weekly frequency. It appears that Henry uses weekly returns due to the fact that the more standard monthly returns would produce such a small number of observations that nothing of any use could be derived from it. He refers to the weekly returns as nothing more than a "best compromise" in the circumstances.

[42] See SFG's papers "The reliability of empirical beta estimates, September 2008, pages 13-14" and Equity beta estimates for Victorian gas businesses, SFG, October 2007, pages 32-51.
[43] SFG, 2007, *Equity beta estimates for Victorian gas businesses*, SFG, October 2007, pages 39-40.
[44] ACG, 2009, *Australian Energy Regulator's draft conclusions on the weighted average cost of capital parameters*, January 2009, page 10.
[45] SFG, 2009, *The reliability of empirical beta estimates: Response to AER proposed revision of WACC parameters*, January 2009, pages 40.
[46] Ibid, page 36.

The use of monthly observations has long been accepted as the preferred frequency by finance academics and practitioners as it provides the most reliable estimates. This is because there is a sufficient length of time for the relationship with market movements to be established while still providing sufficient data points for meaningful regression estimates that minimise statistical noise. Henry and the AER have been forced to adopt weekly estimates because much of the data is for periods that would otherwise be considered too short because of the limited number of data points. Notwithstanding that the weekly data provides sufficient data points, it produces less reliable results than monthly data and is being used over a period that is too short to provide a sound basis for equity beta estimates. As SFG comments[47] in this regard:

> In my view, the scant and incomplete data set that is relied upon by the AER is not sufficient to produce beta estimates that are robust or reliable.

In addition ACG[48] comments that:

> The AER acknowledges that using weekly observations to estimate betas is not consistent with standard practice. We note that using weekly observations is more likely to be susceptible to bias than when monthly estimates are used where stocks are traded less than the (value-weighted) average of listed entities, which is likely to be the case for some of the firms in the set of Australian comparable entities. In addition, it is not clear that the use of weekly data improves the overall statistical performance of the model that is used to estimate the betas.

In summary, the need to use weekly observations is a result of the paucity of data. The reliability of the estimates remains questionable. If anything it just allows short sequences of data to be used that would otherwise be rejected. Use of these short sequences may further reduce the reliability of the estimates.

Portfolio analysis

The AER[49] excluded the data relating to AGL, Alinta and GasNet from its data set for a period of time. This creates a significant weakness in the AER's portfolio analysis. These businesses have significantly more stable data than many other companies in the data set, which tend to have shorter data series.

Removing these companies when under takeover threat seems arbitrary, especially as the APA Group was also under takeover threat in 2007 and has not been removed from the data set.

More generally takeovers, mergers, asset sales and changes of ownership are relatively commonplace occurrences. Removal of entire data series to take account of specific and identifiable occurrences may bias the results.

ACG points out that[50]:

> If the AER had sufficient concern about the potential for takeover speculation to affect the beta estimates of GasNet and Alinta, the appropriate course of action would have been to remove the period of observations that were considered to be affected and to justify the period of exclusion.

[47] Ibid, page 36.
[48] ACG, 2009, op cit, page 8.
[49] AER, op cit, pages 235-236.
[50] ACG, 2009, op cit, page 24.

> The fact that Australian [sic] only has a small number of listed comparable entities with a reasonable trading history means that all effort should be made to maximise the use of the information that is available. Indeed, Henry set out the periods during which he considered GasNet and Alinta to be affected by takeover speculation but then decided not to follow his own advice

ACG accordingly recommends the estimates be remade with GasNet and Alinta included, but with the removal of the periods for which the takeover activity was occurring, adding to the reliability of the estimates.

While Henry and the AER excluded Alinta and Gasnet completely they did not exclude AGL. This exclusion of two out of three companies affected by takeover activity for a period is arbitrary, particularly when Henry and the AER could have done as ACG propose and removed data for the period in which merger activity was taking place. It is concerning that the AER and Henry chose to exclude two rather all three companies. It is equally concerning that they could not have arrived at the simple remedy put forward by ACG.

Data issues

The AER[51] acknowledges, but does not apply, any explicit or analytical approach to deal with the problem of poor comparables and uses only a very limited set of comparables in its portfolio analysis, rendering it virtually meaningless. The AER's portfolio analysis should be rejected as providing a lower bound estimate. ACG[52] demonstrate that a number of inconsistencies in the AER's approach lead to its conclusion that the lower end of the range of central estimates should be 0.44 and shows that the correct interpretation is that the lower end of the range is 0.6.

The AER's choice of upper bound of 0.68 is also based on inconsistencies in its approach. ACG[53] again shows that when consideration is given to these inconsistencies and the pre tech bubble estimates are included, the upper end of the range is 0.9.

While the AER[54] indicates that it should have regard to the US evidence, there is little if any indication of how it does so. Once proper regard is had for the US data it is clear that the AER understates the upper bound of a reasonable range. ACG[55] identifies the AER's incorrect reasoning and inconsistencies. These include not taking into account simple averages and only considering portfolio estimates that lead to the AER only considering a beta of 0.68 as the top end of the range and not considering its own simple average estimate of 0.87.

As identified above, the AER uses too short a period for estimation given the significant problems with the data over the 2003 -2008 period. The pre tech bubble period even extending back as far as 1980 is very informative. As identified above, while AGL data dominates the period, the data from this period is highly relevant and informative.

[51] AER, 2008, op cit, pages 196-197.
[52] ACG, 2009, op cit, pages 6, 22 and 23.
[53] Ibid, page 6.
[54] AER, 2008, op cit, pages 238-240.
[55] ACG, 2009, op cit, pages 25-28.

Reliability issues

The AER[56] partially recognises the problems with data quality identified by the JIA, but the AER does not ask the fundamental question about what can be meaningfully implied from the market data and how reliable are any results which are obtained. This is a significant failure.

The JIA's submission in response to the Issues Paper sought to bring this issue into perspective, but the AER has not engaged with this issue. Confronting this issue is crucial to making a sound decision about the value of the equity beta. While there is some discussion by the AER of data issues such as the appropriateness of comparables and a brief discussion of confidence intervals, the AER does not fully confront the significant problems with the data and what can be interpreted from it. The AER's approach has applied many sophisticated techniques, but has not involved a qualitative assessment of the data and the results produced. Furthermore the AER did not use a number of useful statistical tools, which could have assisted it in this assessment.

The AER[57] has focused on point estimates of the equity beta and, while acknowledging that confidence intervals are measures of precision, it seems to largely ignore their application. The AER undertakes a technical discussion of standard errors, heteroskedasticity, auto correlation and their impact on confidence intervals, but does not draw conclusions about what the confidence intervals reveal about the reliability of the point estimates. Considering both the very wide range of the confidence intervals and the expert advice of ACG and SFG on the reliability of the confidence intervals, the approach by the AER calls into question the validity of the point estimates. This is especially important where there is a wide variation in these estimates resulting from different regression variants employed to estimate the equity beta.

The AER[58] has also not recognised the likelihood of the need to widen measured confidence intervals to allow for matters other than autocorrelation and heteroskedasticity and it has not recognised or estimated the impact of low R2 results and the quality of comparables.

Confidence intervals must be taken into account if the issue of whether there is "persuasive evidence" for a change from the previous value is to be considered properly. The AER's approach of not considering standard errors and confidence intervals in evaluating the results does not enable it to properly address the issue of whether "persuasive evidence" for a change from the previous value exists.

SFG[59] makes this clear in its report responding to the AER's explanatory statement:

> I have already noted that the standard error of a beta estimate is a measure of the precision of that estimate, conditional on the empirical method that has been selected and on the particular data sample that has been chosen. The precision of the available beta estimates is, in general, one of the relevant considerations to take into account when determining whether to afford material weight to those estimates.
>
> .....

[56] AER, 2008, op cit, pages 251-253.
[57] Ibid, page 216.
[58] Ibid, page 217.
[59] ACG, 2009, op cit, page 16.

> A confidence interval allows one to conclude whether a particular econometric method applied to a particular sample of data produces an estimate that is significantly different from a particular value. If the view was, for example, that current regulatory precedent is to adopt an equity beta of 1.0, a confidence interval allows one to test whether or not a particular estimate is significantly different from 1.0. For this reason, it would seem that confidence intervals and standard errors would be relevant considerations.
>
> .....
>
> I noted in my previous report (p. 6) that "it follows logically that higher regulatory beta estimates will (other things equal) result in higher regulatory returns and a commensurately higher probability that the regulatory return will be sufficient for network service providers to recover at least the efficient cost of capital employed." If the probability of the regulated return being sufficient to recover the efficient cost of capital is a relevant consideration, some way of estimating this probability is required. This is exactly what the standard error and confidence interval is designed to do.

Similarly ACG[60] provides a simple complete summary of the failures in the AER's approach to confidence intervals, highlighting both the need to use confidence intervals to make an assessment of persuasive evidence and the particular relevance of the upper confidence interval.

> Thus, there is nothing inappropriate nor asymmetric about concentrating in the current case on the upper limit of the confidence intervals for the new beta estimates. When testing whether the evidence for change is 'persuasive' given the reliability of the evidence, only one end of the confidence interval would be relevant (with the relevant 'end' depending upon whether the new point estimates are above or below the previously adopted value).

R2 statistics are a useful tool in interpreting equity beta estimates. The AER has an incomplete understanding of the role of R2 statistics in interpreting equity beta estimates. While the AER acknowledges that low R2 statistics make it more difficult to obtain statistically reliable estimates[61], it focuses on identifying the extent to which market returns influence stock returns, but does not correctly determine the role and impact of low R2 estimates obscuring the true equity beta. That is, where an R2 is low the role of statistical noise becomes significant and any estimate of correlation becomes increasingly suspect. Not only does the estimate become obscured by noise, but as shown by SFG the noise has the effect of depressing the estimate, biasing it downwards.

SFG[62] provides a comprehensive explanation of the misunderstanding the AER has in responding to the issues raised by the JIA and SFG on this matter. Two key statements from their report that summarise the issues are:

> Again, the key point (about which there appears to be general agreement) is that in circumstances where the R-Squared statistic is low "it is difficult to obtain statistically reliable estimates." In my view, this alone should lead one to (a) compute and report R-squared statistics, as is standard practice whenever using regression analysis, and (b) apply great caution in affording material weight to the resulting estimate where the R-squared statistic is low[63].

and

[60] ACG, 2009, op cit, page 16.
[61] AER, 2008, op cit, page 215.
[62] SFG, 2009, op cit, pages 25-29.
[63] Ibid, page 28.

> In summary, my earlier report shows that beta estimates less than 1.0 are more likely to be below the true beta than above it and are therefore downwardly biased. When the JIA obtain a beta estimate that is less than 1.0 the JIA know that it is more likely to have been affected negatively by estimation error. Consequently, the JIA's best estimate of the true value of beta is higher than the estimated value. The AER argues that it is reasonable to hold an a priori view that the equity beta of the benchmark firm is less than 1.0 based on "empirical and conceptual evidence." In my view, the "empirical" evidence is circular and the "conceptual" evidence is based on flawed reasoning and does not contradict the existence of bias in any event. [64]

The JIA considers that the AER[65] misunderstands the reason why a focus on low R2 results is needed. Clearly where R2 is not low, there is no problem. Where R2 is low there is a problem. Importantly the equity beta estimates on which the AER is basing its decision have a large number of low R2 results. Thus there is a need to focus on these results.

The AER[66] also misconstrues the role of the simulation analysis used by SFG. It has mistakenly drawn the conclusion that the SFG simulation is an alternative method of estimating equity beta. This is incorrect. The SFG simulation is used to crosscheck the validity of the beta estimates by comparing the results to those of a simulation where the true values are known. This crosscheck is particularly important where the data is of such low quality that the results are open to question, as it is in this case. SFG provides a full explanation to assist the AER on this important point on pages 28 and 29 of its report to the JIA in response to the Explanatory Statement. As SFG explain[67]:

> Simulation analysis is regularly used to test the reliability of an econometric method applied to a data set with certain characteristics. The idea is to simulate data that has characteristics that are similar to the real data and then to apply the econometric method to it. One can then compare the estimate obtained by the econometric method with the true value of the parameter. In a simulation analysis, the true value of the parameter is known, because the researcher has generated the data. If the econometric method consistently and reliably produces estimates that are close to the true value, one can have confidence when it is applied to real data. If the econometric method produces estimates that are highly variable or consistently above or below the true value, one would have no confidence when it is applied to real data. That is, the point of simulation analysis is to determine the degree of confidence the JIA would have in the estimates that are obtained from applying a particular econometric method to a data set with particular characteristics. Simulation analysis is not proposed as, and is never used as, an alternative econometric method for estimating parameters.

The AER fails to recognise the very high probability of significant downward bias in the equity beta estimates. This high probability is indicated by the large number of very low R2 statistics for the period 2003 – 2008, particularly where the value for equity beta is low. The AER does not acknowledge this fact and does not to seek to compensate for it or otherwise address it. This amounts to an incomplete application of statistical methods. Since the methods used are statistical in nature, all relevant statistics must be considered. If all relevant statistics are not considered the possibility of incorrect statistical selection and manipulation is likely to become an issue.

[64] Ibid, page 33.
[65] AER, 2008, op cit, page 216.
[66] Ibid, page 216.
[67] SFG, 2009, op cit, page 28-29.

Hansen Test

As part of Henry's beta analysis for the AER, Henry includes a stability assessment using recursive regression and the Hansen test. On the basis of his conclusion the AER determines that its equity beta estimates are stable. ACG[68] takes issue with the conclusion and the AER's unquestioning acceptance of it. ACG points out that in fact Henry's Hansen Tests indicate instability with 4 out of 9 firm's estimates. The imprecision of the estimates means that the test's ability to detect instability, which may in fact be present, is limited. The result is that the AER's conclusion regarding beta stability is quite unconvincing.

Importantly, as noted by ACG[69] while there are varying signs of instability:

> ... given the imprecision with which betas are estimated, the odds are stacked against finding evidence of statistically significant instability in those estimates – an alternative explanation for the finding of no statistically significant instability in the true beta is that it reflects the poor precision of the underlying beta estimates.

Interpretation of the AER's results

Of particular importance is that ACG[70] concludes that the correct interpretation of the AER's work results is central estimates of the equity beta of 0.6 – 0.9, rather than the range of 0.44 - 0.68. According to the ACG:

> The AER has understated the range for the central estimate of beta. The AER's own results and a proper interpretation of the JIA's empirical work justify a range for the central estimate of the equity beta of between 0.60 and 0.90 (rounded)[71].

Overall the AER has not applied consideration of confidence intervals or other reliability tests in determining the level of weight to be given to any particular estimate and the AER has not dealt with the statistical problems with the data, but claims that the evidence for its decision and treatment of the statistical issues is robust and persuasive.

The correct interpretation of the AER's work results in the AER's estimate of the equity beta of 0.8 being too low. The AER's work also fails to provide persuasive evidence that the value of the equity beta is below 1.0.

3. The AER dismissed the evidence presented by CEG that using the Sharpe CAPM without adjustment will underestimate the cost of equity where equity betas are below 1.0, primarily on the incorrect basis that the NER mandates the use of the Sharpe CAPM but also because of an incorrect interpretation of Handley's and CEG's reports.

While the CAPM is the most widely used method for determining the cost of equity, it must be recognised that the application of CAPM is subject to significant limitations. These limitations were raised in detail by the JIA's expert, CEG[72], in a paper provided in response to the AER's Issues Paper.

[68] ACG, 2009, op cit, pages 1, 16-17.
[69] Ibid, page 17.
[70] Ibid, page 7.
[71] Ibid, page 1.
[72] CEG, 2008, Estimation of, and correction for, biases inherent in the Sharpe CAPM formula.

CEG[73] focus on accurately estimating the risk adjusted return on equity. Empirical testing, as both cited and undertaken by CEG, shows that an equity beta estimate of 1.0 provides a more accurate estimate of the cost of equity than an equity beta solely derived from regression of market data. As CEG notes:

> The key implication is that the AER should have regard to the uncontested empirical fact that equity beta's measured from stock market data do not provide a good indication of the actual returns required by equity investors. This maybe because the Sharpe CAPM formula is imperfect or it may be because equity beta's derived from stock market data are poor proxies for the true equity beta. Ultimately, it doesn't matter why estimating equity betas in this fashion 'does not work'. What matters is the fact that it does not work[74].

CEG's empirical findings demonstrate that the AER cannot reasonably rely on equity betas that are below 1.0.

The NEL and NER require the estimation of the risk adjusted return on equity over and above mechanical application of the Sharpe CAPM and the use of standard methodologies and data to estimate individual parameters in isolation. However, based on incorrect reasoning, the Explanatory Statement disregards the outcomes presented. The AER's[75] reasoning for effectively disregarding the problems with the Sharpe CAPM and not adjusting for them is incorrect for a number of reasons. The solution proposed by CEG for an adjustment to the Sharpe CAPM equity beta to achieve a demonstrably better estimate of the cost of equity is a sound one. For the AER not to specifically consider how to address the weaknesses in the Sharpe CAPM as CEG has done is to not discharge its obligations under the NEL and NER.

In responding to CEG's arguments, the AER raised concerns such as inconsistency with past regulatory practice or the fact that the issue has not previously been raised in a regulatory process. However these are not arguments that are relevant to the NEL and NER, in particular, the National Electricity Objective (**NEO**) (section 7), the Revenue and Pricing Principles (Section 7A) or the sections 6A.6.2 (j) (1) of Chapter 6A or 6.5.4(e) (1) of Chapter 6.

The regulatory framework, the NEO and the principles of good decision making require that any party should be able to be raise research, evidence and arguments (old or new) in the regulatory process, regardless of what has occurred in previous regulatory reviews.

As a matter of professional rigour, the fact that Australian energy infrastructure regulators have only used the Sharpe CAPM to date is a poor reason to ignore a demonstrated problem, particularly a problem which undermines the accuracy of the estimate of the equity beta. Moreover, this issue has not been considered by Australian regulators and regulated businesses, because while regulators decided on an equity beta of 1.0, the error in the Sharpe CAPM is minimised. In the one instance where the equity beta has been set at significantly less than 1.0, industry has raised this issue. The issue was raised during the Victorian gas distribution networks Access Arrangement Review, when the ESC in its draft decision sought to adopt an equity beta as low as 0.7.

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[73] The two CEG papers that focus on these issues are CEG, 2008, Estimation of, and correction for, biases inherent in the Sharpe CAPM formula, and, CEG, 2009, Estimating the NER equity beta based on stock market data – a response to the AER draft decision

[74] CEG, 2009, Estimating the NER equity beta based on stock market data – a response to the AER draft decision, page 3

[75] AER, 2008, op cit, pages 241-248

Most disturbingly the AER[76] misrepresents both CEG and the JIA by saying that both have said that the AER should not apply the Sharpe CAPM. This is not correct. Both the JIA and CEG recognise that the AER is required to apply the Sharpe CAPM. However, the AER appears not to acknowledge that its higher responsibility under the NER and NEL is to estimate an equity beta that will result in a cost of equity that reflects the current cost of funds in the market.

The AER cite Associate Professor Handley's report which states, in reviewing the first CEG's report[77] on the fundamental weakness surrounding the CAPM, that "there is no consensus as to how the empirical evidence should be interpreted".

As explained by CEG,[78] the AER has fundamentally misconstrued Handley's comment as quoted above. The AER takes Handley's words as meaning that there is no consensus about the results demonstrating that equity betas estimated using the stock market as the proxy for all assets are a poor predictor of equity returns. In fact, there is general agreement on what the results show, but there is no consensus about the theoretical explanation for what is observed. That is, Handley in quoting Roll, acknowledges that the explanatory power of the equity beta (derived from a regression of market data only) in predicting the cost of equity is much weaker than predicted by the Sharpe CAPM and that this was a recognised problem with the Sharpe CAPM. Handley also recognises that the theoretical reasons are not clear and there is no consensus about which theoretical reason or explanation is correct.

As CEG[79] explain:

> The empirical literature has established that the use of the Sharpe CAPM formula in conjunction with an equity beta estimated from stock market data provides a biased estimate of the cost of capital for those firms with equity betas so estimated that are either above or below 1.0. Handley notes that there are two theoretical explanations for this:
>
> - First, it could be that the unrealistic assumptions underlying the derivation of the Sharpe CAPM formula cause it not to accurately predict reality (this was the focus of the theoretical discussion in the JIA's report);
>
> - Second, it could be that the formula is correct but estimates of equity beta derived from stock market data are biased proxies for the true Sharpe CAPM equity beta.

Whichever explanation is correct the fact remains that the returns predicted by the Sharpe CAPM do not reliably predict the true cost of equity well and a flatter version of the security market line is required. Consequently the equity beta proposed by the AER will underestimate the true cost of equity where the beta adopted is less than 1.0, even if the equity beta has been correctly estimated in accordance with Sharpe CAPM.

The AER[80] incorrectly interpret CEG's Australian empirical analysis as indicating that there is no significant relationship between the empirically estimated equity beta and equity returns in the

[76] Ibid, pages 242-243, 246.
[77] CEG, 2008, Estimation of, and correction for biases inherent in the Sharpe CAPM formula, as attached to the JIA Submission to the AER WACC Review issues paper September 2008.
[78] CEG, 2009, Estimating the NER equity beta based on stock market data – a response to the AER draft decision, January 2009, pages 3-4, 6-7, 12-13.
[79] Ibid, page 11.
[80] AER, 2008, op cit, page 245.

Australian market. The AER concludes that CEG's results are insignificant rather than that there is no statistical relationship between returns and estimates of beta from the market. This is clearly incorrect. The correct interpretation is that there is no basis for rejecting the null hypothesis that equity beta is only a weak or non-existent factor affecting equity returns. CEG[81] set this out clearly:

> The AER appears to interpret this as evidence that the JIA's results are themselves statistically insignificant. Quite the contrary, the result of statistical insignificance is powerful evidence that an empirically estimated beta is a very poor indicator of actual returns.

This is clearly a very important and significant finding, which must be taken into account if the AER is to meet the requirements of the NEL and NER in determining an equity beta that is an accurate estimate the true cost of equity in the market for funds.

What CEG does in its report attached to the JIA's September response to the Issues Paper is demonstrate, unequivocally, that using an unadjusted equity beta with the Sharpe CAPM when the beta is less than 1.0 will significantly underestimate the cost of equity. CEG goes on to address the identified problem by providing an adjustment mechanism. This adjustment mechanism results in the equity beta values less than 1.0 moving markedly towards 1.0 and hence provides further support for the case that there is no persuasive evidence to adopt a value less than 1.0.

By discounting the CEG analysis, which shows that there is no persuasive evidence to adopt a value less than 1.0, the AER will cause underestimates of the cost of equity for electricity infrastructure businesses for the next five year period to which the WACC parameters apply.

In summary, the AER has produced no evidence to contest the empirical finding that an equity beta of 1.0 provides a better estimate of the cost of equity than an equity beta derived from stock market data.

This finding is not inconsistent with the application of the Sharpe CAPM. The AER cannot dismiss this finding on the grounds of inconsistency with the NER, and therefore, there is no persuasive evidence for lowering the NER equity beta parameter below 1.0.

4. The AER considered the DGM analysis of CEG and concluded that this was not persuasive evidence.

The JIA support the need to examine multiple analytical approaches to assist in assessing a forward looking equity beta, including information from dividend growth models (**DGM**).

DGM analysis is a well-recognised method of providing a forward looking estimate of the prevailing cost of equity and is a direct estimate of investors' forward looking required returns. Due to the forward looking nature of the DGM, where there is a misalignment between the DGM results and results based on a theoretical model, the differences between the results of the two methods must be investigated and understood before any judgement about persuasiveness can be made.

[81] CEG, 2009, Estimating the NER equity based on stock market data – a response to the AER draft decision, January 2009, page 27.

CEG have updated the DGM analysis previously undertaken, and the results reinforce the original findings. CEG[82] find that:

> for any reasonable set of assumptions it is, in our view, simply not possible to conclude that the forward looking cost of equity for utilities was lower than the actual cost of equity (adjusted for the AER's proposed changes to the NER) in November 2008.

CEG's[83] analysis concludes that the NER approach is already giving a historically low return to equity investors, whereas the actual cost of equity in the market for funds is at historically high levels. Specifically CEG state in summarising their updated analysis:

> According to more recent evidence there has been an increase in the cost of equity for utilities, whilst there has been a reduction in the NER cost of capital (due to falls in government bond yields and the AER's proposal to reduce the NER equity beta and increase gamma). In November 2008 it was the case that, assuming dividends grow in line with inflation beyond the forecast period, the implied cost of equity for the same utilities analysed in the JIA's first report had increased to 17.2% whilst the NER cost of equity (based on the draft decision proposal) is 9.7%[84].

The AER effectively rejects the DGM analysis previously undertaken by CEG on a number of flawed bases.

The first of these is the issue of whether the dividend forecast reflects the underlying cash flows. The AER presents no evidence to suggest that the dividend forecasts used by CEG are inconsistent with the underlying cash-flows. In their response, CEG[85] note that the dividend forecasts they rely on are an average of analysts' forecasts. As such, they represent the analysts' best estimates of dividends given the analysts' expectations of underlying profitability. The assumption underlying this approach is that the analysts in question have properly informed themselves when making dividend forecasts. CEG regards this as the correct assumption as analysts would be acting negligently to forecast dividends that are inconsistent with underlying cash flows.

CEG[86] further note that it would be possible for it to perform its own analysis of cash flows and to arrive at its own estimate of dividends, but this would defeat the purpose of the analysis – which is to estimate the level of dividends expected by the market not the level of dividends expected by CEG.

The second limitation is that DGM analysis is sensitive to input assumptions – while this limitation is valid it is equally valid for all estimates of the cost of capital. CEG argues that this limitation is especially true of the AER's approach which relies on two sets of assumptions; firstly, that the AER is using the correct theoretical model; and secondly that they have implemented it accurately. As noted by CEG[87], there are strong grounds to question the validity of both these assumptions.

[82] CEG, 2009, Forward looking estimates of the equity premium for regulated businesses and the market as a whole, page 4.
[83] Ibid, pages 6-7.
[84] Ibid, page 4.
[85] Ibid, page 9, page 33.
[86] Ibid, page 9, page 33.
[87] Ibid, pages 34-35.

In any event, the CEG DGM conclusions are very compelling. CEG note that in order for the DGM analysis to yield results consistent with the AER's views, investors must be expecting dividends to fall by 13.5% pa forever beyond 2013 (the end of the analysts' forecast period). While it may be possible to query the magnitude of this fall, there is no persuasive evidence to suggest the conclusion that, if the explanatory statement proposals were implemented, the AER determined cost of equity would be below the prevailing cost of equity for regulated businesses.

Moreover, CEG perform a DGM analysis for the market as a whole that corroborates their finding in relation to utilities specifically. That is, the current cost of equity in the market is much higher than suggested by the AER's proposed CAPM parameters. This is true for the market as a whole (ie, equity beta of 1.0 and MRP of 6%) and true for utilities (proposed equity beta of 0.8 and MRP of 6%).

The AER's conclusion that DGM analysis is only a "back of the envelope" approach is not worthy of detailed consideration as it has two major flaws:

- this methodology is and has been the primary method used by US regulators for determining the cost of equity for US energy utilities[88]. The US regulatory process is one that has been tested regularly in the courts. To consider it as only a "back of the envelope" method is misinformed; and

- even if DGM was only a "back of the envelope" methodology, this does not recognise that when seeking a sound perspective, "back of the envelope" evaluations are valid approaches, particularly when seeking to crosscheck a result premised on a particular theoretical model or questionable data. What this DGM analysis demonstrates is that under current market conditions, an equity premium of 4.8% for utilities relative to CGS (consistent with the AER's proposed equity beta of 0.8 and MRP of 6%) is not plausible. Such a high level perspective cannot be dismissed when determining whether the totality of the evidence is persuasive.

It is therefore essential that the AER recognise that the equity beta is only a means to the end of estimating the cost of equity. The higher and more determinative part the NER is the need to estimate a forward looking cost of equity that reflects the prevailing conditions in the market and the equity beta to be used must meet this requirement.

In summary, the AER's decision to adopt an equity beta of 0.8 is not supported by any clear line of reasoning that is supported by both robust empirical results and recognition of factors such as the DGM results and the shortcomings of Sharpe CAPM. Consideration of these factors should lead to a further adjustment of the AER's beta estimates.

That is, when these matters are taken into account, there is insufficient persuasive evidence to justify a change from an equity beta of 1.0. The translation from the measured results to the decision has the appearance of being arbitrary, particularly in light of the early conclusions that the equity beta should be less than 1.0 before any detailed analysis has been undertaken. Given the significant flaws in its consideration of the evidence provided by the JIA, the AER's result

[88] Ibid, pages 34-35.

must be replaced with an equity beta value of 1.0 to arrive at conclusions that meet the requirements of the NEL and NER.

Conclusion

Focusing solely on the assets owned and not other factors, it is understandable that there might be an expectation that the asset beta of an electricity infrastructure business would be less than the asset beta of the market because of lower business risks. However, to calculate a cost of equity the JIA need to estimate an equity beta, which in turn requires consideration of financial risk, as represented by the level of gearing.

Regulated electricity infrastructure assets have less business risk than that of average firms; however this does not inform a decision about the value of equity beta. To do that the JIA also need to consider the impact of financial risk. Electricity infrastructure businesses are geared significantly greater than the market average and hence direct comparisons between equity betas cannot be made (unless the same measure of gearing is assumed).

When a consistent gearing basis is used, the equity beta to be applied to electricity businesses should be compared to a market equity beta of 1.6.

The JIA's updated conclusion about the value of the equity beta in light of the AER's explanatory statement and further expert advice received by the JIA is:

- the fact that the electricity businesses' assets have a lower business risk than the market as a whole does not inform the decision as to whether the value of the equity beta should be less than 1.0. Both business risk and financial risk need to be considered. Any a priori assessment of risk or equity beta must take these two factors into account;

- there are significant problems with the data for estimating the equity beta for electricity infrastructure businesses that must be recognised by the AER. Once these problems are properly recognised the likely range for equity beta central estimates will be materially higher than the measured range of 0.7 to 0.9. Moreover the uncertainty around these estimates, which must be recognised and understood in the context of needing persuasive evidence, reflects the quality of the data and gives a 95% upper confidence interval in excess of 1.0. This is strong evidence that a value of 1.0 for equity beta is reasonable and any evidence that reduces the equity beta from 1.0 is not persuasive;

- in addition, DGM analysis provides a forward looking view of the return on equity (unlike the historical beta estimates which give a backward looking view). The evidence is that the current return on equity implies an equity beta that is well in excess of 1.0 is conservative and this evidence should not be disregarded or discounted. Moreover, it is incorrect to describe the DGM as a "back of the envelope" method of analysis given its long term consistent application by US regulators;

- furthermore, problems with the Sharpe CAPM, including the application of equity betas estimated from stockmarket data to the Sharpe CAPM formula, cannot be disregarded. Where an equity beta measured accurately using the regression approach is materially lower than 1.0, the Sharpe CAPM will seriously underestimate the return on equity and must be

corrected. Such a correction will have the effect of increasing the equity beta where the equity beta is less than 1.0;

- viewed cumulatively the JIA submit that the evidence reviewed above demonstrates the following:
  - the best estimates of the equity beta provide a range of central estimates that is higher than 0.7 – 0.9, but with an upper confidence interval that is in excess of 1.0;
  - estimates of the return on equity using DGM indicate that a beta of at least 1.0 and an MRP in excess of 6.0 are required if the Sharpe CAPM is to estimate the forward looking cost of equity with a reasonable degree of accuracy;
  - the equity beta to be applied in the Sharpe CAPM must be adjusted upwards where equity betas are accurately estimated and are materially less than 1.0; and
- cumulatively, there is a low probability that the true value of the equity beta for electricity infrastructure businesses is less than 1.0. That is, there is no persuasive evidence for reducing the equity beta below 1.0.

The AER's reasoning in applying the evidence has a number of significant errors. Once these errors are corrected the JIA's original conclusion that there is no persuasive evidence for an equity beta of less than 1.0 remains sound. In fact, additional evidence from the JIA's experts strengthens its original conclusion.

The role of the AER is to determine a value for equity beta, which along with the MRP and the risk free rate, will provide an estimate which reflects the prevailing forward looking cost of equity. In doing so it must take the totality of the evidence together, not just part of the evidence. The AER must comprehensively and completely assess the reliability of all data and analysis and weigh the totality of the evidence.

The JIA believe that the AER has failed to provide persuasive evidence for changing the value of the equity beta. In light of the identified shortcomings in the AER's analysis and the limitations of the data available the JIA believes that there is no persuasive evidence to change the value of the equity beta.

Those elements of the evidence, which the AER has discounted, cannot continue to be discounted on the evidence originally put forward and this is now further supported by this submission and its expert attachments.

The JIA reaffirms its original proposal that the evidence available to suggest a reduction in the equity beta value from 1.0 is not persuasive when all evidence is considered. Moreover, the JIA submits that on the evidence available an equity beta value of at least 1.0 is indicated.

7 Benchmark Credit Rating

Introduction

The previously adopted benchmark credit rating for both electricity transmission and distribution is BBB+. The AER purported to find that there is persuasive evidence to change the benchmark credit rating from BBB+ to A-.

The JIA submits that the analysis undertaken by the AER is flawed in many respects, including in relation to its assessment of government-owned businesses, and does not provide persuasive evidence for an increase in the benchmark credit rating.

The credit ratings analysis undertaken for the JIA, as well as the contemporary views of credit ratings agencies indicates that there is not only persuasive evidence to maintain the currently adopted benchmark credit rating of BBB+, but that persuasive evidence exists for the benchmark credit rating to be reduced from BBB+ to BBB.

The JIA submits that the analysis undertaken by the AER is flawed in many respects, and does not provide any evidence for an increase in the benchmark credit rating. The JIA have formed its view based on:

- appropriate consideration of, and credit rating corresponding to, government owned businesses;
- current views of credit ratings agencies, including relevant credit metrics; and
- the JIA's expert credit rating analysis.

The second section of this chapter provides the AER's proposed position on credit ratings. The third section provides background or context to credit rating assessments. The fourth section outlines the criteria for assessing the benchmark credit rating. The fifth section discusses the relevance of ratings agency market information releases, while the sixth section details the flaws in the AER's credit rating analysis. The seventh section provides information on the Allen Consulting Group's "best comparators"/"credit metrics" approach. The eighth gives an analysis of published Standard & Poor's Utilities credit metrics. Finally, the ninth section of this chapter concludes with the JIA's views of the appropriate benchmark credit rating given the available evidence.

AER's Position in Explanatory Statement

The AER has determined in its proposed Statements that the "previously accepted value" for the credit rating for the transmission businesses and all distributors is BBB+. The AER concluded

that "there is sufficient persuasive evidence to depart from a credit rating of BBB+ for a benchmark efficient service provider to A-".[199]

However, the JIA contend that the AER has erred in selecting the sample of credit ratings, a large proportion of which have characteristics not representative of the benchmark energy network business. Further, the AER has given no consideration to the contemporary views of the credit ratings agencies and formed its position using a range of backward looking statistical techniques which do not provide a sound basis for arriving at its conclusion.

Background

Credit ratings are made by independent rating agencies such as Standard & Poor's, Moody's and Fitch Ratings, who each have their own methods for assessing the creditworthiness of a business and rating system. Credit ratings are inherently subjective, with different ratings agencies occasionally providing different ratings for the same business.

A credit rating provides a simple forward looking indication of the risks of default associated with a particular business. It is influenced by a range of industry, business specific and financial factors that can impact on upon a business' financial risks, a business' cash flow and the willingness and capacity of the corporation to pay its debts as and when they fall due. Among other things, these factors include the level of debt, the cash generated by the provision of services, the stability of revenue, and also non-quantitative factors such as regulatory stability, support from related companies, and the management of the business. This means that a rating of say, BBB+ by one agency may not be equivalent to the same rating made by another agency.

The cost of debt is a critical parameter in determining the weighted average cost of capital (**WACC**). The cost of debt is determined as the risk free rate plus a debt risk premium[200] for the corresponding benchmark credit rating. The benchmark credit rating assumption is therefore an important input for determining the debt risk premium to apply for both electricity transmission and distribution businesses, in the WACC calculation.

Benchmark Credit Rating

As a matter of logical consistency the benchmark credit rating must relate to the benchmark energy network business. The AER has previously defined the benchmark energy network business as:

> It is assumed by the AER that in setting a benchmark allowance for equity raising costs it is regulating a hypothetical efficient benchmark firm. The efficient benchmark firm should be a large listed firm and while firms may operate under different structures to this, compensation should not be provided for any deviation from the benchmark.[201]

Therefore, energy network businesses with characteristics materially different to the benchmark will not provide any relevant information to the AER for comparative analysis purposes. This

[199] AER, Explanatory Statement, 11 December, 2008, p.285.
[200] Debt raising costs should be dealt with by inclusion in the operating expenditure component of the aggregate revenue requirement.
[201] AER, Draft decision, New South Wales draft distribution determination 2009-10 to 2013-14, 21 November 2008.

brings us to the issue of the relevance or appropriateness of the businesses that should be included in the credit rating analysis sample.

This following relates only to the AER's inclusion and treatment of government owned businesses in the credit rating sample, given the significant impact such businesses have on the outcome of the AER's analysis. While the JIA have further concerns with the AER's selection of sample comparator businesses, these are discussed in 'Errors in the AER's Credit Rating Analysis' below.

Government Owned Businesses

The JIA's submission in response to the AER's Issues Paper recommended the exclusion of Government owned businesses from the consideration of the benchmark credit rating. This is because the credit rating of Government owned businesses is heavily influenced by the financial support received from its Government parent. In noting this, the JIA commented that:

> Government owned businesses have a stand alone credit rating that reflects their capital structure and business cash flows. This provides guidance for the business of its underlying business credit rating, and is used by State Governments to impose competitive neutrality fees in accordance with national competition policy.[202]

Government owned businesses that are rated tend to have two credit ratings - a public rating and a private rating. The public rating reflects the actual ownership structure and the explicit or implicit financial support provided by the Government as parent. The private rating, which cannot be publicly disclosed, assesses the Government owned businesses on a stand-alone basis. As noted above, this has primarily been used to assess the likely credit strength of the business were it not owned by Government. This can be used for a number of purposes but has mainly been used to estimate the likely cost of debt that the Government owned business would face if it had to raise debt without the benefit of Government ownership (and hence is used to calculate competitive neutrality fees).

In its Explanatory Statement the AER has assumed that the public rating is the stand-alone rating. However, this is incorrect. The public rating, which is relied upon by investors and the wider market, reflects the ratings agency's assessment of the business 'as it is', which is a Government-owned business with explicit or implicit financial support. Further, there is evidence to suggest that Government ownership has had a significant impact on the rating outcome for these businesses. The following extracts are from Standard & Poor's publications:

> The overwhelming majority of Australian states and territories retain ownership of their electricity and gas businesses…An implied level of support from the companies' highly rated Government owners underpins all of the ratings.[203]

> On April 26, 2006, the Queensland Government announced the sale of Sun Retail (not rated), a new entity that will comprise the retail businesses of Energex Ltd. (not rated) and the contestable elements of Ergon Energy Pty Ltd…The 'AA+' ratings on Ergon Energy Corp. Ltd. and EEPL are not affected by the announcement, based on Standard & Poor's view that there will be no change to the strong level of implied Government support on which the ratings are based.[204]

[202] JIA Submission (2008), p.140.
[203] Standard & Poor's (2006), Industry Report Card: Australian Government – owned Electricity and Gas Utilities, April 3, p.2.
[204] Standard & Poor's (2006), Industry Report Card: Australian Utilities, May 1,p.5.

In order to better inform the AER of its misuse or misinterpretation of public ratings for government owned businesses, a number of regulated government owned businesses have provided information on their private stand-alone rating to the AER on a confidential basis. This information clearly demonstrates that the AER's starting position of AA for government owned businesses is incorrect.

Conclusion

The credit ratings analysis undertaken by the AER utilises public credit rating information for Government owned businesses, which has a significant impact upon the outcome of the credit rating analysis. This approach is invalid. The only relevant framework in which to analyse the credit ratings of Government owned businesses is if the private stand-alone ratings (not the public ratings) are used. These private ratings are lower than the public ratings that reflect their Government ownership (the latter having been relied upon by the AER).

Further, given the AER's definition of the benchmark energy network business, the JIA consider that the AER's inclusion of Government owned businesses in the credit rating sample is also not relevant.

Contemporary Views of Ratings Agencies

Ratings agencies regularly make releases to capital markets to keep market participants abreast of ratings related issues and likely future courses of action. The contemporary views of ratings agencies are therefore relevant when making an assessment of credit ratings that will apply in the future. Therefore, it follows that the AER should have regard to recent statements from ratings agencies in relation to energy network businesses when forming its view on the appropriate benchmark credit rating. Extracts from statements made by Standard & Poor's are provided below which indicate that credit ratings for utility businesses are more likely to decrease than increase in the future.

> Australian utilities rated by Standard & Poor's Ratings Services continue to face a challenging environment. Key challenges over the next two years include constrained credit markets, higher debt-funding costs, significant capital-expenditure plans, the expected introduction of a carbon-pollution-reduction scheme (**CPRS**), and the fallout from any sale of the New South Wales (NSW) government-owned energy retailers. The JIA's recent rating actions and distribution of rating outlooks for the sector support the negative tone: eight of the nine rating actions in the past six months have been negative, while about half of the 33 Australian utilities the JIA rate have negative outlooks. The increasingly negative ratings trend reflects a combination of concerns regarding balance-sheet management, capital-expenditure funding, and operational issues (see charts 1 and 2). Any difficulty in raising equity for committed capital works and/or rectifying operational difficulties could see some further downward ratings transition. A favorable note is that the sector's refinancing task is relatively modest until 2010.[205]

And

> Standard & Poor's Ratings Services said today that Australia's electricity network companies are likely to face lower cash flow if the Australian Energy Regulator's (**AER**) draft review of the sector's weighted average cost of capital (**WACC**) parameters were implemented as proposed.

[205] Standard & Poor's Industry Report Card: As Risk Heat Up, Can Australian Utilities Strengthen Their Balance Sheets? October 2008.

> The aggressive capital structures of Australia's rated network companies mean they have limited tolerance at existing ratings for material reductions in cash flow; hence, this leaves them vulnerable to a lowering in credit ratings by one notch. The draft nature of the AER's review means it is difficult to make any meaningful assessment at present. The final decision by the AER on WACC parameters is due for release in March 2009, and Standard & Poor's plans to make an assessment of the implications on ratings at this time.[206]

The key messages from these Standard & Poor's reports are that:

- the macroeconomic environment is conducive to a higher risk of default with about half of the 33 Australian rated utilities on negative outlooks[207]; and
- it quite clear that if the AER reduces the WACC as part of this review then it is likely that rated regulated utilities, with their double the average gearing levels (ie aggressive capital structures), will have their credit ratings downgraded.

Furthermore, Fitch Ratings have analysed the financial reports of 2,675 ASX listed companies dating back to 1992, the end of the last recession, and found that corporate borrowers were likely to experience weaker credit metrics for 2009 as the effects of the global slowdown flow through the economy.

> The data reviewed by Fitch shows that the financial health of the Australian corporate sector showed a significant deterioration in FY08. The deterioration was ameliorated by strong performance from the materials sector. The relatively weak state of the corporate sector in FY08 does not bode well for FY09, particularly as the global economy has deteriorated sharply since June 2008 and the support provided by the materials sector is unravelling rapidly. In Fitch's view, the Australian corporate sector is heading for the weakest credit metrics since the early 1990s.[208]

Fitch has also recently commented on the significantly higher levels of refinancing risk than previously assumed.

> The impact of the credit crunch on bank balance sheets and behavior is not expected to abate in the near term, thus affecting the ability of corporations that rely on bank debt to access this capital. As a result, Fitch's ratings and analysis of corporate liquidity in the leveraged finance market continue to be weighted more heavily toward internal sources of funds cash holdings and cash generated from operations. Recent examples of how banks are responding to tighter credit conditions require that Fitch take a much more circumspect view of unused bank revolving capacity, rather than simply assuming it will be available.[209]

The implication for the benchmark credit rating assessment is that credit ratings on the boundary of a specified level (ie a current BBB+ with characteristics close to that of BBB) are more likely to be downgraded rather than upgraded as higher levels of refinancing risk are being factored into ratings decisions. This intuitively makes sense given the global financial crisis.

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[206] Standard & Poor's, Australian Energy Regulator's Draft WACC Decision Leave Companies Vulnerable To Downgrades, 12 Dec 2008.

[207] A Standard & Poor's rating outlook assesses the potential direction of a long-term credit rating over the intermediate term (typically six months to two years). In determining a rating outlook, consideration is given to any changes in the economic and/or fundamental business conditions. Negative means that a rating may be lowered.

[208] Fitch, *Australia Special Report Australian Corporate Health Report 2008 – Weak Metrics Bode ill for 2009*, 17 November 2008.

[209] Fitch, *Corporate Liquidity: Bank Agreements and Refinancing Risk*, 22 August 2008.

Errors in AER's Credit Rating Analysis

The JIA and its experts consider that the AER's analysis of the median Standard & Poor's credit rating contains several errors that would be expected to materially affect its results there are two major sources of error:

- statistical methodological flaws; and
- other sample selection errors relating to subsidiary companies and the inclusion of Rowville Transmission Facility Pty Ltd.

These issues are discussed below.

In response to the AER's proposed Statements and Explanatory Statement, the JIA sought further expert advice from its consultants, the Allen Consulting Group. ACG's full response to credit rating matters is attached to this document.

Statistical Errors

A fundamental flaw in the approach adopted by the AER is its implicit assumption that credit ratings are additive, divisible and generally amenable to statistical analysis. The AER assigns weights to alternative Standard & Poor's ratings, which are assumed to be equidistant between ratings. The AER has provided no evidence to demonstrate that this assumption holds. The AER has provided no supporting evidence referencing Standard & Poor's, that the credit rating agency supports this assumption and methodological approach. There is no evidence in the AER's document that it consulted Standard & Poor's about the methodological approach and whether this corresponds with the approach applied by credit rating agencies in general.

The resulting regression and median credit rating information therefore cannot be relied upon for decision making.

The AER also provided some preliminary results for an ordered logit regression approach in support of its findings. ACG have advised that due to the insufficient number of observations the results could not reasonably be considered reliable.

Subsidiary Company Selection Errors

Any statistical study requires the selection and use of a valid sample. There are several methodological errors in the AER's approach. First, the AER appears not to be concerned with the inclusion of a subsidiary business where the credit rating of the parent is not recorded. The flaw in this logic is that the fundamental connection between credit rating and key Standard & Poor's credit metrics is lost. In the case where a subsidiary is rated but the parent company is not, what the AER obtains is most likely to be an estimate of what the rating of the parent company would have if it were rated. By including such subsidiaries the AER has introduced observations that introduce spurious information and confound the relationship that is being sought: the likely credit rating of a stand-alone benchmark efficient energy network business.

The AER's key criterion for excluding a subsidiary business should not be the AER's opinion of whether it should be included, but rather the rating agencies' opinions. The opinion of the rating

agency may not always be evident from a general document such as the Standard & Poor's Industry Report Card, but can be obtained from the credit rating agency's detailed analysis of the business. The key issue looked at by Standard & Poor's and other ratings agencies is whether the operations of the subsidiary are considered core by the parent. In that event the parent can be expected to intervene if required, and that is why the rating of the parent is given to the subsidiary irrespective of the subsidiary's actual credit metrics.

In the accompanying ACG report Appendix, Table A.1 lists references to Standard & Poor's statements about the rating characteristics of subsidiary businesses. The following subsidiaries have been inappropriately included in the AER sample, as Standard & Poor's has stated their ratings are dictated by the ratings of their parent business, rather than their own credit metrics

- Dampier Bunbury Natural Gas Pipeline (60 percent owned by DUET);
- Energy Partnership (Gas) Pty Ltd (80 percent owned by DUET through Multinet);
- ETSA Utilities (51 percent owned directly by CKI and an additional 5.4 percent through Spark Infrastructure);
- GasNet Australia (Operations) Pty Ltd (owned by APA since 2006);
- Powercor Australia (51 percent owned by CKI); and
- SPI PowerNet Pty Ltd (51 percent owned by Singapore Power Limited);

By including these subsidiary businesses in its sample, the AER is attributing the credit rating of the parent business, which may be higher or lower than the rating of the businesses. Most of the parent companies are headquartered, and have a diversity of operations in other countries. It would not be valid for the AER to directly include as additional observations the ratings of these parent companies or other foreign businesses, which have different regulatory regimes and levels of gearing to those of the benchmark efficient network service provider in Australia.

Rowville Transmission Facility Pty Ltd

The AER's inclusion of the AAA-rated Rowville Transmission Facility's $28 million credit wrapped bonds is very strange as it is not a regulated network business, and therefore bears little resemblance to the benchmark efficient energy network business that is the AER's concern. Furthermore the AAA credit rating attributed to the Rowville Transmission Facility significantly biases the AER's econometric analysis.

The AER has included this business as an observation in its "Private Electricity Networks" group for all years from 2002 to 2008 with a rating of "AAA". That is, Rowville's absolute weighting under the AER's rating system (Table 2.2 above) was 11, or equivalent to 5.5 observations of "BBB" rated businesses (weighted at 2). The AER emphasised that it considered the sample it had selected for inclusion to be "sufficiently close comparators to the benchmark efficient business".[210]

[210] AER, Explanatory Statement, 11 December, 2008.

Conclusion

The AER's analysis includes a large number of inappropriate observations in its sample of 16 credit ratings. ACG advised that there are less than half a dozen valid observations in total. Most of the observations used in the AER analysis were for subsidiary businesses that have foreign majority shareholders. The ratings of those businesses follow the ratings of the parent companies, which are subject to economic and regulatory conditions that do not resemble conditions facing the benchmark business in Australia. As a result, the credit metrics of the Australian businesses bear no relationship to their credit rating, which is dependent on their parent.

The inclusion of these companies has biased the AER's findings towards a result that it said indicated there to be sufficient persuasive evidence for raising the benchmark credit rating from BBB+ to A-.

In addition ACG advised that the AER's regression analysis is a flawed approach to estimating the credit rating for a benchmark energy network business. There are too few valid observations to undertake statistical regression or logit analysis as the AER has done. In doing so, the AER has introduced spurious data that delivers meaningless outputs. This is for the same reasons that the AER's median and simple average approaches failed to derive a meaningful result.

Allen Consulting Group Credit Ratings Analysis

In response to the Explanatory Statement the JIA provide advice on the appropriate benchmark credit rating level. ACG have used a Best Comparators/Credit Metrics Approach[211] to form a view as to the most appropriate credit rating for the benchmark energy network business.

The Best Comparators Approach is where the credit ratings and financial indicators of comparable rated firms provide guidance about the financial indicators that are likely to be required for the benchmark energy network business. The best comparators sample comprised five businesses:

- Diversified Utility and Energy Trust;
- ElectraNet Pty Ltd;
- Envestra;
- GasNet Operations (to 2006); and
- United Energy (to 2003).

The financial indicators for the comparable businesses as calculated by ACG are provided in **Table 7.1** below:

[211] ACGs 2006 credit rating report used these two approaches to form a view as the benchmark credit rating. The AER did raise some objections to this methodology in the Explanatory Statement, however ACG have advised that none of those reasons provided a valid basis for rejecting the approach.

Table 7.1: Revised and 'Best Comparators'/Credit Metrics: FFO /Interest Cover (x) & FFO/DEBT (%)

Comparators Table 1		2003	2004	2005	2006	2007	Average
ElectraNet	Interest Cover (x)	2.3	2.8	2.3	2.5	2.1	2.3
	FFO / Debt (%)	8	10	9.8	9.8	8.6	8.8
	Credit Rating	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
GasNet	Interest Cover (x)	2		1.9	1.8		1.9
	FFO / Debt (%)	6.8		5.7	5.3		5.9
	Credit Rating	BBB		BBB	BBB		BBB
United Energy *	Interest Cover (x)	1.8					1.8
	FFO / Debt (%)	11.3					11.3
	Credit Rating	BBB					BBB
Envestra	Interest Cover (x)	1.59	1.6	1.5	1.6	1.6	1.6
	FFO / Debt (%)	4.2	4.1	3.8	4.4	4.1	4.1
	Credit Rating	BBB	BBB	BBB	BBB-	BBB-	BBB/BBB-
DUET *	Interest Cover (x)	2	2	2.2	1.8	1.6	1.9
	FFO / Debt (%)	7.4	6.9	8.1	5.8	4	6.4
	Credit Rating	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-

Source: ACG (2009), Credit Rating for the 'Benchmark Efficient Network Service Provider', Commentary on the AER's Explanatory Statement, p9.

For the Credit Metrics approach, forecasts of the relevant financial indicators for the benchmark energy network business are derived and then used to form a judgement on the appropriate credit rating that it would be likely to maintain. This method is analogous to that used by ratings agencies.

In its analysis, ACG derived the most relevant financial indicators for a sample of firms that have been the subject of the recent AER draft or final decisions, namely the NSW electricity distributors, Transend, TransGrid and ElectraNet. ACG's estimates of these firm's projected credit metrics over the next regulatory period are set out in **Table 7.2** below:

Table 7.2: Electricity distribution/transmission: FFO/Interest cover & FFO/Debt forecasts (%)

Credit Metrics Table 2	Years	2009	2010	2011	2012	2013	2014	Ave.

Credit Metrics Table 2	Years	2009	2010	2011	2012	2013	2014	Ave.
NSW Distributors	Interest Cover (x)		2.1	2.1	2.1	2.1	2.1	**2.1**
	FFO / Debt (%)		10%	10%	10%	9%	10%	**10%**
Tasmanian Transmission	Interest Cover (x)		2.3	2.2	2.1	2.2	2.2	**2.2**
	FFO / Debt (%)		11%	10%	10%	10%	11%	**10%**
NSW Transmission	Interest Cover (x)		2.1	2.1	2.1	2	2	**2.1**
	FFO / Debt (%)		10%	10%	10%	9%	9%	**9%**
S.A. Transmission	Interest Cover (x)	2.1	2	2	2	2		**2**
	FFO / Debt (%)	10%	10%	9%	10%	10%		**10%**

Source: ACG (2009), Credit Rating for the 'Benchmark Efficient Network Service Provider', Commentary on the AER's Explanatory Statement, p29.

ACG then compared the financial indicators of the regulated businesses to those of the relevant listed Australian comparators. ACG advised that Diversified Utility and Energy Trust and United Energy could be considered to have characteristics that are further removed from those of a benchmark energy network business due to international and non-energy business activities. This left a 'best comparators sample of three businesses, ElectraNet Pty Ltd, Envestra and GasNet Operations (to 2006), with ElectraNet thought to be the single best comparator.

In a recent report, Standard & Poor's defined the two most important credit metrics that it applies to ElectraNet as follows:

> Based on the current business profile of ElectraNet, where unregulated business represents less than 15% of total revenue, credit metrics of 2.3x-2.5xFFO interest cover and 9%-10% FFO to total debt would be expected for the 'BBB+' rating.[212]

Table 7.1 shows that the BBB+ rated ElectraNet's credit metrics were sometimes above and sometimes below the target metrics range advised by Standard & Poor's, the average metrics over the period fell close. The credit metrics of GasNet (BBB) and Envestra (BBB/BBB-) appear to reflect their relative credit ratings.

Comparing the results in Table 7.1 and Table 7.2, the forecast interest cover for these firms are below the range that Standard & Poor's has stated that it expects ElectraNet's ratios to remain within in order to maintain its BBB+ rating. The FFO/Total Debt measure for the regulated firms is within the range expected for a BBB+ firm. Accordingly, when testing the forecast financial indicators for the firms under the current regulatory settings (equity beta of 1, 10 year term for the risk free rate and BBB+ credit rating), ACG find no evidence – let alone persuasive evidence – for a need for the benchmark credit rating to be raised from the current BBB+ assumption.

ACG go on to note that the above calculations assume that the current regulatory settings continue. With the AER's proposed revisions to the WACC parameters, revenue would fall materially, which would place downward pressure on the firms' financial indicators and credit ratings. In addition, the AER's proposal to change the term of the risk free rate from 10 to 5 years implies that regulated businesses would need to reduce the term to maturity of their debt

[212] S&P (23 November, 2008), 'ElectraNet Outlook Revised to Negative On Prolonged Underperformance To Policies', Rtg Affirmed, *Commentary Report*, p.3.

portfolios (ie more short duration debt ≤ 5 year term) which would increase refinancing risk and the associated impact on the risk of default. Taking all of this into consideration and the Standard & Poor's negative ratings outlook for the industry, is it likely that the credit rating would fall one notch to BBB.

Analysis of Published Standard & Poor's Utilities Credit Metrics

To inform us further as to the appropriate level of the benchmark credit rating the JIA has compared the Standard & Poor's utility credit metrics[213] from a recent publication to those from recent regulatory decisions in Table 7.2. As can be seen the average FFO interest coverage of 2.0-2.2 times and FFO to debt of 9-10% from recent AER draft or final decisions compares poorly to the BBB medians reported by Standard & Poor's and shown in **Table 7.3** below. The credit metrics applicable to recent AER regulatory decision are more representative of a BB credit rating.

Table 7.3: Standard & Poor's Corporate Ratings Criteria

Standard & Poor's Corporate Ratings Criteria					
Table 3 –Utility Credit Metrics					
Three-year (2002 to 2004) medians	**AA**	**A**	**BBB**	**BB**	**B**
FFO interest coverage (x)	5.4	4	3.8	2.6	1.6
FFO / average total debt (%)	30.6	18.2	18.1	11.5	21.6

Source: Standard & Poor's, Corporate Ratings Criteria 2006, p43.

To the extent that these metrics conflict with the stated requirements for ElectraNet, it is apparent that some qualitative factors are providing comfort to Standard & Poor's that ElectraNet can maintain its credit rating at a BBB+ level. Given that the ElectraNet credit metrics are slightly below target levels it would be imprudent to assume the regulatory regime is one of those qualitative factors given the negative statements made by Standard & Poor's on 12 December 2008, following the release of the AER's Explanatory Statement. Notwithstanding, the pertinent information the JIA can glean from the median Standard & Poor's credit metrics is that Australian utilities are likely to be rated at the lower end of the BBB scale.

Conclusion

The credit rating analysis described in the AER's Explanatory Statement has a number of sampling errors and methodological flaws that do not allow a reasonable person to form the view that the benchmark credit rating should be increased from BBB+ to A-. Key amongst these is the AER's use of public ratings for government-owned businesses to establish its benchmark, which has the effect of biasing the regression results upwards. In addition, small sample sizes and inappropriate sample selection invalidate the AER's statistical results.

[213] Standard & Poor's Corporate Ratings Criteria 2006, p.43.

ACG's Best Comparators/Credit Metrics approach is a methodology that seeks to (partially) replicate the credit ratings methodology of ratings agencies and provides a robust basis for estimating the benchmark credit rating.

The JIA consider that there is no evidence to support an increase in the benchmark credit rating above BBB+. Taking into consideration:

- the negative ratings environment;
- the benchmark credit metrics contained in Table 7.2, and the fact that those metrics are below the levels stated by Standard & Poor's as required for the ElectraNet BBB+ rating;
- the median credit metrics in Table 7.3;
- the JIA's expert advice; and
- further evidence provided herein, including in relation to government owned businesses;

the JIA consider that there is not only persuasive evidence to maintain the currently adopted benchmark credit rating of BBB+, but that persuasive evidence exists to support a reduction in the benchmark credit rating to BBB.

8 Value of imputation credits (Gamma)

Introduction

On 24 September 2008, the JIA provided a substantial submission to the AER in response to the Issues Paper released on 6 August 2008. In developing the submission the JIA sought advice from a range of recognised experts examining both the latest empirical evidence and the underlying economic and financial theory relevant to determining a benchmark value of imputation credits for regulatory purposes.

Drawing on this wealth of evidence the JIA recommended to the AER that a gamma value of 0.2 was an appropriate benchmark for the value of imputation credits for economic regulatory purposes.

In contrast, the Proposed Statement issued by the Australian Energy Regulator (AER) has adopted a 0.65 value for gamma, being the mid-point of a range of 0.57 to 0.74. The AER arrived at this range by:

- assuming a payout ratio of imputation credits equal to one;
- constructing a lower bound of 0.57 for theta based on the AER's best estimate inferred from post-2000 market prices; and
- constructing an upper bound of 0.74 for theta based upon the AER's best estimate from tax statistics.

The JIA is deeply concerned that, in arriving at such assumptions and outcomes, the breadth of the empirical evidence and the generally accepted theoretical framework set out by the JIA does not appear to have been fully considered on the individual merits of each point. That original work was presented by Professor Gray of SFG Consulting who is also Professor of Finance at the University of Queensland. The equations that specify his model were set out in his report and standard, and identified data sources were used with standard approaches to data cleaning. He quoted a body of finance literature that supported his analysis and his work is also supported by further analysis from NERA.

The AER requested additional supporting data and material and this was provided well before the proposed Statements but apparently not in time for the analysis to be verified and fully taken into account by the AER. Consequently the AER only partially engaged with the original numeric work. To a greater (but still not complete extent) the AER has engaged with the SFG and NERA's conceptual discussion.

The AER has confirmed to the JIA that SFG's material will be fully considered prior to the final determination and the JIA is committed and determined to ensure that this occurs. In the meantime, the JIA has commissioned a peer review by Synergies Economic Consulting, which has undertaken the following as part of its peer review:

- initiating the process with a review of the SFG paper;
- meeting with representatives of SFG to confirm our understanding of the underlying methodology applied by SFG;
- obtaining and reviewing the SFG data set. Synergies were familiar with the data set by virtue of the work that they independently performed on the valuation of gamma. Accordingly, they reviewed the SFG data to confirm it met with our expectations. However, they did not recreate the data set from source data;
- undertaking a detailed analysis of the code used by SFG (Code) for its analysis. The process involved:
    a. meeting with SFG to discuss the relevant Code;
    b. confirming that the SFG approach (as applied in the Code) was consistent with Synergies' understanding of manipulations that should be performed for the analysis to be correctly undertaken;
    c. independently verifying that the Code operated in the manner intended by SFG; and
    d. performing diagnostic tests on the Code to confirm its accuracy and efficacy for the purposes of the analysis.

The conclusions of the detailed peer review support SFG and NERA's original and further work.

Instead of taking the approach of SFG, NERA and the other finance theorists referred to in their papers, it appears the AER has accepted an alternative framework provided by Associate Professor Handley that contradicts the weight of financial academic literature on how the market values imputation credits. This alternative framework demonstrably overstates the value of gamma.

The JIA has thoroughly examined the Proposed Statement and sought further advice specifically addressing matters raised in the Statement. Based on this further advice the JIA believes that the AER and Associate Professor Handley have made a series of theoretical and methodological errors that result in an assumed value of gamma that is substantially overstated. The consequence is that, unless its Proposed Statement is amended, the AER will not provide a rate of return commensurate with prevailing conditions in the market for funds and the risk involved in providing prescribed transmission services or standard control services (as the case may be) as required by NER.

Payout ratio (F)

In its Proposed Statement the AER has relied upon Associate Professor's Handley's advice that the standard WACC valuation approach (within a classical tax environment) assumes that all free

cash flows are immediately distributed to shareholders. Accordingly, the AER adopted a payout ratio of 100 per cent. However, the AER stressed that:[214]

> this does not imply an expectation that all credits will be paid out in each period, but rather that the standard assumption for valuation purposes is full distribution of free cash flows, therefore for consistency a 100 per cent payout of imputation credits is appropriate.

Handley's standard WACC valuation framework is predicated on a classical tax regime rather than the Australian tax imputation regime. The report from NERA (which is attached), clearly demonstrates that an assumption that all free cash flows are distributed is inconsistent with the Australian imputation tax regime and inconsistent with reality.

NERA demonstrates that as a firm cannot reinvest retained imputation credits, such credits must have less value to investors than those that are immediately distributed. As a result, the assertion that retained imputation credits can be valued at their face value (or can have the same value as those credits that are distributed) denies the inherent value diminution that arises from any delay in distributing imputation credits. It follows that to simply assume a payout ratio of 100 per cent is inappropriate. Instead the JIA believes that, like all the CAPM parameters, the payout ratio should where possible be determined by reference to empirical data.

The NERA report, also explains that firm's use of retained earnings to finance new projects can lead to a build-up of imputation credits. NERA explains that, for the benchmark network business, it is highly unlikely that the stock of imputation credits that is built up will be returned to shareholders. As a consequence, imputation credits that are not be paid out for many years, or never paid out, will have little or no value to investors. Recognising that any retained credits have little or no value to shareholders, gamma must continue to be defined as the product of an expected payout ratio (F) and the market value of imputation credits distributed as a proportion of their face value (θ).

Moreover, in the same paper that sets out the CAPM-WACC framework, Officer (1994) provides a detailed example in an appendix. In this example, the firm distributes 76% of free cash flow as dividends and 76% of imputation credits each year. The 24% of imputation credits that are not distributed have no impact on the value of the firm or the WACC – they are not valued within the Officer CAPM-WACC framework.

After reviewing the available empirical data NERA has advised that a market average payout ratio should be adopted since it provides the most reliable and relevant benchmark for the purposes of deriving an actual value of imputation credits to electricity network service providers. The most recent and comprehensive estimate of the market payout ratio is 0.71 as provided by Hathaway and Officer.

In a report included as an attachment to this submission, Synergies Economic Consulting also reaches the conclusion that assuming a payout ratio of 100% is not consistent with finance theory or valuation practice and that 0.71 is the most appropriate empirical estimate.

[214] AER, Explanatory Statement, page 302.

Market value of imputation credits (θ)

Theoretical framework

The report from NERA, included as an attachment to this submission considered the Proposed Statement (and supporting documentation) and in response provides compelling analysis that demonstrates the AER is incorrect in defining[215]:

> "the market" as the domestic Australian capital market with foreign investors recognised to the extent they invest in that market.

Both Associate Professor Handley and NERA agree that the value of theta in "the market" will depend on the value that the representative investor places on imputation credits. The representative investor has characteristics that are a wealth-weighted-average of the characteristics of all investors.

However, Associate Professor Handley's characterisation implies that domestic and foreign investors face constraints in moving funds into and out of the Australian equities market, even though this clearly contradicts the facts – domestic and foreign investors are largely free to move funds into and out of the Australian equities market.

The framework adopted by the AER is unsupported by peer reviewed study and directly contradicts the analysis of Brennan (1970) and Guenther and Sansing (2007). Brennan and Guenther and Sansing show that the representative investor has characteristics that are wealth-weighted-averages of all investors and not holdings-weighted averages of the characteristics of some investors. Consequently the fact that foreign investors hold only about 30 percent of the market value of the ASX does not imply that foreign investors do not exercise considerable influence over the market value of imputation credits.

The published and widely cited theoretical framework provided by Brennan and Guenther and Sansing directly contradicts Associate Professor Handley's position that the means of weighting investors is based on their proportion of ownership of Australian equities. The overwhelming weight of academic literature supports the original proposition put to the AER by the JIA that the representative investor has characteristics that are wealth-weighted-averages of all investors and therefore most closely resembles a foreign investor.

This is true irrespective of the proportion of Australian equities held by foreigners at any one time. A representative investor is most likely to resemble a foreign investor because foreign investors have much greater "weight" in terms of portfolio allocation decisions, because they possess aggregate wealth that greatly exceeds the aggregate wealth of domestic investors.

Associate Professor Handley's assertion that the means of weighting investors is based on their proportion of ownership of Australian equities depends on the assumption of a closed system. Indeed all asset-pricing frameworks in which prices are set by a weighted-average "representative" investor require a closed system. No investors inside the model can have investment opportunities in assets outside the model, and no investors outside the model can be

[215] AER, Proposed Statement, page 310.

able to invest in assets inside the model. Only in a closed system in which all assets and all investors are inside the model is it even possible to derive any result in which a weighted-average representative investor is a relevant concept. But Associate Professor Handley's characterisation of a setting in which it is appropriate to average over the Australian asset holdings of domestic and foreign investors (just to the extent that they hold Australian assets) is not a closed system. The investors inside the system have investment opportunities outside the system, and foreign investors have the ability to buy Australian assets. In this case, the weighted-average derivation does not hold. Consequently there is no basis for the use of average redemption rates at all.

Importantly, the NERA paper explains that in the CAPM framework assumed by the AER, the representative investor is most likely to resemble a foreign investor. This is because foreign investors have much greater "weight" in terms of portfolio allocation decisions, because they possess aggregate wealth that greatly exceeds the aggregate wealth of domestic investors. NERA provide a useful numerical example that explains how foreign investors can have a significant influence on the value of gamma, even though the percentage of their equity holding is relatively small. This is a very important finding that explains why Associate Professor Handley's conclusions regarding gamma do not provide persuasive evidence for increasing the gamma to 0.65. On the contrary, as noted above, a proper examination of the evidence indicates that there is persuasive evidence to support setting gamma to 0.2 or less.

Use of tax statistics to estimate theta

The report from NERA, included as an attachment to this submission considered the Proposed Statement (and supporting documentation) and in response provides compelling analysis that the AER is incorrect in finding that tax statistics on the redemption rates of imputation credits[216]:

> provides a relevant and reliable estimate of theta in the post-2000 period. Based on Handley's advice, the AER considers that the results of this study provide a reasonable upper-bound estimate of theta.

The advice from NERA highlights two critical facts that have not been adequately considered to date by the AER.

First, in any weighted-average across investors, the weights must be applied according to the wealth of investors, not their portfolio holdings. Although domestic shareholders might receive 70 per cent of the imputation credits that are distributed, they do not hold 70 to 80 per cent of all investor wealth. Consequently, redemption rates estimated from tax statistics will substantially overstate the value of imputation credits in the market.

Second, it is not costless for domestic investors to acquire imputation credits. Domestic investors incur costs to acquire imputation credits since they must hold a less than optimal diversified portfolio – that is, less than optimal holdings of international equities and domestic stocks that pay little or no imputation credits.

[216] AER, Proposed Statement, page 331.

Further, redemption rates estimate the number of imputation credits that are redeemed, whereas WACC estimation requires an estimate of their value to investors. Also, valuing $1 of redeemed imputation credits at $1 is inconsistent with the result from dividend drop-off analysis (on which the AER also relies) that dividends are valued at around 80 cents per dollar – there being no circumstances in which imputation credits can be more valuable than cash dividends. In other words, by using tax statistics to value theta the AER implicitly assumes that investors have a higher value for redeemed imputation credits than distributed dividends. This is clearly an illogical suggestion.

The report from SFG Consulting (*Using redemption rates to estimate theta*), included as an attachment to this submission also considered the Proposed Statement (and supporting documentation) and in response provides a number of compelling arguments that demonstrate that the AER is incorrect to use tax statistics on the redemption rates to estimate the market value of imputation credits.

SFG Consulting demonstrate that, even under the AER's theoretical framework, estimating the value of theta by reference to the consumption of imputation credits leads to the illogical result that a restriction on foreign investment will decrease the estimated cost of capital. This point was considered in the Proposed Statement and rejected by the AER. The attached SFG report responds individually to each reason proposed by the AER and demonstrates that none of them is valid.

Based on the evidence provided from experts to date it is clear that the rate at which imputation credits are redeemed has nothing to do with the market value of theta even in a completely segregated market.

In a report included as an attachment to this submission, Synergies Economic Consulting also reaches the conclusion that average redemption rates have no relevance to the estimation of theta. Theta requires an estimate of the market value of imputation credits, not the number of them that might be redeemed.

In summary, three expert reports have reached the same conclusion on this point – that Associate Professor Handley is mistaken to suggest that redemption rates provide point estimates or even "upper bounds" for theta and that the AER was wrong to rely on that advice.

Market Evidence of Theta

Dismissal of empirical studies on theta

In reaching the conclusion that the best estimate of theta inferred from market prices was 0.57, the AER dismissed or placed little weight on all market studies and exclusively relied on a small sub-set of the results of the 2006 Beggs and Skeels study. In other words the AER rejected the:

- 2004 Cannavan, Finn and Gray study of simultaneous security prices over the 1994 to 1999 period that found that theta had a zero value;

- 2006 ACG dividend drop-off study that based on data set corrections, estimated that the value of theta is insignificantly different from zero in all but one year since 1997;[217]

- 2007 Ickiewicz study of the impact on share prices of the introduction of the Australian dividend imputation system that found no evidence of a positive value of theta. An appendix to this chapter examines the response to this study in the Proposed Statement and shows that none of the reasons proposed for down-weighting this study are valid;

- 2008 SFG Consulting dividend drop-off study that concluded that a reasonable range for theta (conditional on dividends being valued at less than face value) was between 0.2 and 0.35 with an arithmetic average of 0.28; and

- 2006 Beggs and Skeels results for all periods other than their Tax Regime 7.

SFG dividend drop-off study

The JIA submitted to the AER the results of a dividend drop-off study more comprehensive than Beggs and Skeels, and using an extended data set that includes more recent observations in September 2008. The AER requested additional data from SFG Consulting so that a statistical analysis examining the reliability of the estimates in the 2008 study can be carried out. This information was provided to the AER on 14 and 22 December 2008. The JIA will continue to make every effort to assist the AER and provide any further requested information.

SFG Consulting has also provided an additional report (*The value of imputation credits as implied by the methodology of Beggs and Skeels*), included as an attachment to this submission, that explicitly considers the AER's concern with the variance of theta estimates derived from dividend drop-off studies that utilise the same underlying data set.

For this report, SFG was asked to apply the Beggs and Skeels methodology to a period beginning in July 2000 and extending to more recent times – beyond the sample examined by Beggs and Skeels. For reasons set out in this submission, the JIA does not believe that it is correct to ignore data from pre-2000 or to rely solely on the Beggs and Skeels methodology. However, given that was the approach adopted in the Proposed Statement, SFG was asked to extend the analysis to encompass more recent data.

SFG Consulting has specifically reconciled the analysis undertaken by Beggs and Skeels and its own. It finds that the difference between SFG Consulting 2008 study and Beggs and Skeels 2006 study arise because:

- the SFG results are based on a much larger cross section of firms; and

- the SFG results are based on a longer and more recent data period.

Further, SFG Consulting has applied the Beggs and Skeels filters[218] and methodology to its data set and estimated that the value of theta was 52.6 cents per dollar compared with 57.2 cents per dollar reported by Beggs and Skeels.[219]

[217] ACG, Preliminary response to SFG report on the value of distributed imputation credits, Report to ESCOSA, 14 September 2006.

SFG Consulting also found that:

- the parameter estimates derived from the Beggs-Skeels methodology are highly sensitive to a small number influential outlier observations, and so imperfectly matching data samples would be expected lead to different theta estimates;

- extending the Beggs and Skeels methodology to include data up to September 2006 (ie, an additional two and half years of additional data) the estimated value of theta falls from 0.57 to 0.37[220];

- that removing the 1 per cent of most influential observations from the data set produces estimates that are more stable over different time periods and results in an estimated value of theta of:

  – 0.19 for the Beggs and Skeels 2001-2004 period; and

  – 0.24 for the period extended to September 2006.

In light of this information the most comprehensive study in terms of coverage of firms and time period is provided by SFG Consulting rather than the 2006 Beggs and Skeels study. The SFG report demonstrates that the Beggs and Skeels methodology produces estimates of theta that are highly dependent on a small number of influential observations. On the advice of SFG Consulting, the JIA advocates when interpreting dividend drop-off studies that 1 per cent of the most influential observations should be excluded from the sample set. This results in a current value of theta of 0.24.

The SFG analysis has been independently reviewed by Synergies Economic Consulting, included as an attachment to this submission. Synergies confirm the accuracy of the SFG results and conclude that it is a robust analysis.

In summary, if the Beggs and Skeels approach is applied to 2001-2006 data, including a small number of highly influential observations, the estimate of theta is 0.37. If those few unduly influential outliers are removed from that data set, the estimate of theta is 0.24. The SFG and Synergies reports both set out reasons why the latter estimate is statistically more reliable.

The JIA note that in all the dividend drop-off studies the estimates of theta are conditional on a dollar of cash dividends being valued at less than a dollar.

[218] That is, using a data set starting from 1 July 2000 to 10 May 2004, excluding all observations where a complete data set was unavailable, and removing all cases where the market capitalisation of the company was less than 0.03 per cent of the value of the All Ordinaries.
[219] While the estimates are close, SFG Consulting has been unable to exactly replicate the data set used by Beggs and Skeels, who removed a number of unspecified stocks for which they were unable to obtain all required data.
[220] The JIA note that the SFG Consulting were unable to perfectly replicate the filters used by Beggs and Skeels, who do not specify the stocks for which they were unable to obtain the required data.

July 2000 tax changes

The report from NERA, included as an attachment to this submission considered the Proposed Statement (and supporting documentation) and in response provides compelling arguments demonstrating that the AER is wrong[221]:

> to reject pre-2000 data from consideration in estimating theta. Accordingly for the purposes of this review the AER intends to estimate theta based on post-2000 data only.

In reaching this conclusion, the AER failed to have adequate regard to the fact that:

- the tax change only increases the value of credits to some domestic investors but does not change the value of credits to other domestic investors or, more importantly, to foreign investors whose aggregate wealth exceeds the aggregate wealth of domestic investors by an order of magnitude; and

- the studies on which the AER rely to exclude the pre-2001 data do not provide a reasonable basis for excluding the data.

In reviewing the studies relied on by the AER to dismiss the use of pre-2001 data NERA has found that the studies provide no basis for this exclusion. This is not surprising since the income tax law changes introduced in 2000 were designed to address a specific inconsistency in the access to imputation credits for a section of domestic taxpayers.

Further, logic and evidence dictates that the influence that foreign investors have in the market, and the transactional and market costs incurred in order to earn the imputation credits are such that any impact on the market value of imputation credits would be minimal at best.

This conclusion is consistent with the detailed discussion on this point in the SFG report of September (2008) submitted prior to the Proposed Statement and is also consistent with the conclusions of Synergies Economic Consulting, included as an attachment to this submission. That is, three independent experts have reached the same conclusion – that the Beggs and Skeels analysis provides no basis for concluding that data prior to July 2000 should be excluded from the analysis.

Finally, the imprecision with which theta can be estimated from market data suggests that a comprehensive data set that includes both pre and post-2001 data to estimate theta should be used. That is, more reliable estimates of theta can be obtained when a larger number of observations are included in the analysis. Since there is no valid reason for eliminating the pre-2000 data, it should be included in the analysis.

Different studies examining different time periods will produce different estimates of theta. However, if a longer time period including pre-2000 data is used, the estimate of theta will be more reliable and it will be lower than the 0.57 estimate relied upon by the AER.

[221] AER, Proposed Statement, page 318.

Market practice

In a report included as an attachment to this submission (*Market practice in relation to franking credits and WACC*), SFG Consulting demonstrate that the dominant market practice is for Australian firms and expert valuation professionals to determine that gamma is zero when estimating WACC and when conducting any valuation exercise. The Proposed Statement interprets the evidence that market practice is to set gamma to zero as being not inconsistent with the proposed approach of setting gamma to 0.65.

The attached SFG report demonstrates that none of the reasons proposed in relation to this conclusion are valid. In particular, Associate Professor Handley proposes, and the AER accepts, that valuation professionals may use a valuation approach that somehow circumvents the need to estimate gamma at all. In rejecting this unique proposition, the SFG report concludes that valuation professionals work within known frameworks and determine the appropriate value of gamma to be zero.

The evidence provided by the JIA clearly suggests that the dominant market practice is to set gamma to zero when estimating WACC and performing valuation exercises. The AER's proposed approach is to set gamma to 0.65, and is clearly inconsistent with market practice.

Consistency with CAPM

SFG Consulting in a report, included as an attachment to this submission (*Consistency of estimates of the value of cash dividends*) has again highlighted the inconsistency that:

- the AER's empirical estimates of theta (and consequently gamma) are conditional on an estimated value of cash dividends (75-80 cents per dollar); and
- the AER's estimate of the required return on equity using the Sharpe CAPM is conditional on a particular value of cash dividends (100 cents per dollar).

This inconsistency is acknowledged by the AER. However, the AER has made no effort to reconcile this inconsistency. The importance of consistency in calculating the rate of return was highlighted by the Australian Competition Tribunal in the GasNet decision. The JIA believes that this inconsistency again undermines the logic underlying the CAPM and must be resolved so that there is a single value for dividends used to determine the return on equity and to value theta.

The JIA agrees with the recommendation of SFG Consulting that the most sensible approach to reconciling this inconsistency is by:

- continuing to use the CAPM to estimate the required return on equity conditional on cash dividends being valued at 100 cents per dollar; and
- estimating theta also conditional on cash dividends being valued at 100 cents per dollar – rather than adopting a different estimate of the value of cash dividends when estimating theta.

In proposing this resolution, SFG Consulting cites the work of Boyd and Jagannathan (1994), who concludes that dividend drop-off analysis, when properly executed (in terms the

econometric specification and the sample size) leads to the conclusion that cash dividends are fully valued. When theta is estimated in the way proposed by SFG Consulting (ie, consistent with the Sharpe CAPM), the resulting estimate is immaterially different from zero whichever dividend drop-off methodology is used.

The JIA concurs with the views of SFG Consulting that it is neither logical nor correct for the AER to use inconsistent estimates of the same parameter (the value of cash dividends in this case) in two steps of the same WACC estimation exercise. Even if there are inconsistent estimates of the value of a parameter, the correct approach is to properly consider all of the available evidence, select a value for that parameter, and then to apply that same value of the parameter consistently throughout the steps involved in estimating the WACC. The evidence presented in this submission demonstrates that the inconsistency is best resolved by adopting a gamma of zero.

The reports of NERA and Synergies also conclude that the Proposed Statement contains an inherent inconsistency in the estimated value of cash dividends in two steps of the WACC estimation process, and that this inconsistency should be resolved.

The reasoning of Associated Professor Handley, as adopted by the AER, has been comprehensively rebutted by our independent experts as invalid.

Other market evidence of the value of theta

The JIA believes that the AER has given insufficient regard to the theoretical arguments, empirical studies and market practices that suggest that the value of theta is zero. JIA believes that there is overwhelming evidence that the lower bound of any reasonable range for theta should be zero.

A zero value for theta is reasonable because:

- it is consistent with the recognised theoretical framework that suggests that the value of gamma depends on the impact of imputation credits on the representative investor. Where the representative investor is a weighted average of the characteristics of all investors – with the weights determined by investors' wealth not holdings;
- a zero value for theta was found by:
  - 2004 Cannavan, Finn and Gray study of simultaneous security prices over the 1994 to 1999 period that found that theta had a zero value;
  - 2006 ACG dividend drop-off study that when data set corrections are made estimated that the value of theta is insignificantly different from zero in all but one year since 1997;[222]
  - 2007 Ickiewicz study, of the impact on share prices of the introduction of the Australian dividend imputation system that found no evidence of a positive value of theta;[223]

[222] ACG, Preliminary response to SFG report on the value of distributed imputation credits, Report to ESCOSA, 14 September 2006.

  - 2009 Lajbcygier and Wheatley study of the cross-sectional relationship between returns and credit yields;[224] and

  - all dividend drop-off studies if one dollar of cash dividend is valued at one dollar, in accordance with the findings of empirical evidence including Boyd and Jagannathan (1994);

- the evidence set out in SFG Consulting's attached study that the dominant market practice is for Australian firms and expert valuation professionals to determine that gamma is zero when estimating WACC and when conducting any valuation exercise; and

- the evidence set out in SFG Consulting's attached study that the approach in the Proposed Statement involves inconsistent estimates of the value of cash dividends in two steps of the WACC estimation process, and that when this inconsistency is resolved the estimates of theta are immaterially different from zero.

The JIA submits that there is compelling evidence to suggest that the value of theta may be zero and so the lower bound of any reasonable range for theta should be zero.

Conclusion

In this submission and associated expert reports the JIA has established the reasons why the AER made a series of theoretical and empirical errors when it adopted a 0.65 value for gamma being the mid-point of a range for gamma of 0.57 to 0.74.

The appropriate estimate of gamma depends on a balanced and reasonable assessment of the available evidence, including:

- gamma should continue to be defined as the product of an expected payout ratio (F) and the market value of imputation credits distributed as a proportion of their face value (θ). Thereby, setting the value of retained imputation credits at zero;

- a market average payout ratio should be adopted as it provides the most reliable and relevant benchmark for the purposes of deriving an actual value of imputation credits. The most recent and comprehensive estimate of the market payout ratio is 0.71 as provided by Hathaway and Officer;

- the lower bound estimate for theta of zero based on theoretical framework, numerous empirical studies, and the practice of Australian firms and expert valuation professionals;

- the upper bound estimate for theta of 0.28 (or 0.24 if only post-1 July 2000 data is considered) inferred from dividend drop-off studies.

The evidence outlined in this submission further reinforces the positions advocated by the JIA in its September 2008 submission.

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[223] SFG Consulting provide a compelling rebuttal of all the reasons put forward by either Professor's Handley or the AER to place little or no weight on the 2007 Ickiewicz study. This report is included as an attachment to Chapter 8.
[224] See the NERA report, included as an attachment to this Chapter 8.

Appendix to Chapter 8: AER's consideration of Ickiewicz (2007)

Summary of issue

1. In a submission on behalf of the JIA, Gray (2008) cites the recent work of Ickiewicz (2007). Ickiewicz examines the impact that the introduction of dividend imputation had on Australian stock prices.

2. Ickiewicz (2007) controls for things like US market movements, exchange rates, interest rates, commodity prices and so on. He then plots whatever cannot be explained by these things to see whether there was a significant positive effect around the introduction of imputation. He carefully examines every announcement related to the introduction of imputation and looks at a period of more than a year around the introduction.

3. The results of Ickiewicz (2007) indicate that around the introduction of dividend imputation Australian stock prices simply move as one would expect, given US stock returns, commodity prices, exchange rates, interest rates, and so on – on average, Australian stocks behaved as expected, given the values of the various explanatory variables. There is no evidence of any upward revaluation of Australian stocks associated with the introduction of dividend imputation.

4. The Explanatory Statement indicates that:

> The AER intends to place limited weight upon the results of this study in informing its estimate of theta, for four primary reasons.[225]

The reasons proposed in the Explanatory Statement are addressed in turn below. I note that the first two reasons are the same, and so I deal with them together.

<u>Earlier data is no longer relevant?</u>

5. The Explanatory Statement argues that:

> The study relates to an earlier period and is therefore less relevant – it does not provide information regarding the value of credits in the current imputation tax regime,[226]

and that:

> the period covered only extends until June 1987, and does not cover the period after the introduction of imputation on 1 July 1987.[227]

6. These arguments both relate to the time period examined by Ickiewicz (2007) and suggest that different time periods should have been examined. Ickiewicz carefully examines all of the public announcements in relation to the introduction of dividend imputation. Prior to implementation there were a number of reviews, reports, and

[225] *Explanatory Statement*, p. 324.
[226] *Explanatory Statement*, p. 324.
[227] *Explanatory Statement*, p. 324.

official announcements from government. Ickiewicz carefully documents all of these and examines a whole range of periods prior to and after the introduction of imputation on July 1 1987. His results are consistent throughout – there is no evidence of any significant re-rating of Australian stocks over any period around the introduction of imputation. Over the whole period, Australian stocks did not behave significantly differently from exactly what would be expected given movements in overseas stock markets, interest rates, commodity prices and so on.

7. The most relevant result is that pertaining to the period immediately prior to the introduction of imputation. It is during this period that all of the relevant public information was announced and during which time any stock price appreciation would be expected to occur. That is, stock prices are expected to react quickly when relevant new information is made public. There is an abundance of empirical evidence to establish that when value-relevant information is made public, stock prices react immediately. Gray (2008, p.24) shows that if gamma really is equal to 0.5, dividend imputation would cause stocks to become 30% or more valuable. It is highly unlikely that dividend imputation really did boost stock values by 30% or more, yet the market did not realise this when imputation was announced or explained.

8. Gray (2008) reproduces the results of Ickiewicz (2007) that are most relevant – those pertaining to the period over which the introduction of imputation was announced and confirmed. It during this period that any re-rating of stocks would have occurred. But Ickiewicz (2007) also examines a range of other periods, all of which suggest that the introduction of, and changes to, imputation have no significant impact on Australian stocks.

9. One of the periods specifically examined by Ickiewicz (2007) was the introduction of the Rebate Provision on July 1 2000. He examined periods prior to and after July 2000. His conclusion is:

> Once more the innovation in the dividend imputation system has produced no monthly abnormal return observations significantly different from those available in the unaffected in-sample population. The result indicates that the Cash Rebate Amendment has no effect on the value Australia's marginal investor placed on distributed franking credits; aggregate equity prices in the market remaining unaffected.[228]

<u>Contradictory evidence in other studies?</u>

10. The Explanatory Statement argues that:

> There is other evidence that contradicts the results of this study. For example, a 2005 paper by Hancock finds that the introduction of imputation resulted in a significant once-off increase of in share prices of 21 per cent between July and September 1987.[229]

11. For clarity, it should be noted that Hancock (2005) does not report an increase in share prices of 21% over the stated period. Rather, Hancock reports an excess return of 21%

[228] Ickiewicz (2007, p. 88).
[229] *Explanatory Statement*, p. 325.

over the period – the excess of the return on a broad stock market index (including dividends and capital gains) over an above the return available on government bonds.

12. The next point to note is that Hancock (2005) does not explain why July to September is the relevant period to examine. If the period is extended by one month to include October 1987, the excess return would be negative, as a result of the stock market crash in that month. Moreover, if the period was reduced by one month to finish in August, the excess return would also be considerably smaller. It is not suggested that Hancock has deliberately selected a period to maximise the ex post excess return he reports. However, as a matter of fact, the selection of any other period (whether slightly shorter or slightly longer) would have the effect of substantially reducing the reported excess return.

13. The key point, however, is that there is no inconsistency between the results of Hancock (2005) and Ickiewicz (2007). Both find strong returns on the Australian stock market between July and September 1987. Hancock attributes all of this to the introduction of dividend imputation. By contrast, Ickiewicz notes that US stocks, Japanese stocks and European stocks all exhibited similar returns over the same period and that none of those markets introduced dividend imputation.

14. That is, if the US, Japanese, European, and Australian markets all exhibit excess returns of around 21% over the same period, should the JIA conclude that Australian stocks did well because world markets were up – or because the JIA introduced dividend imputation?

15. Ickiewicz (2007) controls for stock returns in other markets, commodity prices, exchange rates, interest rates, and so on. His results indicate that around the introduction of dividend imputation Australian stock prices simply move as one would expect, given US stock returns, commodity prices, exchange rates, interest rates, and so on – on average, Australian stocks behaved as expected, given the values of the various explanatory variables

16. By contrast, Hancock (2005) ignores the fact that stock markets all around the world were up sharply during July to September 1987 and attributes all of the excess return on Australian stocks to the introduction of dividend imputation.

17. For these reasons, the results of Ickiewicz (2007) should be strongly preferred to those of Hancock (2005).

18. By contrast, the Explanatory Statement appears to prefer the results of Hancock (2005) but states no reasons as to why Hancock (2005) is likely to provide more reliable results and should be preferred to Ickiewicz (2007).

<u>Inconsistent with dividend drop-off results?</u>

19. The Explanatory Statement argues that:

> ...a theta value of close to zero is inconsistent with the substantial body of persuasive evidence concerning dividend drop-offs.[230]

20. Dividend drop-off analyses have been conducted by different authors applying different variations of the method to different sub-samples of data. The one result that is consistently reported across this whole literature is that the package of a one dollar dividend and the associated franking credit is valued by the market at one dollar. This combined value of one dollar then has to be separated into two components – that relating to the cash dividend and that relating to the franking credit. Here the results vary considerably across variations of the method and across different samples of data. When the estimated value of cash dividends is low, the result is a high estimate of theta. And when the estimated value of cash dividends is higher, the result is a lower estimate of theta. The Explanatory Statement recognises this variation in estimates and adopts a single result from a single version of the drop-off methodology applied to a single sub-sample of data.[231]

21. In summary, there is clear, consistent and reliable evidence from dividend drop-off studies that the package of a one dollar dividend and the associated franking credit is valued by the market at one dollar. Separating this value into the components attributable to cash dividends and franking credits is statistically problematic and produces inconsistent and variable results. For example, Beggs and Skeels (2006) report that a one dollar cash dividend was valued at $1.18 in the period immediately prior to the 2001-04 period favoured by the AER. Such a high value is clearly impossible – but arises due to the statistical problems in separating the combined value of a dividend and franking credit into the component pieces.

22. If one considers that the value of a one dollar cash dividend is one dollar, dividend drop-off studies imply a value of zero for theta. That is, if the combined value of a one dollar cash dividend and the associated franking credit is one dollar, and if the one dollar dividend is worth a dollar, the implication is that the franking credit contributes nothing to the combined value and theta is zero.

23. That is, the result from Ickiewicz (2007) is entirely consistent with the result of dividend drop-off studies conditional on a one dollar cash dividend being valued at one dollar. It is only when dividend drop-off analysis is based on cash dividends being valued substantially less than their face value that positive estimates of theta are obtained.

24. The result from Ickiewicz (2007) is also consistent with market practice, which is to make no adjustment to cost of capital or cash flow estimates in relation to imputation credits.

25. In summary, the results of Ickiewicz (2007) are relevant evidence that assist in the interpretation of dividend drop-off analyses.

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[230] *Explanatory Statement*, p. 325.

[231] That is, the Beggs and Skeels methodology applied to large firms for which the authors were able to obtain all of the necessary data over the 2001-04 sub-period.

9 Conclusion

The JIA's original submission concluded by noting that the AER's WACC parameter decision is a vital input into the regulatory environment affecting the regulated electricity network sector. The sector can only attract the capital needed to maintain "business as usual" investment, and also meet the Governments' climate change agenda, if the AER maintains the levels of the previously adopted parameters and upgrades the market risk premium and gamma parameters.

Justification for maintaining or upgrading the previously adopted parameters existed prior to the global financial crisis and is even more evident now.

Notwithstanding that the AER's proposed Statements would downgrade almost every parameter, the JIA remain strongly of the view that this is not appropriate. Based on their original submissions and the substantial further material submitted in this package, the Final Statements should substantially reverse the direction of the proposed Statements.

There is a significant mismatch:

- between the WACC calculated using the AER's proposed parameters and that observable in the market; and
- in the relativities between the returns on debt and on equity calculated using the AER parameters, with the AER's proposed parameters suggesting that equity holders would be willing to accept substantially more risk but demand relatively little additional return when compared with debt holders.

These mismatches strongly suggest that the values of the proposed parameters are incorrect.

Parameter	Key contentions	Outcome sought
Equity Beta	There is no persuasive evidence to warrant a departure from the previously adopted value of 1.0. The material upon which the AER's proposed parameter is based is not sound in theory, approach or data. Indeed, to the extent any robust conclusions can be drawn from the evidence, it tends to reinforce that the previously adopted value is the correct value.	1.0
Market Risk Premium	There is substantial evidence presented to support an increase in the MRP from 6 to 7%, where imputation credits are assumed to have a value of 0.2 or above. This evidence does not support the conclusions reached by the AER in the proposed Statement.	7.0%

Parameter	Key contentions	Outcome sought
	Adopting the higher integer is made more important in the context of the current economic environment in which markets are, for the foreseeable future, requiring significant rewards for risk.	
Credit Rating	The AER's proposed Statement was based on a flawed analytical approach and an inadequate set of data both because it relied on too few companies' data and, in some cases, incorrect data. We have provided a comprehensive analysis of the credit rating issue and find no evidence to support the notion of an increase in benchmark credit rating above BBB+. We do however find that persuasive evidence exists for the benchmark credit rating to be reduced to BBB.	BBB
Term of the Nominal Risk Free Rate	Again, the AER's proposed Statement was based on incorrect data. Amongst other things, incorrect conclusions concerning the businesses preferences and actual practices were drawn. Correcting the data and equally importantly taking account of detailed expert material that also establishes the approach of a benchmark efficient network service provider, the only correct final parameter is to maintain a 10 year time frame.	10 year term to maturity
Gamma	With respect to Gamma, the AER has based its conclusion that there is persuasive evidence to depart from the previously adopted value and raise the Gamma on unsound theory and empirics. A range of additional work has addressed each point raised by the AER in detail. The work has also now been peer reviewed and the conclusions confirmed. In summary, the effect of this material is that rather than increasing the gamma, it should be reduced to 0.2. However, the JIA's material strongly suggests that the true value of Gamma lies between 0.0 and 0.2.	0.2

In addition to the summary above there are also conceptual and theoretical issues in the Proposed Statement that are identified and addressed in more detail in this submission.

This submission explains the various requirements of the NEL and the NER which require the AER's judgement and discretion to be exercised by not only taking into account individual parameter by parameter considerations but also with respect to actual capital market requirements such that the combined effect of the package of parameters, when calculated in the CAPM, delivers a cost of capital commensurate with the prevailing market conditions.

The JIA's parameters would provide for an overall WACC based on the return on capital required by an appropriate benchmark efficient company. The returns calculated using these parameters accord with prevailing market conditions. They would provide a reasonable opportunity for JIA members to recover their efficient costs of capital and, in the long term interest of end users of electricity, the package of parameters would promote efficient investment as required by the National Electricity Objective.