

49. The Tribunal accepts that Ergon Energy had the prime responsibility to provide information to the AER for the AER to consider and evaluate.

50. Ergon Energy had a critical role to play in providing information to the AER to assist the AER in making a distribution determination which reflects the national electricity objective and the revenue and pricing principles. Having failed to do so adequately in relation to other costs, we cannot characterise the AER's decision in relation to other costs as unreasonable. Nevertheless, as indicated above, the AER, in the circumstances of this case, should have made further enquiry from Ergon Energy.

51. This is not to say that the concepts of onus or burden of proof are to be adopted in the present context. The focus is upon the material

placed before the AER, or upon the material available to the AER, to determine whether AER can or should be satisfied of a particular matter.

52. Nevertheless, an error of fact may occur, through no unreasonableness in the decision, or even unreasonable behaviour of the regulator.

53. The AER was, and the Tribunal is, not able to properly comment on the materiality of this issue relating to "other costs" in dollar terms due to the lack of sufficient information available to it.

54. For the above reasons, the Tribunal considered errors of fact occurred, and directions should be made as suggested by the parties on the basis of a ground of review being established.

#### Footnotes:

1194 AER, *Draft decision, Queensland draft distribution determination, November 2009*, p420.

1195 Ergon Energy, *Revised regulatory proposal, January 2010*, p231.

1196 Ergon Energy, *Revised regulatory proposal, January 2010, attachment RP9I8c*.

1197 Ergon Energy, *Revised regulatory proposal, January 2010, attachments RP920c and RP921c*.

1198 AER, *information request AER.ERG.RRP. 41, 19 April 2010*.

1199 Ergon Energy, *response to information request AER.ERG.RRP.41, 21 April 2010*. [own emphasis]

## [¶42-329] APPLICATION BY ENERGEX LIMITED (NO 2)

(2010) ATPR ¶42-329

Court citation: [2010] ACompT 7

Australian Competition Tribunal

13 October 2010

*Trade practices — Energy regulation — Distribution network service providers submitted regulatory proposals to regulator — Distribution determination made by regulator under National Electricity Rules — Determination regulates charges for provision of electricity distribution services — Providers contested regulator's adjustment of formula for estimating cost of corporate income tax — Application for review of determination under National Electricity Law, s 71B.*

The applicants, each of whom was registered as a distribution network service provider under the National Electricity Rules (the Rules), sought a review of a final distribution determination made by the Australian Energy Regulator (the AER). The distribution determinations regulate the charges each applicant can impose for the provision of electricity distribution services for a five-year period from 1 July 2010.

The subject of the applications was the AER's valuation of a particular component of the formula for estimating the cost of corporate income tax. This formula, set out in r 6.5.3 of the Rules, includes a component representing the assumed utilisation of imputation credits (gamma). The value of gamma is usually understood as a product of the "distribution ratio" (the value of imputation credits distributed by a firm as a proportion of the value of

imputation credits generated by it in the period) and the “utilisation rate” (the value of imputation credits distributed to investors as a proportion of their face value).

Under the formula, a higher value for gamma would result in a lower estimated cost of corporate income tax. The AER adopted a value of 0.65 for gamma, in place of the significantly lower figures proposed by the applicants. The AER’s decision, which followed an extensive review of the weighted average cost of capital parameters (the WACC Review), represented a departure from the past regulatory practice of applying values of 0.5 or less.

Before the tribunal, the AER acknowledged that it may have made a material error of fact in its calculation of the distribution ratio, although it did not accept the much lower substitute value proposed by the applicants. As far as the utilisation rate (or theta), however, the AER maintained that its determination on this issue did not involve any material error of fact. The AER submitted that its decision on the gamma value should be affirmed insofar as it relates to the theta estimate of 0.65. The applicants contested the methodology and assumptions underpinning the AER’s decision regarding the utilisation rate, and submitted that the best estimate of theta is 0.23.

*Held:* grounds for review made out; AER directed to re-estimate gamma value.

1. The tribunal accepts the AER’s concession that it had made a material error of fact in arriving at its distribution ratio value. However, the tribunal is not in a position to determine for itself the appropriate value for this component. The AER is therefore directed to make further submissions on this issue on the basis of the material now before the tribunal.

2. The AER also erred in its treatment of the utilisation rate, or theta. Rather than substitute the value of 0.23 proposed by the applicants, however, the parties are directed to file further submissions to aid the tribunal in its determination of the appropriate value for this component.

3. The AER is required to provide a report addressing the various errors identified by the tribunal in respect of its treatment of theta, including the flawed use of tax statistics studies and dividend drop-off studies.

*[Headnote by the CCH TRADE PRACTICES EDITORS]*

S Doyle SC with Mr Pomerence (instructed by Allens Arthur Robinson) for Energex Limited.

P O’Shea SC with Mr Bradley (instructed by Minter Ellison Lawyers) for Ergon Energy Corporation Limited.

M Sloss SC with CA Moore and M Borsky (instructed by Gilbert + Tobin Lawyers) for ETSA Utilities.

P Hanks QC with Mr Gray, R Ellyard, T Clarke and L Merrick (instructed by Corrs Chambers Westgarth) for the Australian Energy Regulator.

Before: Middleton J (Deputy President), R Davey and R Shogren

**Middleton J (Deputy President), Mr R Davey and Mr R Shogren:**

## **INTRODUCTION**

1. Each applicant is:

- (a) the owner and operator of an electricity distribution network; and
- (b) registered as a distribution network service provider (DNSP) under the National Electricity Rules (the “Rules”).

2. The Australian Energy Regulator (the “AER”):

(a) is responsible for the economic regulation of distribution services provided by means of, or in connection with, distribution systems that form part of the national grid; and

(b) must make a distribution determination for each distribution network service provider and, in doing so, must follow the process set out in Part E of Chapter 6 of the Rules.

3. In May 2010, the AER for each applicant made a distribution determination for the period

2010-11 to 2014-15 (the “distribution determinations”).

4. Each distribution determination regulates the charges each applicant can impose for the provision of electricity distribution services for a period of 5 years from 1 July 2010.

5. Each applicant has applied under s 71B of the National Electricity Law (the “NEL”) for review of the distribution determination applying to it.

6. A particular aspect of each distribution determination which is the subject of the applications is the AER’s determination of the value of one component of the formula applied to arrive at an estimated cost of corporate income tax.

7. That component is “ $\gamma$ ” (gamma), which represents the assumed utilisation of imputation credits (r 6.5.3).

8. These reasons are provided after hearing submissions on this particular aspect and form the bases for the giving of directions.

9. It is useful to set out some background to the role of the AER and the content in which the issue for present consideration arises.

10. In making each distribution determination, the AER was required to act in a way that furthers the objective of the NEL set out in s 7 of the NEL, and in accordance with the revenue and pricing principles set out in s 7A of the NEL.

11. Section 7 of the NEL provides:

“The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests 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.”

12. Section 7A of the NEL provides:

“(1) The revenue and pricing principles are the principles set out in subsections (2) to (7).

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

(a) providing direct control network services; and

(b) complying with a regulatory obligation or requirement or making a regulatory payment.

(3) A regulated network service provider should be provided with effective incentives in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes:

(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and

(b) the efficient provision of electricity network services; and

(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

(4) ...

(5) A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

(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.

(7) Regard should be had to the economic costs and risks of the potential for under and over utilisation of a distribution system or transmission system with which a regulated network service provider provides direct control network services.”

13. The Rules provide for a building block determination as a component of a distribution determination.

14. The annual revenue requirement for a DNSP is determined using a building block approach.

15. The building blocks include:

(a) a return on capital;

(b) the estimated cost of corporate income tax of the provider.

16. Calculation of the return on capital requires the application of a rate of return to the value of the DNSP's. The rate of return for a DNSP is the cost of capital as measured by the return required by investors in a commercial enterprise with a similar nature and degree of non-diversifiable risk as that faced by the distribution business of the provider and must be calculated as a nominal post-tax weighted average cost of capital ("WACC").

17. The calculation of the estimated cost of corporate income tax is governed by r 6.5.3 of the Rules, which provides:

"The estimated cost of corporate income tax of a *Distribution Network Service Provider* for each regulatory year (ETCt) must be calculated in accordance with the following formula:

$$ETC_t = (ETI_t \times r_t) (1 - \gamma)$$

Where:

**ETI<sub>t</sub>** Is an estimate of the taxable income for that *regulatory year* that would be earned by a benchmark efficient entity as a result of the provision of *standard control services* if such an entity, rather than the *Distribution Network Service Provider*, operated the business of the *Distribution Network Service Provider*, such estimate being determined in accordance with the *post tax revenue model*.

**r<sub>t</sub>** Is the expected statutory income tax rate for that regulatory year as determined by the AER.

**γ** Is the assumed utilisation of imputation credits."

18. The generally accepted regulatory approach in Australia has been to define the value of gamma imputation credits as a product of the imputation credit "distribution ratio" (**F**) and the "utilisation rate" (**theta** or **θ**) ( $\gamma = F \times \theta$ ) where:

(a) **F** is defined as the value of imputation credits distributed by a firm as a proportion of the value of imputation credits generated by it in the period (the distribution ratio); and

(b) **theta** or **θ** is defined as the value of imputation credits distributed to investors as a proportion of their face value (the "utilisation rate").

19. Under the formula set out in cl 6.5.3 of the Rules, the higher the value for gamma, the lower the estimated cost of corporate income tax for a DNSP. The overstatement of either the distribution rate or the utilisation ratio would result in an overstatement of gamma and thus an underestimate of the cost of corporate income tax for the DNSP. This would result in an underestimate of the revenue that is required to provide the required return to investors. This, in turn, would deprive the DNSP of a reasonable opportunity to recover its efficient costs, such that it would not have the incentive to achieve the efficiency objectives, that are the purpose of the regulatory regime.

20. Clause 6.5.4(e) of the Rules set out a number of matters to which the AER must have regard in undertaking a WACC parameters review. They include:

"(3) 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 *Distribution Network Service Provider*; and

(4) where 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:

(i) the need to achieve an outcome that is consistent with the *national electricity objective*; and

(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."

21. Clauses 6.5.4(c) and (f)-(i) of the Rules make provision for what is described as a statement of regulatory intent ("SORI"). They provide:

“(c) The AER must, in consequence of a review, issue a . . . *statement of regulatory intent* . . . adopting values, methods and credit rating levels for *Distribution Network Service Providers* . . .

...

(f) A *statement of regulatory intent* adopting a revised value, method, or credit rating level applies only for the purposes of a *building block proposal* submitted to the AER after publication of the statement of regulatory intent.

(g) A distribution determination to which a *statement of regulatory intent* is applicable must be consistent with the statement unless there is persuasive evidence justifying a departure, in the particular case, from a value, method or credit rating level set in the statement.

(h) In deciding whether a departure from a value, method or credit rating level set in a *statement of regulatory intent* is justified in a distribution determination, the AER must consider:

(1) the criteria on which the value, method or credit rating level was set in the *statement of regulatory intent* (the **underlying criteria**); and

(2) whether, in the light of the underlying criteria, a material change in circumstances since the date of the statement, or any other relevant factor, now makes a value, method or credit rating level set in the statement inappropriate.

(i) If the AER, in making a distribution determination, in fact departs from a value, method or credit rating level set in a *statement of regulatory intent*, it must:

(1) state the substitute value, method or credit rating level in the determination; and

(2) demonstrate, in its reasons for the departure, that the departure is justified on the basis of the underlying criteria.”

22. In the context of cl 6.5.4(g) of the Rules, the term “evidence” refers to data or material (including expert opinion) from any source. The term is not being used in a technical legal sense,

given that the AER is not a court or tribunal and is free to seek out its own data and material.

23. Further, the adjective “persuasive” bears its ordinary meaning of able to persuade or induce a belief.

24. The grounds upon which an application may be made to the Tribunal for review under s 71B of the NEL are set out in s 71C(1) of the NEL:

“(a) the AER made an error of fact in its findings of facts, and that error of fact was material to the making of the decision;

(b) the AER made more than 1 error of fact in its findings of facts, and that those errors of fact, in combination, were material to the making of the decision;

(c) the exercise of the AER’s discretion was incorrect, having regard to all the circumstances;

(d) the AER’s decision was unreasonable, having regard to all the circumstances.”

25. It is for the applicant to establish one or more of these grounds.

26. In *Application by Energy Australia & Ors* [2009] ACompT 8 (EnergyAustralia) at [70], the Tribunal held:

“... the Tribunal’s review is not at large, but is a review of the AER’s decision on the factual and legal grounds available, but only on the material provided to or before the AER. Nevertheless, the Tribunal must consider the merits of whether the material provided to or before the AER leads to a finding or findings of material fact different from those made by the AER, or that it exercised its discretion incorrectly, or that its decision in all the circumstances was unreasonable.”

27. Subsections 71C(1)(a) and (b) refer to errors of fact in the AER’s findings of fact which were material to the making of the decision.

28. The expression “findings of fact” should be interpreted broadly enough to be meaningful in relation to the function of the AER under review.

29. They include errors in findings as to matters such as:

- the existence of an historical fact being an event or circumstance;
- the existence of a present fact being an event or circumstance;
- an opinion about the existence of a future fact or circumstance;
- opinions based upon approaches to the assessment of facts or methodologies which have been chosen to be applied.

30. In considering whether the exercise of any such discretion was “incorrect”, assistance may be derived from the well known passage in *House v The King* (1936) 55 CLR 499 at 505. Further, as the Tribunal said in *EnergyAustralia* at [67]:

“If the reasons for a decision contain an element of arbitrariness, in the sense of an unexplained discretionary choice made in reaching a conclusion, then it may readily be concluded . . . that the exercise of discretion miscarried or was in error.”

31. The position in respect of the “unreasonable” ground was stated by the Tribunal in *EnergyAustralia* at [63]–[67]:

“It is to be observed that the ‘unreasonable’ ground is a separate ground of review. It is not, as in the *Gas Pipelines Access (South Australia) Act 1997* (SA) (‘Gas Law’), related to the error of an incorrect exercise of discretion: see *East Australian Pipeline Pty Ltd v Australian Competition and Consumer Commission* (2007) 233 CLR 229, 250. The term ‘unreasonable’ does not just provide a basis for informing the presence of one or more of the established grounds which render a decision ‘incorrect’, in the sense of the incorrect exercise of discretion. It provides a separate and distinct ground of review.

The question arises then as to when it may be held that the decision under review is ‘unreasonable in all the circumstances’. For instance, is it limited to so called *Wednesbury* unreasonableness?

On this question, the comments of the Full Court in *Australian Competition and Consumer Commission (ACCC) v Australian Competition Tribunal* (2006) 152 FCR 33 are relevant, accepting that for the purposes of the NEL (as distinct from the Gas Law),

unreasonableness is a separate ground of review.

In *ACCC v ACT* 152 FCR 33, it was stated:

‘176 *The Tribunal has not been given a purely substitutive function in relation to the review of the ACCC’s discretion. That is to say, if the ACCC has exercised its discretion on correct principles and if the particular exercise of the discretion was open to it within the framework of the Code, the Tribunal is not empowered to set aside that decision simply because it thinks another decision would have been preferable. This is emphasised by the provision in s 39(2)(a)(ii) of the ground of review based on unreasonableness. The exercise of a discretion is not unreasonable simply because another decision-maker would have come to a different view. On the other hand unreasonableness in s 39(2)(a)(ii) is not limited to cases in which the exercise of the discretion was so unreasonable that no reasonable person could have so exercised it.*

177 *In Application by Epic Energy the Tribunal (Cooper J presiding) said (at [30]):*

“Section 39(2)(a)(ii) is concerned with the correctness or unreasonableness of an exercise of discretion having regard to the circumstances relevant to the proper exercise of that discretion. Those circumstances are ones which are demonstrable from the matters to which the Tribunal may refer under s 39(5). For the purposes of the subsection, error is made out if it is demonstrated that the exercise of the discretion was so unreasonable on the basis of the matters available to the decision maker that no reasonable decision maker could ever come to it: *Associated Provincial Picture Houses Ltd v Wednesbury Corporation* [1948] 1 KB 223 at 223–234. It also deals with the situation where the decision is so far outside the range of decisions open to a reasonable decision maker that it bespeaks of error even though the particular error

cannot be identified: *House v R* (1936) 55 CLR 499 at 505. For the purposes of s 39(2)(a)(ii) of GPA Law, correctness and reasonableness are to be determined by reference to applicable criteria contained in the Code applied to the matters which were before the relevant Regulator before the decision under review was made.”

*That passage does not limit the ground of unreasonableness to so called Wednesbury unreasonableness. It is compatible with the wider view of “unreasonableness” which would pick up logical error or irrationality in the decision. The ACCC’s submission which would limit the unreasonableness ground to so called Wednesbury unreasonableness is not accepted.*

*178 The concept of “unreasonableness” imports want of reason. That is to say the particular discretion exercised by the ACCC is not justified by reference to its stated reasons. There may be an error in logic or some discontinuity or non sequitur in the reasoning. It may be that the decision has an element of arbitrariness about it because there is an absence of reason to explain the discretionary choices made by the ACCC in arriving at its conclusion.’*

The Tribunal considers it clear that the scope of the separate ground of review of ‘unreasonableness’ set out in the NEL goes somewhat beyond the so called Wednesbury unreasonableness ground. To a certain extent, there is an overlap between the exercise of a discretion which is ‘incorrect’, and a decision which is unreasonable having regard to all the circumstances. If the reasons for a decision contain an element of arbitrariness, in the sense of an unexplained discretionary choice made in reaching a conclusion, then it may readily be concluded that the decision itself is unreasonable, and that the exercise of discretion miscarried or was in error.”

32. Section 16(1)(b) of the NEL provides:

“The AER must, in performing or exercising an AER economic regulatory function or power:

...

(b) ... ensure that the regulated network service provider to whom the determination will apply [is] ... :

(i) informed of material issues under consideration by the AER; and

(ii) given a reasonable opportunity to make submissions in respect of that determination before it is made.”

33. A question may arise as to what, if any, significance a breach of s 16(1)(b) of the NEL or the requirements of procedural fairness may have in the context of an application for review under s 71B of the NEL.

34. A breach of s 16(1)(b) of the NEL or the requirements of procedural fairness may in a particular case be an element in establishing one or more of the grounds set out in s 71C(1).

35. The Tribunal recognised this possibility in *EnergyAustralia* at [316(d)]:

“The grounds under s 71C do not directly embrace ‘procedural’ errors, such as failure to comply with s 16 of the NEL, any common law requirement of procedural fairness, or failure to consider submissions or give reasons as specifically required by the Rules. Section 71C(1)(d) specifically focuses on the unreasonableness of the AER’s decision itself. Section 71C(1)(c) focuses on the exercise of the AER’s discretion being ‘incorrect’. Section 71C(1)(a) and (b) are directed to errors of fact in the findings of fact. However, if for instance, the AER does not take into account a submission of a provider, then that may result in the exercise of the AER’s discretion being incorrect, as not taking a relevant matter for consideration, either the submission itself or a matter raised in the submission that was not taken into account by the AER. Depending on the circumstances, a ground of review may be established (such as failing to take into account the submission), but the Tribunal may still affirm the AER’s decision (such as where the matter raised in the submission was independently and properly considered by the AER in any event).”

36. The first review of the WACC parameters: Electricity transmission and distribution network service providers —

Review of the weighted average cost of capital (“WACC”) parameters (the WACC Review) concluded in May 2009. The Tribunal will return to this review later.

37. At the conclusion of the WACC review, the AER issued a SORI on 1 May 2009, in which the AER adopted a value for gamma of 0.65. Accordingly:

- (a) under cl 6.5.4(f) of the Rules, that value for gamma applied to the building block proposal submitted by each applicant; and
- (b) under cl 6.5.4(g) of the Rules, the same value for gamma was required to be adopted in the final determination applying to each applicant unless there was persuasive evidence justifying a departure from that value in the particular case.

38. The value for gamma of 0.65 in each distribution determination was a departure from the past regulatory practice of Australian regulators which was to apply values for gamma of 0.5 or less.

39. Each applicant (other than ETSA) submitted a regulatory proposal to the AER in which it proposed a value for gamma of 0.2. ETSA proposed a value for gamma of 0.5.

40. On 25 November 2009, the AER issued its draft distribution determinations in which it adhered to its value for gamma of 0.65.

41. Each applicant (other than ETSA) submitted a revised regulatory proposal to the AER, again proposing a value for gamma of 0.2. In its revised regulatory proposal, ETSA proposed a value for gamma of 0.5.

42. As observed above, the AER made the distribution determinations the subject of these applications in May 2010 in which it adopted a value for gamma of 0.65.

### **TAX SYSTEM CHANGES**

43. Since July 1987, Australia has had a system of dividend imputation. This means that shareholders can potentially receive a credit for all of the tax paid at the corporate level. Shareholders receive a cash dividend plus an imputation tax credit and this bundle is known as a “franked” dividend. This tax credit reflects the amount of corporate tax paid on the source profit from which the dividend was paid. The imputation tax credit can be used to offset Australian personal tax obligations.

44. In July 2000, individual Australian resident taxpayers and superannuation funds became entitled to a tax refund for their excess or unused franking credits.

45. The July 2000 changes allowed individual Australian resident taxpayers and superannuation fund shareholders to receive a cash rebate for unused imputation credits. Prior to July 2000, the franking credit rebate allowed to a taxpayer could not exceed an investor’s taxation liability and therefore any unused credit was lost.

46. Non-resident investors are only able to redeem imputation credits to the extent of their Australian personal tax obligations and depending on the interaction of Australian tax laws and the non-resident investors’ home country tax laws. In the absence of trading opportunities, imputation credits are worthless to most non-resident investors.

### **DISTRIBUTION RATIO**

47. The Tribunal first addresses the distribution ratio (F) being the proportion of credits that are distributed to shareholders. The AER submits that the Tribunal could make a finding that the gamma constituent decision, only insofar as it related to the distribution ratio, involved an error or errors of fact that were material to each distribution determination.

48. The AER also submits that it is open to the Tribunal to conclude that the AER made an error of fact in making the gamma constituent decision, insofar as it related to the distribution ratio, that was material to the making of each distribution determination.

49. In the WACC Review Final Decision, the AER stated that:

“... the AER considers that a reasonable estimate of the annual payout ratio is the market average of 0.71 provided by Hathaway and Officer. ... In effect, this means that 71 per cent of all imputation credits created in a given year are assumed to be distributed to shareholders in that same year,”

and then adopted that value as the basis of its estimation of the time value loss associated with imputation credits that are not immediately distributed. The reference to Hathaway and



Officer in the above quoted passage is a reference to a November 2004 study entitled: *The Value of Imputation Credits — Update 2004*, by Neville Hathaway and Bob Officer (“Hathaway and Officer 2004”).

50. The AER adhered to that interpretation of the Hathaway and Officer 2004 study.

51. The AER now accepts that the distribution ratio of 71 per cent derived from Hathaway and Officer 2004 was in fact a long-term distribution ratio. That is, the ratio derived from that study is the average annual ratio of the amount of credits distributed in a year (regardless of whether the credits had been created in that year or retained from an earlier year) to the amount of credits created in that year. The AER acknowledges that there was evidence submitted to the AER that identified the error and that the evidence was persuasive evidence justifying departure from the value of gamma, insofar only as it relates to the distribution ratio, that was adopted in the SORI.

52. The Tribunal accepts the AER’s submissions and finds that an error of fact occurred in the making of the distribution ratio.

53. In acknowledging the error of fact referred to above, the AER did not concede that the appropriate substitute value for the distribution ratio is necessarily 0.71 (or 0.7) as pressed by the applicants. The AER’s concession does not address the manner in which the value of retained credits should be recognised in setting the distribution rate, which is a very difficult econometric task.

54. The AER submits that in re-determining the distribution ratio it will be necessary for it to review the available evidence and consider how to incorporate an appropriate value for retained imputation credits in the estimate of the payout ratio. The AER anticipates that this exercise would require review of at least the following sources as identified by the AER in its submissions:

“(a) the payout ratio estimates from Hathaway and Officer 2004;

(b) a further consultant’s report on tax statistics prepared by Hathaway in July 2010, which the AER is presently considering as part of the Victorian electricity distribution determination process;

(c) the theoretical models available — principally Officer 1994, Monkhouse 1996 and Monkhouse 1997;

(d) the NERA 2010 report submitted by ETSA Utilities as part of the South Australian Determination; and

(e) the advice in the Handley 2010, and McKenzie and Partington 2010 reports that the AER obtained in the course of the Queensland Determinations.”

55. The substitute value for the distribution ratio that the AER adopts would form part of each distribution determination and would be applied to each applicant for the 2010/11 to 2014/15 regulatory period.

56. The AER did not consider it necessary to consult with interested parties on the issue as this would require significant additional time and would be unlikely to add much to the final decision.

57. The Tribunal has concluded, particularly in light of its later consideration of the utilisation rate (“theta”), that the AER could assist the Tribunal in determining whether it should conclude that the distribution rate be 70%. To this end, directions will be made not remitting the matter to the AER, but allowing submissions to be filed on this issue on the bases of the material now before the Tribunal.

#### THE UTILISATION RATE (THETA)

58. The Tribunal now turns to the issue in relation to the utilisation rate.

59. The Tribunal notes that, in the event that the Tribunal were to set aside or vary the theta aspect of the gamma constituent decision, one possible outcome or effect on each distribution determination of such a decision could be that it would be necessary for the AER to consider whether it is necessary to make any consequential adjustment to the market risk premium (MRP). The Tribunal makes this comment as it may impact upon the appropriate directions to be given. The Tribunal notes, however, that the position of the AER in its submission dated 1 October 2010 that any consequential adjustment to the MRP may need to be only in future distribution determinations after consideration by the AER. The Tribunal also received a written submission dated 11 October 2010 from Energex Limited in relation

to theta and MRP. In light of the Tribunal's approach, the Tribunal needs now say no more about any adjustment to the MRP consequent upon the assessment of theta.

60. Whilst the AER accepted that the grounds in s 71C(1)(a) and (b) were made out in that there was persuasive evidence justifying a departure from the value for gamma insofar as the distribution ratio is concerned, insofar as the utilisation rate or theta is concerned, the AER contends the gamma constituent decision did not involve an error or errors of fact that were material to the decision.

61. Further, the AER contends that the gamma constituent decision did not involve the incorrect exercise of discretion within s 71C(1)(c), nor was it unreasonable.

62. Essentially, the AER submits that there was no persuasive evidence that justified departing from the value for theta of 0.65 that the AER had adopted for the purposes of adopting a value of gamma in its May 2009 SORI.

63. The AER also submits that accordingly, there is no basis to conclude that the theta aspect of the gamma constituent decision either:

- (a) involved an error (or errors) of fact that was material to the making of each distribution determination; or
- (b) was decided unreasonably, such that any of the distribution determinations are unreasonable as a result.

64. The AER therefore submits that, insofar as it relates to theta, the gamma constituent decision should be affirmed by the Tribunal.

65. Much discussion took place before the Tribunal whether each applicant was required to demonstrate persuasive evidence justifying a departure from the value for gamma insofar as theta was concerned, once there was a departure justified as far as the distribution ratio was concerned.

66. The Tribunal does not need to enter this debate — the Tribunal has come to the view that there is persuasive evidence justifying a departure from the value of gamma insofar as theta is concerned for the reasons that follow. In that regard, the AER made a material error of fact, and exercised its discretion incorrectly.

67. Further, in light of the conclusions of the Tribunal, it is unnecessary to consider other legal issues that have arisen, including the extent of the requirement to accord procedural fairness.

68. The utilisation rate (or theta) represents the per-dollar value to a shareholder of a distributed imputation credit. As tax laws prevent the trade in imputation credits and there is no open market to observe their value, a value must be estimated.

69. In the WACC Review, the AER adopted a theta estimate of 0.65, giving equal weight to:

- (a) a market-based point estimate of 0.57 derived from a 2006 post-July 2000 dividend drop-off study entitled: Market Arbitrage of Cash Dividends and Franking Credits, 2006, by D J Beggs and C L Skeels ('Beggs and Skeels (2006)'); and
- (b) an estimate of 0.74 derived from a 2008 tax statistics study entitled: A Measure of the Efficacy of the Australian Imputation Tax System by J C Handley and K Maheswaran ('Handley and Maheswaran (2008)').

#### **Estimates of Theta from Dividend Drop-off Studies**

70. Empirical estimates of a firm's utilisation ratio may be derived from an assessment of the market value of the firm's imputation tax credits from the market value of their associated gross dividends.

71. One empirical method of estimating a firm's utilisation ratio is the dividend drop-off method, which involves examining stock price changes on ex-dividend days. The amount by which stock prices change (on average) is assumed to reflect the value to investors of the dividend and franking credit. Regression analysis is then used to estimate the value of a dollar of cash dividend and the value of a dollar of imputation credits. Examples of dividend drop-off studies include Hathaway and Officer (2004) and Beggs and Skeels (2006).

72. The theory of arbitrage predicts that, in perfect capital markets, with no transactions costs, no differential taxation of dividends relative to capital gains and no dividend imputation, the expected reduction in the price of a share on its ex-dividend day should equal

the amount of the cash dividend. Under dividend imputation, shareholders receive a gross dividend, which is the cash dividend plus a franking credit, where the franking credit has the value of tax already paid on that income at the company level. It follows that, in a perfect capital market with no transactions costs and no differential taxation, the expected ex-dividend day share price drop-off should equal the size of the gross dividend. However, a number of studies have observed a price drop less than the size of the gross dividend.

73. The Beggs and Skeels (2006) dividend drop-off study used a data set for the period 1986-2004. During this period, there were a number of different taxation laws which applied to franking credits. The study provided seven separate estimates for the different taxation regimes. For the most recent period, 2001-2004, Beggs and Skeels (2006) estimated that the franking credit drop-off ratio (i.e. the inferred value of a dollar of imputation credits) was 0.572 (with a standard error of 0.121) and that the cash drop-off ratio (i.e. the inferred value of a dollar of cash dividends) was 0.800 (with a standard error of 0.052).

74. The 95 per cent confidence interval for theta, based on Beggs and Skeels (2006), is  $0.57 \pm 0.24$ . That is, the 95 per cent confidence interval for theta based on this study is from 0.33 to 0.81.

75. The Strategic Finance Group: SFG Consulting (SFG) conducted a dividend drop-off study entitled: The value of imputation credits as implied by the methodology of Beggs and Skeels (2006) ("SFG 2009a") which sought to replicate the methodology of Beggs and Skeels (2006). SFG 2009a was submitted to the AER for consideration in the WACC review. The SFG 2009a study provided an estimate of theta during the period 2001-2006. In the WACC Review, the AER considered the SFG 2009a results, but gave them no weight in making its estimate of gamma because of concerns regarding the data set and methodology used by SFG.

76. In support of its regulatory proposal, ETSA Utilities (ETSA) submitted two additional reports by SFG (one dated 13 January 2010 and the other dated 4 February 2010) that incorporated additional analysis to

the SFG 2009a study and sought to address the concerns that the AER had raised in the WACC Review. Associate Professor Skeels (a co-author of Beggs and Skeels (2006), who was retained by ETSA to review the SFG 2009a study, confirmed the validity of a number of the AER's concerns. The SFG analysis, dated 4 February 2010 (SFG 2010) estimated that the franking credit ratio was 0.23 (with a standard error of 0.08) and that the cash dividend ratio was 0.99 (with a standard error of 0.03).

### Estimates of Theta from Tax Statistics Studies

77. The Handley and Maheswaran (2008) taxation statistics analysis reported that:

- (a) during the period 1990 – 2000, a mean of 67 per cent of distributed credits were used to reduce personal taxes;
- (b) during the period 2001 – 2004, a mean of 81 per cent of distributed credits were used to reduce personal taxes; and
- (c) across the entire period 1990 – 2004, a mean of 71 per cent of distributed credits were used to reduce personal taxes.

78. In the WACC Review, the AER acknowledged concerns that tax statistics studies do not take account of "time value loss" between the creation and redemption of credits, and other risks of investment. In response, the AER derived a point estimate from the Handley & Maheswaran (2008) study by taking a simple average of the values obtained for the pre-2000 (0.67) and post-2000 (0.81) periods, notwithstanding its view that only the utilisation statistics from the post-2000 period were relevant.

79. In each draft and final determination, the AER concluded that a reasonable range of theta estimated from Handley and Maheswaran (2008) is 0.67 to 0.81 for the post-2000 period. The AER continued to adopt the mid-point of these figures (0.74) as a reasonable point estimate for theta based on tax statistics.

80. Based on the advice of its consultants in a report entitled: Report to the AER – Evidence and Submissions on Gamma, by Professor M McKenzie and Associate Professor G Partington, 25 March 2010, ("McKenzie and Partington 2010") the AER considered that the final SFG 2010 estimate of theta (0.23) could

not be relied upon due to data and methodological issues.

81. The AER concluded that the information provided by the applicants did not constitute persuasive evidence that justified departure in the particular case from the gamma value of 0.65 that was adopted in the SORI. Accordingly, under cl 6.5.4(g) of the Rules, the AER adopted the value for gamma appearing in the SORI, 0.65.

#### **Alleged errors in the AER's approach to theta**

82. The AER derived its estimate of theta (0.65) by:

- first, simply averaging two estimate from the Handley and Maheswaran (2008) tax statistics study (one, of 0.67, derived from a study covering the period from 1988-2000 and the other, of 0.81, from a study covering 2001-2004) to arrive at a figure of 0.74;
- secondly, averaging the average of those tax statistics studies (0.74) and the result of the Beggs and Skeels (2006) post-July 2000 dividend drop-off study (0.57) to arrive at 0.655;
- thirdly, rounding the average of the tax statistics and dividend drop-off studies (0.655) to arrive at 0.65.

83. The applicants submit that the AER was in error in a number of ways. The most important can be summarised as follows:

- the AER averaged “apples and oranges”; that is, the AER was in error to average an upper bound for theta derived from a tax statistics study with a point estimate provided by a dividend drop-off study;
- the AER failed to recognise that the estimate from Handley and Maheswaran (2008) involved an assumption about the utilisation rate, rather than an empirical estimate of it; and
- the AER wrongly placed no reliance on an estimate of 0.23 from the SFG 2010 dividend drop-off study. (The SFG 2010 study was the result of a number of iterations as reservations by the AER were serially addressed. Those iterations are hereafter referred to as “the SFG study” because the basic methodology and data set

were progressively amended rather than fundamentally changed.)

84. A number of related objections were raised to the AER's approach, some subsidiary to those already mentioned and some supplementary to them, including:

- the use of a simple average of figures for two periods in Handley and Maheswaran (2008), when that study itself provided an estimate for the combined period;
- reliance upon Handley and Maheswaran (2008) without it being subjected to scrutiny similar to that applied to the SFG study;
- rejection of a Synergies 2009 tax study on the basis of erroneous advice about it;
- failing to take account of tax laws which require, in effect, that a shareholder must hold a shareholding from which a franked dividend is derived for 45 days before being able to gain the benefit of a tax off-set.
- the claimed implication of the AER's estimate that foreign investors would accept a lower return on equity than on debt; and
- a failure to consider general market practice regarding the value of theta.

85. It should be noted that, while the Beggs and Skeels (2006) study did not come under direct attack, questions about it did arise, especially in the light of the scrutiny to which the SFG study was subjected by the AER. These questions will need to be considered by the Tribunal.

86. Each applicant shared the key set of objections to the AER's approach. The AER's alleged errors were couched variously as errors of fact, wrong exercises of discretion, and reasoning that was illogical or arbitrary, rendering the decision unreasonable.

87. As observed (par [52] above), the Tribunal accepts the AER's submissions and finds that an error of fact occurred in the making of the distribution ratio, one of the two parameters from which gamma is derived. The Tribunal agrees that the AER was in error regarding the distribution rate. The Tribunal needs also to decide whether to accept submissions by the applicants that the AER was in error in respect of the utilisation rate, theta.

88. The applicants submitted that the Tribunal should conclude that the best estimate

of theta is 0.23. The Tribunal agrees with the applicants that if it did so conclude, then it would follow — the value 0.23 being so far removed from the value 0.65 — that persuasive evidence existed to justify a departure from the SORI value of gamma.

89. While, as explained below, the Tribunal has not at this stage decided that it should substitute the value of 0.23 for theta, it nevertheless considers that the AER erred in its conclusion that there was not persuasive evidence justifying a departure from the value of theta. The Tribunal is of opinion that the value of theta needs to be re-examined with the benefit of further submissions from the parties.

90. The Tribunal first considers the main submissions regarding error, with some comments on the further submissions where appropriate.

#### **The Tribunal's finding regarding theta**

91. The AER accepted that utilisation rates derived from tax statistics provide an upper bound on possible values of theta. Setting aside the manner in which the AER derived a value from the tax statistics study, it correctly considered that information from a tax statistics study was relevant. However, its relevance could only be related to the fact that it was an upper bound. No estimate that exceeded a genuine upper bound could be correct. Thus the appropriate way to use the tax statistics figure was as a check.

92. In fact the figure that the AER derived from Handley and Maheswaran (2008), 0.74, far exceeded any estimate for theta from empirical studies and, in particular, the estimate from Beggs and Skeels (2006), 0.57, on which the AER relied. Thus the tax statistics figure did no more than confirm that the Beggs and Skeels (2006) figure was not to be ruled out as being too high, ie higher than the correct figure could possibly be.

93. How then did the AER make its error of logic? The relevant upper bound from the Handley and Maheswaran (2008) tax statistics study was that for the post-July 2000 period. This is the period during which franking credits have been able to be used in full, even if they exceed the investor's tax payable, through their provision as a rebate. This aspect of the tax law is still current and hence applies to the task of

estimating theta and gamma for the purposes of the Rules. It could be expected to result in higher utilisation rates than heretofore. The Handley and Maheswaran (2008) estimate for the period was 0.81.

94. The AER, recognising that this was an upper bound on the value of theta for the relevant period, decided to be "conservative" by adjusting the figure downwards. As explained, it did so by averaging 0.81 with the lower figure of 0.67 that Handley and Maheswaran (2008) estimated for the period 1988-2000.

95. But this simple averaging adjustment has no logic to it and fails to accord each Handley and Maheswaran (2008) estimate its correct interpretation as an upper bound applying to a period. The fact that the AER chose a simple average rather than using the Handley and Maheswaran (2008) estimate for the combined period 1988-2004 is immaterial to the AER's error, since any downward adjustment to a properly derived upper bound would be inappropriate as a means of deriving an estimate of theta.

96. The Handley and Maheswaran (2008) tax statistic study ignores tax law to the effect that a resident taxpayer who holds shares for less than 45 days is unable to redeem a franking credit arising on the shares and assumed, erroneously, that from July 2000 every resident taxpayer would, "consistent with investor rationality" fully redeem a franking credit arising on the shares held by the taxpayer. However, even in the absence of this error, it seems likely that the utilisation rate derived from a tax statistics study of this type would still be considerably higher than the Beggs and Skeels (2006) estimate, and hence could have no effect on that estimate's reliability or usefulness.

97. It is worth noting that McKenzie and Partington 2010 prepared for the AER states the following in relation to using both taxation and dividend drop-off studies:

"Ex-dividend studies and taxation studies however, both have limitations. Ex-dividend studies have substantial measurement and estimation issues and they involve analysis of trades in a restricted window. Taxation studies present results that apply across a

broad sweep of investors, but they are subject to measurement problems (this has proven to be less of an issue since the introduction of the simplified tax system). Furthermore, the link between taxation statistics and the market value of imputation credits remains indirect. Therefore, neither type of study is likely to provide an accurate and definitive estimate of gamma on its own. Given the uncertainty surrounding the estimates of gamma, we argue that it is preferable to consider evidence from multiple sources. This means considering results from both types of study and, where multiple studies of the same type are available, considering the results across these studies.

.....

Given the problems inherent in estimating gamma using either taxation or ex-dividend studies, we argue in favour of a balanced approach. Since the best estimation techniques are beset with problems, the most logical approach is to consider the evidence on balance across all available sources. In this respect, the AER's approach of considering both ex-dividend and taxation statistics has merit, but we would recommend a broader range of studies to triangulate the evidence considered by the AER."

98. The AER relied on these statement as justification for its averaging of figures from the two types of studies. But it is immediately seen that the statements cannot underpin the AER's specific approach. They merely argue for a balanced approach considering evidence from both types of study.

99. As to the SFG study estimate of 0.23 for theta, the applicants were able to provide a report by Associate Professor Skeels, the co-author of Beggs and Skeels (2006). The report, entitled: Response to Australian Energy Regulator Draft Determination, 13 January 2010, (Skeels 2010) unequivocally endorsed the SFG study estimate of 0.23 for theta. As stated above, the Tribunal is unable at this stage to embrace that view.

### **Dividend Drop-off Studies — Theoretical Basis**

100. The simple theoretical basis of dividend drop-off studies is the starting assumption that an investor has the choice whether to buy a share immediately before a dividend is paid and thus receives the share and the gross dividend (the cash dividend together with any franking credit), or buy it immediately after the dividend is paid, thus receiving only the share and missing out on the (gross) dividend. If the change in share price on payment of the dividend, the dividend drop-off, were, say, less than the gross dividend, then the investor would have been able to buy the share cum-dividend and sell it immediately the dividend was paid and make a profit. But other investors would reason the same way, driving the cum-dividend share price up, or the ex-dividend price down, to the point where no such arbitrage profit could be made. Thus, the simple model is:

$$P^C - P^x = D + F$$

where  $P^C$  is the price cum-dividend,  $P^x$  is the price ex dividend,  $D$  is the cash dividend and  $F$  is the franking credit (which could be zero).

101. Of course, this simple model contains a number of assumptions. First, there must be no transactions costs. Secondly, it takes no account of taxes payable by the investor. This appears to be equivalent to assuming that the tax on the (gross) dividend is the same as any tax on capital gain. Thirdly, it is assumed that the share price is not subject to any other influence over the immediate period of the payment of the dividend. Fourthly, it appears to assume that share prices are effectively set by all shareholders who are eligible to benefit from an imputation credit, when two classes of shareholders, overseas taxpayers and those who have not held a relevant shareholding for more than 45 days, are not so eligible.

102. The assumption that the share price is not subject to any other influence over the immediate period of the payment of the dividend would by no means be unreasonable if the share price could be measured from instant

to instant before and after the dividend is paid, but in practice the share price change may be measured from the closing price on one day to the opening price on the next day. (Incidentally, it is not clear from the materials before the Tribunal exactly when the share price change, the dividend drop-off, was measured in relation to each dividend event by Beggs and Skeels (2006) or the SFG study.)

103. Authors of reports on dividend drop-off models have made various adjustments for these and other factors.

104. In the present context, the most important departure from the assumptions of the simple model described is to allow for the fact that investors may not value cash dividends and franking credits to their full dollar values, or to the same dollar value for each. This is where  $\theta$  (theta) comes in.

#### The Beggs and Skeels (2006) study

105. The Beggs and Skeels (2006) study underpinned the SORI estimate of theta and hence gamma.

106. Beggs and Skeels (2006) used data for the period 1 April 1986 to 10 May 2004 from a Commsec Share Portfolio database. The data are proprietary and have not been used in the SFG study or otherwise relevantly been made available. The study estimated several models, but for present purposes the main features are as follows:

- The method of least squares regression is used.

- The dependent variable, which is sought to be explained, is the dividend drop-off,  $p^c - p^x$ . This is not the exact notation used by Beggs and Skeels (2006), who also did not use the symbol  $\theta$  (theta). Different authors use different notations.

- The dividend drop-off, as the dependent variable, is regressed against two so-called independent or explanatory variables: the amount of the cash dividend,  $D$ , and the amount of the franking credit,  $F$ .

- Data are available for the relevant share prices, dividends and franking credits for individual dividend events, ie cases where a particular share paid a dividend (and, in the general case, a franking credit, which could be zero).

- In statistical terms, the regression procedure involves assuming that for each dividend event the dividend drop off is equal to the sum of four terms: a constant ( $\alpha$ ), the cash dividend in that case multiplied by some unknown number ( $\delta$ ), the franking credit in that case multiplied by some other unknown number ( $\theta$ ), and a disturbance or error term ( $\varepsilon$ ) that captures all other factors that influence the dividend drop-off, apart from the cash dividend and the franking credit. That is,

$$P_i^c - P_i^x = \alpha + \delta D_i + \theta F_i + \varepsilon_i$$

where  $i$  is an index that runs through all the dividend events, ie all the sets of observations of a dividend drop-off.

- It is assumed that the same relationship holds for each and every dividend event. That is,  $\alpha$ ,  $\delta$  and  $\theta$  (alpha, delta and theta) are assumed to hold the same values for every dividend event. The values of  $\varepsilon_i$  are not observed.

$$\hat{\varepsilon}_i = [P_i^c - P_i^x] - (\hat{\alpha} + \hat{\delta} D_i + \hat{\theta} F_i)$$

107. Beggs and Skeels (2006) call  $\delta$  the cash dividend drop-off ratio (although they use a different symbol). It represents the value per

The estimation procedure seeks to estimate the values of  $\alpha$ ,  $\delta$  and  $\theta$ . The method of ordinary least squares, a method of best fit, minimises the sum of the squares of the residuals. In algebraic terms, the estimates of  $\alpha$ ,  $\delta$  and  $\theta$  are designated  $\hat{\alpha}$ ,  $\hat{\delta}$  and  $\hat{\theta}$ . The residuals are defined as

dollar that the investor places on a cash dividend. Naturally, it is expected to be less than or equal to one. Note that it is assumed to

be the same for all dividend payments on all shares. Thus the estimate of  $\delta$  will represent an average drop-off ratio for cash dividends across all the data. Similarly for  $\theta$ , the franking credit drop-off ratio. In the AER's decisions,  $\theta$  is called the franking credit utilisation rate. There was no dispute among the parties that the Beggs and Skeels (2006) franking credit drop-off ratio estimate is an estimate of the franking credit utilisation rate used by the AER in estimating gamma.

108. Note also that on the theoretical foundation of the model,  $\alpha$  would be expected to be zero. However, estimating  $\alpha$  rather than setting it to zero may be necessary for the validity of subsequent statistical hypothesis testing.

109. One feature of the model is immediately apparent. A fully franked dividend is three-sevenths of the cash dividend. This is a result of the company tax being at the rate of 30 per cent. As a consequence, if all the dividend events represented cases where a fully franked dividend was paid, then we would have  $F_i = 3/7D_i$  and we could substitute for  $F_i$ , leaving only one explanatory variable,  $D_i$ .

110. Obviously that would leave no estimate for the drop-off ratio for franking credits. In fact, some dividends are either partially franked or not franked at all. (According to a study provided by ETSA entitled: Using Stock Changes to Estimate the Value of Dividend Franking Credits, by D Bellamy and S Gray, 3 March 2004, a little over three-quarters of dividends are fully franked.) Consequently, it is possible to estimate the model. However, because most dividends are fully franked, there is a high degree of correlation between cash dividends and associated franking credits.

111. This correlation between explanatory variables is called multicollinearity, and it causes difficulties in statistical inference.

112. Before discussing multicollinearity, another feature of the model should be mentioned. Share prices vary greatly between companies, depending simply on the number of shares on issue compared to the market capitalisation of the firm. At any given time share prices across firms vary from a few cents up to tens of dollars and more. Dividends per share vary similarly, for obviously a five per

cent dividend on a \$1 share is five cents, but on a \$50 share is \$2.50.

113. This means that in the model there is a large range in magnitudes of the observations, so for illustrative purposes we could have, for the 23rd and 96th observations, say,

$$50.00 - 47.45 = 2.55 = \alpha + 1.75 \delta + 0.75 \theta + \varepsilon_{28}$$

and

$$1.00 - 0.96 = 0.04 = \alpha + 0.035 \delta + 0.015 \theta + \varepsilon_{96}$$

where in each case the cash dividend was fully franked. This is a reminder that the  $\varepsilon_i$  are unobserved. Because the observed values where  $i = 23$  are around 50 times those where  $i = 96$  in this illustrative example, the unobserved  $\varepsilon_{28}$  and  $\varepsilon_{96}$  are likely to be similarly of very different magnitudes.

114. This is a numerical example of the fact that, in this model formulation, the variances among the error terms are likely to range greatly in magnitude. In statistical terms, the model is likely to be subject to perhaps severe heteroscedasticity. (The case where the error terms have the same variance is called homoscedasticity.) Heteroscedasticity causes problems in statistical inference. In particular, it makes estimates of standard errors suspect. It can be allowed for by using the method of generalised least squares instead of ordinary least squares. In that case, the residuals are adjusted before finding the least sum of squares. However, the variances need to be known, or at least estimated.

115. Beggs and Skeels (2006) did this by assuming that the error variance is a linear function of company size, gross dividend and cum-dividend price. They estimated this regression and used the estimates of the variances thus found in the generalised least squares regression of the main model. The Tribunal has no material before it to judge the utility of this procedure in dealing with the problem of the wide range of share prices described above.

116. From the materials before the Tribunal, it appears to be accepted that the usual method of estimating the dividend drop-off model is to divide both sides of the equation by the cum-dividend price, giving



$$\frac{P_i^c - P_i^x}{P_i^c} = \alpha + \delta \frac{D_i}{P_i^c} + \theta \frac{F_i}{P_i^c} + \varepsilon_i$$

where the intercept and error terms are now the previous intercept and error terms divided by  $P_i^c$ .

117. In the illustrative example we have

$$0.051 = \alpha + 0.035 \delta + 0.015 \theta + \varepsilon_{28}$$

and

$$0.040 = \alpha + 0.035 \delta + 0.015 \theta + \varepsilon_{96}$$

118. It can be seen that this simple transformation brings the dependent and explanatory variables to ratios that are all of roughly the same order for all values of  $i$ , ie all dividend events (even if the gross dividend were different from five per cent, as in the example). It will have the same effect on the error terms. This should itself greatly reduce heteroscedasticity. It is not clear why Beggs and Skeels (2006) did not follow this usual procedure.

119. A further aspect of the model deserves attention. The theoretical basis of the simple model, from which the Beggs and Skeels (2006) model is an extension, relied on an arbitrage argument. That argument is somewhat difficult to pin down.

120. It seems to be based on the theoretical construct of an arbitrageur being able to choose between the profit to be had by buying a share cum-dividend and selling it ex-dividend. But in fact the franking credit is unable to be used unless the share is held for 45 days. This gives rise to some interesting questions which were not canvassed before the Tribunal and which only cause further qualms about the results of dividend drop-off studies.

121. How is the share price set? In economic language, who are the marginal investors whose transactions set the price? It might be thought that it is traders, indeed arbitrageurs, who fit that description, valuing the share at just above or below its current price and being prepared to transact in it if it departs just enough from the "fair value" to cover their costs of trading (which may be very small).

122. But as explained, it is these transactors who are unable to benefit at all from franking credits (unless some scheme to avoid the

intentions of the tax legislation allows some partial benefit to be obtained). In that case, it might be unsurprising to find that estimation of share price drop-offs around payment of dividends shows very low valuations of franking credits. But is that valuation the one that is relevant and appropriate to investors in the regulated firm?

123. Apart from this question, the capital gains tax implications of an arbitrageur's calculation need to be considered. It is plausible, and may even be clear, that the arbitrageur faces the same marginal tax rate on capital gains as on cash dividends. However, this was not explored in the models presented to the Tribunal.

### Multicollinearity

124. The above digression on the topic of heteroscedasticity is symptomatic of the subtleties and estimation difficulties presented by dividend drop-off studies. These are alluded to in the passage from McKenzie and Partington 2010 quoted above.

125. However, it is multicollinearity that took up a considerable part of the submissions to the Tribunal. The problem with multicollinearity is that it tends to cause large standard errors for the parameter estimates. Large standard errors mean that the true value of the parameter may lie a relatively large distance from the estimated value. That is, the confidence interval is large, and it is difficult to have a reasonable degree of confidence in the estimate.

126. With certain assumptions, least squares regression can support statistical hypothesis testing. With multicollinearity, it may be difficult to reject the hypothesis that the parameter is different from zero. That is the same as saying that it may be difficult to conclude that the relevant explanatory variable in fact explains anything.

127. In the case of dividend drop-off studies, multicollinearity is generally acknowledged to exist and to cause large standard errors (large confidence intervals) around the estimates of the value theta (and for that matter around the estimate of the cash dividend drop-off ratio). By

contrast, there may be a high degree of confidence around the drop-off ratio for the gross dividend.

128. This, of course, accords with common sense. The theory of arbitrage provides a high level of expectation that the share price drop-off will be largely explained by the gross dividend. But since the cash dividend and the franking credit are highly correlated, it will be difficult to differentiate the influence of each of them separately.

129. Researchers appear to agree that the only “solution” to strong multicollinearity is a large data set.

130. Beggs and Skeels (2006) acknowledged multicollinearity as an issue but said that they did not believe it was a major cause for concern in their data set. In the light of other researchers’ comments and experience, the fact that their estimates did not have higher standard errors is surprising, although their standard error for theta for the period 2001-04 was by no means small.

131. The Beggs and Skeels (2006) data set was said to have been pre-filtered by Commsec and was subsequently further filtered by the authors in a manner they describe. No material was before the Tribunal regarding the nature of the Commsec filtering or the effects of the filtering by the authors. However, from the description given, it seems unlikely that the filtering would have reduced multicollinearity; nor was it intended to do so. One thing that can be said with some certainty is that any filtering reduces the size of the data set, which is exactly counter to the recommended approach to multicollinearity. Of course, filtering to deal with other problems may well be necessary.

### **The SFG Study**

132. It will be recalled that the SFG study went through a number of iterations as reservations by the AER were serially addressed. The lengthy and detailed scrutiny that the AER applied to the SFG study was appropriate in the context of its needing persuasive evidence to depart from the SORI estimate.

133. Moreover, the AER’s concerns were well-founded. They were related to high standard errors, questionable filtering techniques, and the large impacts filtering had

on the reliability of the estimates. It is unnecessary to track that process in detail, but it is necessary to consider the AER’s remaining concerns at the end of the process, leading it to disregard the SFG estimate. (There is no question but that the AER did consider the SFG reports carefully at each stage. But equally clearly, in the end it placed zero weight on the SFG estimate.)

134. It is important to note is that the SFG study sought to replicate the Beggs and Skeels (2006) study using a more recent, longer and larger, data set. The reasons for that approach, which appear to have given rise to certain limitations in the SFG study, are not clear on the materials before the Tribunal. The possible need for a somewhat different approach is addressed below.

135. In particular, the SFG study followed Beggs and Skeels (2006) in using the price drop-off as the dependent variable rather than the ratio of the price drop-off to the cum-dividend share price. (The author of the SFG study, Professor Gray, was co-author of a 2004 paper that had stated that the latter was the conventional approach.)

136. The AER’s overriding concerns with the SFG study were that the results jumped around a lot (to use a statistical term of art) whenever an adjustment was made to the data set, and that even by the end of the process, the estimates had comparatively large standard errors.

137. The Tribunal considers it is not a damning criticism of the study that its standard errors were large, given the inherent problems with the data set and the estimation procedure, especially multicollinearity. That is not to downplay the problem, but rather to acknowledge it. There is no obvious way of reducing the multicollinearity; no adjustment that SFG should clearly have made but failed to. The question is rather: why did the Beggs and Skeels (2006) estimates have smaller standard errors? Unfortunately, due to the proprietary nature of the data set and lack of review related material available to the Tribunal regarding the nature of the Commsec filtering process, that question cannot be answered. A bigger question is whether a well-designed

dividend drop-off study can shed more light on the utilisation rate.

138. The reliability of the data set was also a valid concern. While ETSA produced the Skeels 2010 report that endorsed the SFG study and regarded the AER's concerns as misplaced, the Tribunal does not take the same view. In fact, it considers that the Skeels 2010 report was not completely to the point of the AER's concerns and was overly permissive of problems in the SFG study. That said, on the information presently available to it, the Tribunal does not consider that the AER's requirement that the SFG data set be adjusted to remove special dividends was well based, at least until some firm economic case is made for doing so.

139. The Tribunal considers that the AER made no error in refusing to substitute the SFG study results for those of Beggs and Skeels (2006). Nor does it consider that at this stage it is appropriate to accord the SFG study equal weight with Beggs and Skeels (2006) and average the results from the two studies, as was one option proposed by ETSA. It also considers that the results of Beggs and Skeels (2006) must be regarded with something approaching equal caution to that applying to the SFG study.

140. A few words may be useful regarding the helpful material SFG provided late in the process showing a joint confidence region for pairs of estimates of the cash dividend and franking credit drop-off ratios. This is an ellipse, within which no pair of point estimates can be distinguished from any other pair as having higher statistical confidence attached to it.

141. The joint confidence region covers a very wide range of pairs of parameter estimates, including those of both Beggs and Skeels (2006) and the SFG study.

142. It can be argued that some parts of the region can be disregarded, eg where the franking credit estimate is less than zero, it being implausible that an investor would consider receipt of a franking credit to be a financial cost rather than a benefit. Similarly, the area corresponding to a cash dividend parameter greater than one might be disregarded. This has the effect of restricting the relevant part of the region to values for the

cash dividend parameter between 0.7 and 1.0; depending on the value of that parameter estimate, the franking credit parameter estimate could be between zero and almost 0.8.

143. SFG argued that setting the cash dividend estimate equal to one, said to be consistent with the capital asset pricing model (CAPM), which is elsewhere part of the revenue determination framework, corresponds to a franking credit estimate of only 0.08. SFG's "unconstrained" estimate (ie the output from its model) was 0.98 for the cash dividend and 0.23 for the franking credit.

144. The Tribunal is uncomfortable with adding a new criterion (consistency with the CAPM) after parameters have been estimated. That equates to estimating not the parameters but the joint confidence region and then preferring some point within it on the basis of information that was not used in estimating the joint confidence region. No material regarding the statistical validity of that procedure was presented. Moreover, the argument could be seen to involve proceeding on the basis that, since the "best" estimate of the franking credit parameter, 0.08, seems so low, the higher estimate of 0.23 should be regarded as acceptable.

## CONCLUSION

145. The Tribunal is now in the position where it has found error by the AER in its treatment of both the distribution ratio,  $F$ , and the franking credit utilisation rate,  $\theta$ . However, it is not yet in a position to correct those errors. Rather, it requires a report from the AER that addresses the errors found and the further comments of the Tribunal.

146. In respect of  $\theta$ , the Tribunal seeks a report that:

- proposes an approach that correctly uses tax statistics studies and dividend drop-off studies;
- reviews dividend drop-off studies from as many sources as possible to see whether confident use can be made of any of them; and
- if possible, provides results from a newly-commissioned dividend drop-off study that is "state of the art".

147. To achieve the last of these, the Tribunal proposes, and subject to submissions as to appropriate directions by the parties, to direct that the AER seek a re-estimation by SFG of the parameters without the constraint that the study replicates the Beggs and Skeels (2006) study. The AER should seek expert statistical or econometric advice to review the approach prior to the estimation proceeding. The new study should employ the approach that is agreed upon by SFG and the AER as best in the circumstances. Consideration should be given to any possible enhancements to the data set.

148. The Tribunal would expect that, unless compelling reasons to the contrary are adduced:

- the dependent variable will be the share price drop-off ratio, rather than the drop-off itself;
- special dividends will not be removed from the data set; and
- any filtering will be based on economic reasoning rather than removal of statistical outliers per se.

149. The Tribunal has found some deficiencies in its understanding of the foundations of the task facing it, and the AER, in determining the appropriate value of gamma. These issues have not been explored so far because they have not arisen between the

parties, who appear to be in agreement about how the Rules should be interpreted regarding the treatment of corporate income tax. They may be matters that the Tribunal will take up in its further decision in these matters; or they may best be left until the next WACC review. Indeed, they may go to the basis for the Rules themselves.

150. The Tribunal would be assisted in its consideration of the issues before it if the AER were to provide relevant extrinsic material explaining:

- (a) the rationale for including the gamma component in the formula for calculating the estimated cost of corporate income tax; and
- (b) how it relates to the rest of the building blocks, especially the rate of return (cl 6.4.3(a) and cl 6.5.2(b) of the Rules).

151. The Tribunal provides these reasons so they may be considered by the parties. The Tribunal would expect that by 4:00pm on 28 October 2010 the parties inform the Tribunal as to the extent of agreement reached as to directions to implement the matters to be further considered by the Tribunal. If agreement cannot be reached, a directions hearing will need to be convened if disagreement cannot be otherwise resolved by the Tribunal on the papers without the need for an appearance.

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**[¶42-330] APPLICATION BY JEMENA GAS NETWORKS (NSW) LTD**  
**(2010) ATPR ¶42-330**

**Court citation: [2010] ACompT 8**  
**Australian Competition Tribunal**  
**13 October 2010**

*Trade practices — Access arrangement for gas distribution networks — Application for leave to review regulator's decision — Grounds for review — Right to intervene — Whether prospective interveners had "sufficient interest" in the decision being reviewed — National Gas Law, s 245, 254.*

**Jemena Gas Networks (NSW) Ltd (JGN) applied to the tribunal, under s 245 of the National Gas Law, for leave to review a full access arrangement decision made by the Australian Energy Regulator (AER). The grounds for review included:**

- (a) the calculation of the debt risk premium**
- (b) the value of the assumed utilisation of imputation credits**
- (c) calculation of the opening capital base and forecast capital expenditure**
- (d) the deduction of an amount from the opening capital base representing a return on the difference between estimated and actual capital expenditure, and**