frontier economics

An appropriate regulatory estimate of gamma

Report prepared for Icon Water | 27 April 2022

Disclaimer

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1 Executive Summary

1. Icon Water has asked Frontier Economics to provide advice on the estimate of gamma (a parameter that measures the value of imputation tax credits) that should be adopted by the Independent Competition and Regulatory Commission (ICRC) when setting Icon Water's regulated water and sewerage prices for the 2023-28 regulatory period.

2. This report makes one key point: The gamma parameter should be interpreted (and estimated) in a way that is consistent with its role in the ICRC's regulatory framework.

3. Our recommendation is simply that the ICRC should make a clear statement about the role of gamma within its regulatory framework, and then estimate gamma accordingly.

4. The framework that the ICRC has adopted for setting the allowed return on equity is as follows:

    a The ICRC first estimates the amount of dividends and capital gains that would be just sufficient to compensate equity investors.

    b The ICRC then recognises that the equity holders will also benefit from the receipt of dividend imputation franking credits. The ICRC then reduces the dividends and capital gains that the equity investors would otherwise receive by the assumed value of franking credits.

5. That is, gamma plays the role of determining the amount by which the allowed dividends and capital gains will be reduced to reflect the value of the imputation credits that investors will receive. It is a form of relative valuation or an 'exchange rate' – the rate at which investors would forego dividends and capital gains in order to receive imputation credits. Thus, gamma must reflect the value of credits relative to the dividends and capital gains that those credits are replacing.

6. Because the market value interpretation (and estimate) of gamma is consistent with the role of that parameter within the ICRC's regulatory framework and models, that is the interpretation (and estimate) that the ICRC should adopt.

7. The alternative would be for the ICRC to explain that its regulatory framework does not use the estimate of gamma for the purpose of reducing the dividends and capital gains that would otherwise be available to equity holders.

2 Background and context

2.1 ICRC review of the value of dividend imputation franking credits, gamma

8. The ICRC's most recent review of its approach to estimating the weighted average cost of capital (WACC) was completed in April 2021. In that review, the ICRC noted that the gamma parameter (the value of dividend imputation franking credits) did not have a direct role in determining the WACC, but only an indirect role via its impact on certain estimates of the market risk premium (MRP) parameter.

9. For this reason, the ICRC did not investigate the gamma parameter in its 2021 review, leaving that task to be completed during the current regulatory review for Icon Water. In this regard, the ICRC stated:

> *While we do not use gamma in calculating the WACC, the value of imputation credits is correlated with the market risk premium (MRP). Regulators use data on observed equity returns after corporate tax to estimate the MRP. However, they do not take account of the franking credit benefits that Australian investors receive. To take account of this benefit, the MRP estimates are adjusted for dividend imputation.*
>
> *Icon Water agreed that there is an interrelationship between gamma and the MRP and supported our intention to take the interrelationship into account when determining the estimate of the MRP. Icon Water intends to give its views on the values of imputation credits and of the MRP during the next price investigation.*
>
> *We made a draft decision to not consider the value of imputation credits in this review because is not an input parameter for calculating the WACC. We planned to take the interrelationship between gamma and the MRP into account in determining the values for the MRP and gamma in the next price investigation…*
>
> *We have decided to confirm our draft decision.*[1]

10. This report sets out our views about the role of the gamma parameter within the ICRC's regulatory framework. Having established the role that the gamma parameter plays within the ICRC's regulatory framework, we then consider the appropriate method for estimating gamma in a way that is consistent with that role.

2.2 A brief overview of the ICRC regulatory framework

11. The framework that the ICRC has adopted for setting allowed returns is as follows:

    a The ICRC first estimates the nominal WACC – the allowed return on capital that would be just sufficient to compensate debt and equity investors in a benchmark efficient firm.

    b The ICRC provides that allowed return in two forms:

[1] ICRC, April 2021, *Final report: Review of methodologies for the weighted average cost of capital*, p. 15.

i Some of the allowed return is provided in the form of a cash allowance via the post-tax revenue model (PTRM). This cash flow is used to make interest payments to debt investors and to provide cash dividends to equity investors; and

ii Some of the allowed return is provided in the form of indexation of the regulatory asset base (RAB indexation). In particular, the RAB is increased to reflect observed inflation each year. The benefit of this RAB indexation accrues to equity holders in the form of a capital gain – a RAB that is higher than it would otherwise be.

Thus, the allowed return on debt capital is paid as cash interest payments to debt holders, and the allowed return on equity capital is paid as a mixture of cash dividends and capital gains to equity holders.

c The final step is for the ICRC to recognise that the equity holders will also benefit from the receipt of dividend imputation franking credits. This step involves the ICRC reducing the dividends and capital gains that the equity investors would otherwise receive by the assumed value of franking credits, represented by the gamma parameter.

12. By way of a simple illustrative example, suppose the total amount of equity capital is $1,000 and the ICRC has determined that the required return on equity is 7%. Thus, in the first stage of its process, the ICRC will compute a combination of cash allowances (dividends) and RAB indexation (capital gains) that totals $70. That is, a total of $70 of dividends and capital gains would be just sufficient to compensate equity investors for the risk they face in committing equity capital to the benchmark firm.

13. The ICRC then recognises that equity holders will also receive dividend imputation franking credits. If the equity investors were allowed to retain the benefit of those credits, they would over-recover – they are already made whole by the $70 of dividends and capital gains, and would over-recover by the value of any franking credits.

14. Thus, the ICRC will reduce the allowed dividends and capital gains to reflect the assumed value of franking credits. For example, if the ICRC considers that the franking credits received by equity holders would have a value equivalent to $10.50 of dividends and capital gains, it will reduce the allowed dividends and capital gains by $10.50. In this case, the $59.50 of allowed dividends and capital gains, plus the franking credits that have a value equivalent to $10.50 of dividends and capital gains, produce a total 'package' of $70 of return – just sufficient to make the equity holders whole.

3 Market value or Redemption/utilisation rate?

3.1 Two parameters to be estimated

15. In the Australian regulatory setting, there is broad agreement between all regulators and experts that gamma (γ) should be estimated as the product of two parameters: $\gamma = F \times \theta$. The first parameter (F) is the distribution rate – the proportion of created imputation credits that are attached to dividends and distributed to shareholders. The second parameter (θ, or 'theta') is variously defined as "the value of distributed imputation credits" or as "the utilisation rate."

16. While there is some dispute about how each component of gamma should be interpreted and estimated, there is broad agreement that gamma is to be estimated as the product of these two components.

17. In this regard, we note that the ICRC adopts the standard approach of estimating gamma as the product of these two components.[2]

3.2 The estimate of theta should reflect its interpretation

18. In the Australian regulatory setting, two different interpretations of the second parameter, theta, have been proposed:

    a A **market value** interpretation – the amount of dividends or capital gains that investors in general would be prepared to give up in order to receive a dollar of imputation credits; and

    b A **redemption proportion** interpretation – the proportion of distributed credits that might be redeemed by investors.

19. It logically follows that:

    a If the market value interpretation is adopted, we should use estimation methods that are designed to estimate the market value of credits relative to dividends and capital gains; and

    b If the redemption proportion interpretation is adopted, we should use estimation methods that are designed to estimate the proportion of credits that are (or are likely to be) redeemed.

20. In terms of estimation methods:

    a The most common approach to estimating the market value of franking credits is dividend drop-off analysis. This approach involves the analysis of stock market price data to estimate the extent to which franking credits are capitalised into the market price of Australian shares; and

[2] ICRC, *Final report: Regulated water and sewerage services prices 2018-23*, p. 122.

b The most common approach to estimating the redemption proportion is the 'equity ownership' approach, which uses Australian Bureau of Statistics (ABS) data to estimate the proportion of ASX listed shares owned by resident investors, all of whom are assumed to redeem all credits distributed to them.

21. The evidence demonstrates that estimates of the market value of credits (dividend drop-off estimates) are materially lower than estimates of the proportion of credits that might be redeemed (equity ownership estimates). For example:

a IPART adopts a market value estimate of theta of 0.35;[3] whereas

b The AER adopts a redemption proportion (equity ownership) estimate of theta of 0.65.[4]

3.3 Gamma should be interpreted (and estimated) according to its role within the regulatory framework

22. Logic requires that gamma be interpreted (and estimated) in a way that is consistent with its role within the regulatory framework.

23. As we have shown in the previous section of this report, the role of gamma within the regulatory framework is straightforward:

a The ICRC first estimates the total amount of dividends and capital gains that would have to be paid to the equity holders each year to provide them with an appropriate return on equity; and

b The ICRC then estimates the amount by which the allowed dividends and capital gains should be reduced in relation to the value of franking credits. That is, because investors obtain some value from franking credits, the allowed dividends and capital gains are reduced.

24. Thus, within the regulatory framework, what is required is an estimate of the extent to which allowed dividends and capital gains can be reduced in relation to each dollar of imputation credits. That is the role of gamma – it is an estimate of the amount of dividends and capital gains that investors would be prepared to give up in order to receive a dollar of imputation credits.

25. The remainder of this section explains, in more detail, that within the regulatory framework, gamma represents the value of imputation credits relative to the dividends and capital gains they are deemed to replace. That is, gamma must be estimated in terms of the market value of credits relative to the allowed dividends and capital gains they are replacing.

3.4 A simple illustration

3.4.1 The value of credits relative to the allowed return on equity

26. To create a simple framework for analysing the key issue of what gamma actually means, we begin with the following analogy.

[3] IPART, February 2018, *Review of our WACC method*, pp. 81-83.

[4] AER, December 2018, *Rate of return instrument: Explanatory statement*, p. 311.

27. Consider an accountant with a charge-out rate of $70/hr who performs a task that takes exactly one hour. The accountant would then invoice the client for $70. Now suppose that the client is a resident of Malaysia and proposes to pay part of the bill in the form of 30 units of Malaysian currency. In this case, the accountant would note that each unit of Malaysian currency can be converted into 35 Australian cents (after all relevant fees and charges), so the 30 units of Malaysian currency are equivalent in value to AUD $10.50. Thus, the accountant would reduce the required payment of Australian dollars to $59.50. That is, the accountant would be indifferent between receiving $70 or $59.50 plus 30 units of Malaysian currency. Note that this calculation requires an estimate of the value of Malaysian currency relative to Australian dollars – how many Australian dollars would one give up in order to receive one unit of Malaysian currency.

28. Now consider the regulatory setting where a business has $1,000 of equity capital. Suppose that investors require a return on equity of 7%. In this case, the business would be allowed to charge prices so that it was able to provide a $70 return on equity (dividends and capital gains) to its shareholders.

29. Now suppose that the firm's shareholders will also be provided with $30 (face amount) of imputation credits. Under the regulatory framework, the allowed revenues will be reduced by the 'value' of those credits. This means that the allowed return on equity provided to the shareholders will be reduced by the estimated value of the credits. Thus, what is required is an estimate of the value of imputation credits relative to the dividends and capital gains that will be provided as the allowed return on equity. For example, if investors in aggregate value the receipt of a dollar of credits equal to the receipt of 35 cents of return on equity (dividends and capital gains), the relative valuation is 0.35 and investors would be left whole if their allowed return on equity was reduced by $10.50 in relation to the $30 of credits that they will receive. Again, what is required is an 'exchange rate' – the extent to which investors would be prepared to give up dividends and capital gains in order to receive a dollar of imputation credits.

30. In the regulatory setting, theta represents this relative valuation, or exchange rate. It encapsulates all of the reasons why imputation credits have a different value to investors in aggregate relative to the allowed return on equity (dividends and capital gains).

3.4.2 Why are imputation credits less valuable than allowed equity returns (dividends and capital gains)?

31. There are a number of reasons why imputation credits are less valuable to investors than dividends or capital gains, including:

    a Some credits are distributed to non-residents who cannot redeem them and therefore do not value them at all;

    b Some credits are distributed to resident investors who are prevented from redeeming them by the 45-day rule;

    c Some credits are distributed to residents who simply fail to redeem them;

    d Investors have to wait longer to receive any benefit from the credits – whereas dividends are available to investors immediately, the investor only receives a benefit from credits when their personal tax return is finalised after the end of the tax year;

    e There is a compliance and administration cost involved in tracking and redeeming credits that is not present for dividends and capital gains;

f Resident investors will rationally adjust their portfolios until the last dollar of credits they receive just offsets the cost they bear by concentrating their portfolio into franked dividend-paying stocks and away from what would otherwise be optimal. That is, it would be rational for a resident investor to keep tilting their investment portfolio towards stocks that pay franked dividends until the marginal value of the last franking credit was zero – where the benefit from receiving the franking credit was just offset by the cost of deviating from the otherwise optimal investment portfolio. Thus, the net benefit of the redeemed credits would, on average, be approximately half of the face amount – even for investors who are able to redeem credits.

32. For all of these reasons, and possibly others, the value to investors of imputation credits is lower than the value of the equity returns that the regulator allows the firm to provide in the form of dividends and capital gains. Theta represents the extent of this difference – the relative valuation, or ratio of the value of the credits that investors receive to the value of the allowed return on equity that they must give up under the regulatory model. That is, theta represents an exchange rate – the rate at which investors are willing to forego dividends and capital gains in order to receive imputation credits.

33. In the regulatory setting, it is not necessary to separately identify and quantify the various reasons why imputation credits are less valuable to investors than dividends and capital gains. What is required is an empirical estimate of the extent to which (for all of the various reasons) imputation credits are less valuable than dividends and capital gains. We explain below that dividend drop-off analysis provides just such an empirical estimate.

3.5 Which approach to gamma is consistent with the regulatory framework?

3.5.1 Analysis

34. In this section, we consider the question of whether consistency with the regulatory WACC framework requires:

a A market value estimate that reflects the value of franking credits relative to the dividends and capital gains that they replace; or

b A utilisation estimate of gamma that reflects the proportion of credits that might be redeemed.

35. In our view, the best way to consider this question is in the context of Dr Lally's reports for the AER and QCA. In this regard, we note that Lally's (2015 QCA)[5] Equation (1) shows that what is relevant is the extent to which imputation credits are capitalised into the stock price:

$$S_0 = \frac{DIV_1 + \theta \times IC_1 + S_1}{1 + R_e}.$$

36. This equation shows that the price of a stock at the beginning of the year is equal to the present value of:

a Dividends paid during the year;

[5] Lally, M., November 2015, *Review of Submissions on Gamma*, Report for the QCA.

b Theta times the face amount of imputation credits distributed during the year; and

c The stock price at the end of the year.

37. In this formula, R_e is the discount rate that capitalises the face amount of dividends and the future stock price into the current stock price. In the example above, R_e is the 7% required return on equity.

38. Of course, we cannot simply capitalise the face amount of imputation credits using the same discount rate because credits are clearly less valuable to aggregate investors relative to other components of return to equity holders. This is where theta comes in – it reflects the extent to which imputation credits are less valuable to investors relative to the other components of return. That is, theta measures the extent to which franking credits are capitalised into the current stock price relative to dividends (DIV_1) and capital gains (S_1).

3.5.2 Consistency with dividend drop-off analysis

39. To show that dividend drop-off analysis properly estimates theta as the relative value of credits, we note that Dr Lally's formula can be rearranged slightly as follows:

$$S_0(1 + R_e) - S_1 = DIV_1 + \theta \times IC_1.$$

40. Dividing all terms by the current stock price gives:

$$\frac{S_0(1 + R_e) - S_1}{S_0} = \frac{DIV_1}{S_0} + \theta \frac{IC_1}{S_0}.$$

41. This expression is entirely consistent with dividend drop-off regression analysis, which is performed as a regression analysis as follows:

$$\frac{S_0(1 + R_e) - S_1}{S_0} = \delta \frac{DIV_1}{S_0} + \theta \frac{IC_1}{S_0} + \varepsilon.$$

42. That is, in a dividend drop-off analysis, theta estimates the value of credits on a relative basis – exactly as required.

3.6 Conclusion in relation to the regulatory task

43. The regulatory framework operates in two steps:

a In the first step, the regulator estimates the total required return on equity. In this report, we use a simple example where the regulated firm has equity of $1,000 in its regulated asset base (RAB) and investors require a return on equity of 7%, in which case investors require a total return (consisting of dividends, capital gains and imputation credits) of $70.

b In the second step, the regulator deducts the 'value of imputation credits' and sets the allowed revenues so that the firm is able to pay the difference to investors in the form of dividends and imputation credits. For example, if the regulator estimates that the value of imputation credits to investors is $10.50, it will allow the firm to charge prices sufficient to provide an ex-imputation return on equity (i.e., dividends and capital gains) of $59.50.

44. That is, gamma plays the role of determining the amount by which the allowed dividends and capital gains will be reduced to reflect the value of the imputation credits that investors will receive. It is a form of relative valuation or an 'exchange rate' – the rate at which investors would forego dividends and capital gains in order to receive imputation credits. Thus, gamma must

reflect the value of credits relative to the dividends and capital gains that those credits are replacing.

45. Dividend drop-off analysis produces an estimate of precisely this – the value of credits relative to the dividends and capital gains that those credits are replacing. We note that this is entirely consistent with the formulas set out above in Lally (2015 QCA).

46. Because the market value interpretation (and estimate) of gamma is consistent with the role of that parameter within the ICRC's regulatory framework and models, that is the interpretation (and estimate) that the ICRC should adopt.

47. The alternative would be for the ICRC to explain that its regulatory framework does not use the estimate of gamma for the purpose of reducing the dividends and capital gains that would otherwise be available to equity holders.

4 The ICRC's previous consideration of gamma

4.1 Overview

48. In its 2018 determination for Icon Water,[6] the ICRC set out two rationales for its adoption of the redemption approach:

    a The redemption interpretation is consistent with the approach of Officer (1994); and

    b The Federal Court has held that it is open to the AER to adopt the redemption interpretation.

49. In this section, we explain that:

    a It would be a misleading and incorrect interpretation to suggest that Officer (1994) requires or even supports a redemption estimate of gamma. By contrast, Officer refers to gamma as representing the "market price" of franking credits and proposes that their value can be estimated via dividend drop-off analysis; and

    b The Federal Court decision provides that gamma should be estimated in a way that is consistent with its role within the regulatory framework.

50. In summary, we obtain little guidance from Officer (1994) or from the Federal Court decision. The most we can draw from these sources is that the ICRC should make a clear statement about the role of gamma within its regulatory framework, and then estimate gamma accordingly.

51. If the role of gamma within the ICRC's regulatory framework is to determine the amount by which the allowed dividends and capital gains will be reduced to reflect the value of the imputation credits that investors will receive (which it is), the ICRC should estimate gamma accordingly – as the value of credits relative to the dividends and capital gains that those credits are replacing.

52. Such an approach of estimating gamma to properly reflect its role within the regulatory framework would be consistent with both of the above sources.

4.2 The Officer (1994) definition of gamma

53. In its 2018 determination for Icon Water, the ICRC noted that Officer (1994)[7] has stated that:

> *Thus [gamma] is the proportion collected from the company which gives rise to the tax credit associated with a franked dividend. This franking credit can be utilized as tax credit against the personal tax liabilities of the shareholder. [Gamma] can be interpreted as the value of a dollar of tax credit to the shareholder.* [8]

[6] ICRC, *Final report: Regulated water and sewerage services prices 2018-23*.

[7] Officer, R. R., 1994, The cost of capital of a company under an imputation system, *Accounting and Finance*, 34, 1, 1-17.

[8] ICRC, *Final report: Regulated water and sewerage services prices 2018-23*, p. 122.

54. The ICRC has previously interpreted this passage as supporting the redemption interpretation rather than the market value interpretation:

> *In the Officer framework it is clear that the value of gamma depends on the proportion of company tax paid that is distributed as imputation credits attached to franked dividends and the proportion of distributed imputation credits that can be utilised by resident taxpayers to obtain a rebate on their tax. Many overseas investors in Australian companies would not be able to use the imputation credit to obtain a rebate for the company tax paid in Australia.* [9]

55. However, in the same paper, Officer (1994) states that:

> *[Gamma] can be interpreted as the value of a dollar of tax credit to the shareholder…Where there is a market for tax credits one could use the market price to estimate the value of [gamma] for the marginal shareholder, i.e. the shareholder who implicitly sets the price of the shares and the price of [gamma] and the company's cost of capital at the margin, but where there is only a covert market, estimates can only be made through dividend drop-off rates.* [10]

56. This passage from Officer would seem to make it very clear that gamma can be interpreted as a market value – the equilibrium price at which investors would trade franking credits in the market. Moreover, Officer makes particular reference to estimating this value using dividend drop-off analysis – the technique that is used to estimate the market value of franking credits.

57. In light of this 'market value' passage from Officer (1994), our view is that there is no basis for the conclusion that Officer (1994) supports a 'redemption' interpretation over a 'market value' or 'dividend drop-off' interpretation. Rather, Officer (1994) explicitly refers to the market price of credits and to the use of dividend drop-off estimates.

58. For this reason, we consider that the ICRC mischaracterised the contents of Officer (1994) in its 2018 determination for Icon Water:

> *Central to the disagreement about an appropriate value for gamma is the definition of gamma and its interpretation. The disagreement concerns whether it should be interpreted as a 'value of a dollar of tax credit to the shareholder', as defined by Officer, or a 'market value' (that can be estimated by dividend drop-off studies).*

59. It is clearly <u>not</u> the case that the Officer interpretation can be juxtaposed against the market value or dividend drop-off interpretation – because Officer (1994) specifically refers to gamma being the market price of credits and to the use of dividend drop-off estimation.

60. Our view is that a proper consideration of Officer (1994) would recognise the references to gamma representing the market price of franking credits and dividend drop-off estimation.

61. In our view, there is nothing in Officer (1994) that is inconsistent with our recommendation that the ICRC should make a clear statement about the role of gamma within its regulatory framework, and then estimate gamma accordingly.

[9] ICRC, *Final report: Regulated water and sewerage services prices 2018-23*, p. 122.

[10] Officer, R. R., 1994, The cost of capital of a company under an imputation system, *Accounting and Finance*, 34, 1, p. 4.

4.3 The Federal Court decision in relation to the National Electricity Rules

62. In its 2018 determination for Icon Water, the ICRC paid particular regard to the May 2017 decision of the Full Federal Court in relation to the National Electricity Rules (NER).[11] The background to that case is as follows:

    a Prior to 2013, the AER's practice was to estimate gamma as the market value of franking credits. The AER estimated the market value using dividend drop-off analysis;

    b In its 2013 Rate of Return Guideline, the AER proposed to change its interpretation of gamma, adopting an estimate of the redemption proportion rather than the market value;

    c In 2014, the AER proposed to use its 'redemption' estimate of gamma in determinations for a number of NSW electricity distribution businesses. The AER proposed to estimate the redemption proportion using the 'equity ownership' approach;

    d Those businesses pursued a merits review in the Australian Competition Tribunal, arguing that the AER's re-definition of gamma was inappropriate and that the market value interpretation (and market value estimates) should be maintained;

    e The Tribunal ruled that the AER's change to a 'redemption' estimate of gamma (estimated via the equity ownership approach) was inconsistent with the role of gamma in the regulatory framework and inconsistent with the requirements of the National Electricity Rules – and that a market value estimate must be used:

    > *We consider that, by placing most reliance on the equity ownership approach and effectively defining the utilisation rate as the proportion of distributed imputation credits available for redemption, the AER has adopted a conceptual approach to gamma that redefines it as the value of imputation credits that are available for redemption. This is inconsistent with the concept of gamma in the Officer Framework for the WACC which underlies the Rules, and with the objective of ensuring a market rate of return on equity by making an adjustment to the revenue allowance for taxation to account for imputation credits.*[12]

    f The AER sought a judicial review of the Tribunal's decision before the Full Federal Court.

63. For current purposes, the key issue considered by the Full Federal Court was the dispute about the proper interpretation of gamma:

    a The electricity distribution businesses argued that the Tribunal made no legal or process error in concluding that gamma should be interpreted (and estimated) as the market value of franking credits; whereas

    b The AER argued that the Tribunal had made a legal or process error in concluding that the market value interpretation was the only interpretation open to the AER. Rather, the AER proposed that it should also be open to the AER to adopt the redemption interpretation of gamma if it was appropriate to do so within the AER's regulatory framework.

[11] ICRC, *Final report: Regulated water and sewerage services prices 2018-23*, pp. 124-125.

[12] Australian Competition Tribunal, February 2016, Applications by Public Interest Advocacy Centre Ltd and Ausgrid, ACompT, 1, paragraph 1100.

64. The Court held that gamma must be interpreted (and estimated) in a way that is consistent with its role in the regulatory framework. Consequently, the AER should be free to adopt whatever interpretation of gamma is required to achieve such consistency.

65. In this regard, the Court observed that:

> *the Rules require consistency in the way the relevant building blocks interact*[13]

and that:

> *the expression "the value of imputation credits" is to be construed as a whole, in its context and having regard to the subject matter of the exercise. It would be an error to limit attention to the word "value" and give it a meaning in isolation.* [14]

and that:

> *The present context relates to a statutory model rather than the value of something which exists.* [15]

66. Thus, the Court concluded that the Tribunal had not properly considered the role that gamma plays within the AER's regulatory framework, but had instead focussed on the legal construction of the National Electricity Rules which prescribed that "gamma is the value of imputation credits."[16]

67. The Court concluded that:

> *It would be an error to limit attention to the word "value" and give it a meaning in isolation. In essence, we think this is what the Tribunal did.* [17]

68. That is, the Court's view is that the Tribunal did not properly consider the role that gamma plays within the AER's regulatory framework, but rather that the Tribunal focussed narrowly on the word "value" that appears in the NER definition of gamma. The Court found that the Tribunal erred in focussing on the legal construction of the word "value" rather than considering the role of gamma within the regulatory process.

69. This led the Court to set aside the Tribunal's ruling in relation to gamma.

70. In our view, the key implication of the Court's judgment in this case is that gamma must be interpreted (and estimated) in a way that is consistent with its role in the regulatory framework.

71. It would be wrong for a regulator to adopt a particular interpretation of gamma because of the way gamma is defined in legislation or rules, or because that is the interpretation used by some other regulator, or because that is the interpretation that it has adopted in the past.

[13] Federal Court of Australia, May 2017, Australian Energy Regulator v Australian Competition Tribunal, FCAFC 79, paragraph 752.

[14] Federal Court of Australia, May 2017, Australian Energy Regulator v Australian Competition Tribunal, FCAFC 79, paragraph 751.

[15] Federal Court of Australia, May 2017, Australian Energy Regulator v Australian Competition Tribunal, FCAFC 79, paragraph 753.

[16] National Electricity Rules r 6.5.3.

[17] Federal Court of Australia, May 2017, Australian Energy Regulator v Australian Competition Tribunal, FCAFC 79, paragraph 751.

72. Rather, the regulator must clearly identify the role of gamma within its regulatory framework and then adopt an interpretation (and estimate) of gamma that is consistent with that role.

5 Recommended approach

73. Our recommendation is that the ICRC should make a clear statement about the role of gamma within its regulatory framework, and then estimate gamma accordingly.

74. This means that the ICRC could decide either that:

    a Its regulatory framework uses the estimate of gamma to determine the extent to which it will reduce the dividends and capital gains that would otherwise be available to equity holders; or

    b Its regulatory framework uses the estimate of gamma for a different purpose, such that the allowed dividends and capital gains are not reduced in relation to the estimate of gamma.

75. If the ICRC decides the former, it follows that it should adopt a market value estimate of gamma – an estimate of the extent to which investors value credits relative to the dividends and capital gains that those credits will replace.

76. In our view, the best such market value estimate of gamma is 0.25. This figure is the product of a distribution rate of 0.7 and a theta of 0.35. That figure was adopted by:

    a The Australian Competition Tribunal in *Application by Energex Limited (Gamma) (No5)* [2011] ACompT 9 (12 May 2011);

    b The AER in decisions prior to its December 2013 Rate of Return Guideline;

    c The Australian Competition Tribunal in *Applications by Public Interest Advocacy Centre Ltd and Ausgrid* [2016] ACompT 1 (26 February 2016); and

    d IPART in its 2013 and 2018 Rate of Return Reviews.

77. Moreover, the dividend drop-off analysis that underpins the 0.25 estimate was updated by Gray and Cannavan (2017),[18] who conclude that:

> *In this study, we use dividend drop-off analysis to estimate the market value of distributed imputation credits (θ) over the period July 2001 through to June 2016. Our results show that the market value of imputation credits is around 35% of their face amount. Our estimate is corroborated by a number of different econometric specifications and estimation methods. Further, it is robust to the removal of influential outliers and appropriate filters of the data. Assuming a distribution rate to shareholders (F) of 0.7, our estimate of θ corresponds with a value for imputation credits (γ) under the Officer (1994) framework $\gamma = F \times \theta$ of approximately 0.25.*[19]

78. The alternative would be for the ICRC to explain that its regulatory framework does not use the estimate of gamma for the purpose of reducing the dividends and capital gains that would otherwise be available to equity holders.

[18] Cannavan, D. and S. Gray, (2017), "Dividend drop-off estimates of the value of dividend imputation tax credits," *Pacific Basin Finance Journal*, 43B, 213-226.

[19] Cannavan, D. and S. Gray, (2017), "Dividend drop-off estimates of the value of dividend imputation tax credits," *Pacific Basin Finance Journal*, 43B, p. 225.

6 Are other WACC parameters market value estimates?

79. In this section, we conclude by noting that the ICRC employs market value estimates of other WACC parameters. In particular:

    a The ICRC estimates the risk-free rate using market value government bond prices. Those prices reflect the market value of the bonds to investors.

    b The ICRC estimates the required return on debt using market value corporate bond prices. Those prices reflect the market value of the bonds to investors.

    c The ICRC estimates the market risk premium using market value share prices. Those prices reflect the market value of the shares to investors.

    d The ICRC estimates the equity beta using market value share prices. Those prices reflect the market value of the shares to investors.

    e The ICRC estimates gearing using the market value of equity, computed as the number of shares outstanding multiplied by the market value share price.

80. That is, in relation to all other WACC parameters, the ICRC uses traded market prices wherever they are available to obtain market value estimates. Parameters are estimated using traded bond prices that reflect the market value of bonds to investors and traded stock prices that reflect the market value of shares to investors.

81. It would therefore be inconsistent for the ICRC to make an exception in relation to gamma by estimating that parameter by having no regard at all to data on traded prices—particularly since gamma is inextricably linked, through the regulatory framework, to the return on equity. That is, as explained above, gamma represents the amount by which the allowed return on equity (estimated using market data) ought to be reduced in recognition of the fact that part of the total returns that equity investors require may be derived from the ability to redeem imputation tax credits.

82. Perhaps the closest analogy to imputation credits is the estimation of the market value of equity – where the ICRC measures the number of shares outstanding and then multiplies by the market value of each share. The same applies to imputation credits where the distribution rate measures the number of credits and theta represents the market value of each.

83. In our view, internal consistency requires the ICRC to estimate the market value of imputation credits.

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