



Estimating gamma within the regulatory context

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1 Executive summary

1.1 Instructions

- 1 Frontier Economics has been engaged by TransGrid to provide expert advice in relation to the estimation of the value of dividend imputation tax credits, gamma (γ).
- 2 We note that we have previously provided a report on this topic in the context of these proceedings dated January 2017 and titled “Estimating gamma for regulatory purposes.”
- 3 We have now been asked to provide our views on:
 - a. The findings of the Federal Court in the *PLAC-Ausgrid* appeal proceedings; and
 - b. The AER’s new rationale for its utilisation estimate of theta, as developed in the Tribunal hearings in relation to the Victorian distribution businesses and in the AER’s submissions to the Federal Court in relation to the *SAPN* appeal proceedings.

1.2 Primary conclusions

- 4 Our primary conclusions are set out below.

The competing approaches for interpreting and estimating gamma

- 5 Two methods for interpreting and estimating gamma have been proposed:
 - a. The *market value* approach posits that gamma should be estimated from the observed prices of traded securities in the same way that other WACC parameters are estimated. This approach produces an estimate of the extent to which investors value credits relative to dividends and capital gains. It is an estimate of the amount of dividends and capital gains that investors would give up in order to receive a dollar of credits.
 - b. The *redemption* or *utilisation* approach posits that gamma should be estimated as the proportion of credits that are available for investors to redeem. This approach considers the extent to which investors value the credits they redeem less than the dividends or capital gains they receive to be irrelevant.

Gamma must be interpreted and estimated in a way that is consistent with its role in the regulatory framework

- 6 The Federal Court has held that the approach that is used to interpret and estimate gamma must be consistent with the role of gamma in the regulatory framework. We agree with that conclusion and understand that this is the very reason for the

AEMC revising the NER from defining gamma in terms of utilisation to defining gamma to be the value of imputation credits.

The role of gamma in the regulatory framework

- 7 The regulatory framework operates in two steps:
- a. In the first step, the AER estimates the total required return on equity. This is an estimate of the amount of dividends and capital gains that would be required by investors in a benchmark efficient firm if there were no imputation credits. This estimate reflects personal taxes and personal costs that relate to dividends and capital gains. In this report, we use a simple example where the regulated firm has equity of \$1,000 and investors require a return on equity of 7%, of which 2% is compensation for personal taxes and personal costs. That is, investors require \$70, of which \$20 is to compensate them for the personal taxes and costs that relate to dividends and capital gains.
 - b. In the second step, the AER 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 capital gains. For example, if the AER estimates that the value of imputation credits is \$5, it will allow the firm to charge prices sufficient to provide dividends and capital gains of \$65.
- 8 That is, gamma plays the role of determining the amount by which the allowed dividends and capital gains will be reduced to reflect the imputation credits that investors will receive. It is an exchange rate – the rate at which investors would exchange dividends and capital gains for imputation credits. Thus gamma must reflect the value of credits *relative to* dividends and capital gains.
- 9 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;

- 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. Thus, the *net* benefit of the redeemed credits would, on average, be approximately half of the face amount.

10 Anything that equally affects imputation credits, dividends and capital gains will have no effect on the relative value between them, and therefore no effect on gamma. For example, investors pay personal tax on imputation credits at the same rate as on dividends and capital gains.¹ If this were the only factor to consider, the exchange rate would be 1 and investors would value a dollar of imputation credits equal to a dollar of dividends or capital gains because the same tax cost would be imposed on both. It is for this reason that the personal taxes that investors pay on the credits they receive does not appear in the above list.

11 The personal taxes and personal costs that apply to dividends and capital gains are already taken into account in the first step of the regulatory process above. Thus, the second step requires an estimate of gamma that reflects only those personal taxes and costs that apply only to imputation credits, making them less valuable relative to dividends and capital gains.

The recent Federal Court decision

12 In our view:

- a. The Court has correctly identified that gamma must be interpreted and estimated in a way that is consistent with the regulatory framework in which it operates; and
- b. The Court has also correctly identified that the personal costs and personal taxes that relate to dividends and capital gains are taken into account in the first step of the regulatory process. Thus, the \$70 in the example above is an estimate of the pre-personal tax and pre-personal costs dividends and capital gains that investors would require.

13 However, having correctly identified that it would be wrong for gamma to reflect any personal taxes or costs that *equally* affect credits and dividends and capital gains,² it then ruled that gamma should reflect *no* personal costs or taxes at all – even those that apply only to credits and not to dividends or capital gains.

14 This results in investors receiving no compensation at all in relation to any personal taxes and costs that apply only to imputation credits (making them less valuable to investors than dividends and capital gains). Whereas investors are properly compensated for the personal taxes and costs that apply to dividends and capital

¹ The personal tax rate on short term capital gains is the same as on dividends, and the AER's implementation of the CAPM assumes that investors view dividends and capital gains as being interchangeable.

² And which have therefore already been considered in the first step of the regulatory process.

gains, they receive no compensation at all for the additional personal costs that apply to imputation credits. The result is an internally inconsistent implementation of the regulatory model whereby investors are properly compensated for all personal taxes and costs that apply to dividends and capital gains, but not compensated at all for the additional personal costs that apply to imputation credits. In our view, this outcome fails the Court’s requirement of consistency.

The AER has provided two rationales for its “utilisation” approach to gamma

- 15 The AER has provided two mutually exclusive rationales for its approach of providing investors with no compensation for the additional personal costs that apply to imputation credits:
- a. The AER’s first rationale is that the first step of the regulatory framework estimates the before-personal-tax and before-personal-costs dividends and capital gains that investors would require in the absence of any imputation credits, so the second step of the process must subtract the before-personal tax and before-personal-costs value of imputation credits. Thus, any additional personal costs that apply only to imputation credits (making them relatively less valuable than dividends and capital gains) are not considered. This is the line of argument run before the *PLAC-Ausgrid* Tribunal.
 - b. The AER’s second rationale is that the additional personal costs that apply only to imputation credits *are* relevant, but they have already been taken into account in the return on equity, so to also take them into account when estimating the value of imputation credits would amount to double counting. This is the line of argument run before the Victorian Distribution Businesses (*Vic DB*) Tribunal in November 2016 and in the appeal of the *SAPN* proceedings to the Federal Court in June 2017.
- 16 Clearly, these two rationales are mutually exclusive. The additional personal costs that affect the market value of credits (relative to dividends and capital gains) cannot be simultaneously irrelevant and already taken into account.
- 17 In our view, the AER’s first rationale is wrong for the reasons set out above – it inconsistently sets the allowed return on equity to be sufficient to cover the personal taxes and costs that apply to dividends and capital gains, but not those additional costs that apply only to imputation credits.
- 18 In our view, the AER’s second rationale is also wrong. The basis of that argument is that investors will reduce their requirement for dividends and capital gains by their assessment of the relative market value of imputation credits. Thus, if there are additional personal costs that relate only to imputation credits, investors will assign a relatively lower value to the credits, and apply a lower reduction in dividends and capital gains. Suppose, for example, that investors require a total return of 7% and are provided with credits with a face amount of 1%, which they

value at 35% of the value of dividends and capital gains.³ In this case, investors will reduce the return that they require from dividends and capital gains to 6.65% (the 7% total return that they require, minus the 0.35% return that they receive from imputation credits).

19 Thus, when the AER analyses the market data it will observe that investors require a return from dividends and capital gains of 6.65%, which properly reflects the market value of credits. The regulatory process then requires the AER to add back the estimated value of credits to produce an estimate of the total (with-imputation) required return.

20 However, the AER's second rationale is that because the (0.35%) reduction in the market's required return from dividends and capital gains reflects the market value of credits, using the same market value of credits in the grossing-up step of the regulatory process would amount to double counting. In our view, this is exactly wrong. It is precisely *because* the reduction in the market's required return from dividends and capital gains reflects the market value of credits that the same market value of credits *must* be used in the grossing-up step of the regulatory process. To arrive at a correct estimate of the total required return on equity, the AER must add back the same quantity that the market has deducted.

21 In any event, in any determination the AER should be clear about which rationale it proposes for its adoption of the "utilisation" approach to estimating gamma.

Estimation approaches

22 In Paragraph 9 above, we set out a number of reasons why investors in aggregate would value imputation credits less than dividends and capital gains. In relation to those reasons:

- a. The equity ownership approach provides a noisy estimate of the effect of (a) only – the fact that some credits are distributed to non-residents who obtain no value from them;
- b. ATO tax statistics provide an estimate of the effects of (a)-(c) – that approach produces a direct estimate of the proportion of credits that are *actually* redeemed from the Tax Office; and
- c. The dividend drop-off approach provides a direct estimate of the extent to which investors value imputation credits relative to dividends and capital gains. This estimate includes all of the effects set out in Paragraph 9, and any other reasons why investors would value credits less than dividends and capital gains.

23 Consequently:

- a. If one accepts that theta does properly represent the exchange rate at which investors would exchange dividends and capital gains for

³ For example, of the 65% discount relative to dividends and capital gains, 45% may be due to credits being distributed to non-residents who do not value them and the other 20% may be due to personal costs that apply to credits, but not to dividends or capital gains.

imputation credits, dividend drop-off analysis would provide a direct estimate, ATO tax statistics would provide an upper bound, and the equity ownership estimate would be of little relevance because the ATO estimate provides a tighter upper bound.

- b. If one concludes that theta should be interpreted as the proportion of credits that are redeemed, the ATO approach would provide a direct estimate and the equity ownership approach would provide an upper bound (because it does not consider the effects of the 45-day rule or indeed *any* reason why investors would not redeem credits other than their ineligibility as foreign investors).

2 Market value or utilisation rate?

2.1 Two parameters to be estimated

24 In our previous report on gamma⁴ we noted that there is broad agreement 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) is variously defined as “the value of distributed imputation credits” or as “the utilisation rate.” While there is 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.⁵

2.2 Interpretation of theta

25 Our previous report also noted⁶ that there is broad agreement that two different interpretations of the second parameter, theta, have been proposed:

- a. a *market value* interpretation; and
- b. a *redemption proportion* interpretation.

26 There is broad agreement 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 the value of 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.⁷

27 There is broad agreement that estimates of the market value of credits are materially lower than estimates of the proportion of credits that might be redeemed. (Of course, if the two approaches produced similar estimates, there would be no reason for any debate.)

⁴ Frontier Economics, 2017, *Estimating gamma for regulatory purposes*, January, p. 7.

⁵ See, for example, the AER’s CitiPower Final Decision, May 2016, Attachment 4, p. 8. Throughout this report we use references to the CitiPower Final Decision as an example of the AER’s current approach to gamma. The CitiPower decision is among the batch of the AER’s most recent final decisions. The AER’s approach to, and estimate of, gamma has remained the same for more than two years.

⁶ Frontier Economics, 2017, *Estimating gamma for regulatory purposes*, January, p. 7.

⁷ CitiPower Final Decision, Attachment 4, pp. 32-39.

2.3 A simple illustration to help interpret years of litigation

28 In recent years there has been extensive litigation involving the interpretation of
 gamma across a number of overlapping cases. To create a simple framework for
 analysing the key issue of what gamma actually means, we begin with the following
 analogy.

29 Consider a lawyer with a charge-out rate of \$50/hr who performs a task that takes
 exactly one hour, but which also incurs \$20 of costs for photocopying which are
 passed on to the client at cost. The lawyer would invoice the client for \$70, which
 would cover the \$20 of costs and leave a \$50 net benefit. Now suppose that the
 client proposes to pay part of the bill in the form of 30 units of Malaysian currency.
 In this case, the lawyer would note that each unit of Malaysian currency can be
 converted into 35 cents (after all relevant fees and charges), so the 30 units of
 Malaysian currency are equivalent in value to \$10.50. Thus, the lawyer would
 reduce the required payment of Australian dollars to \$59.50. That is, the lawyer
 would be indifferent between receiving \$70 or \$59.50 plus 30 units of Malaysian
 currency.

30 Now consider the regulatory setting where a business has \$1,000 of equity capital.
 Suppose that investors require a return on equity of 7%, of which 2% is to cover
 the effects of personal taxes and personal costs. In this case, the business would
 be allowed to charge prices so that it was able to provide \$70 of dividends and
 capital gains to its shareholders, \$20 of which would cover shareholder level taxes
 and costs, leaving \$50 of net benefit.

31 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
 dividends and capital gains provided to the shareholders will be reduced by the
 estimated value of the credits. Thus, what is required is an estimate of the
 "exchange rate" between imputation credits on the one hand and dividends and
 capital gains on the other. For example, if investors in aggregate value the receipt
 of a dollar of credits equal to the receipt of 35 cents of dividends and capital gains,
 the exchange rate is 0.35 and investors would be left whole if their dividends and
 capital gains were reduced by \$10.50 in relation to the \$30 of credits that they will
 receive.

32 In the regulatory setting, theta represents this exchange rate. It encapsulates all of
 the reasons why imputation credits are less valuable to investors than dividends
 and capital gains. Importantly, theta does not encapsulate any factors that are in
 common. For example, investors pay personal tax on imputation credits at the
 same rate as on dividends and capital gains.⁸ If this were the only factor to

⁸ The personal tax rate on short term capital gains is the same as on dividends, and the AER's implementation of the CAPM assumes that investors view dividends and capital gains as being interchangeable.

consider, the exchange rate would be 1 and investors would value a dollar of imputation credits equal to a dollar of dividends or capital gains because the same tax cost would be imposed on both.

33 However, 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;
- 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. Thus, the *net* benefit of the redeemed credits would, on average, be approximately half of the face amount.

34 For all of these reasons, and possibly others, the value to investors of imputation credits is lower than the value of dividends and capital gains. Theta represents the extent of this difference – the exchange rate that equates the value of the credits that investors receive with the value of dividends and capital gains that they must give up under the regulatory model. That is, theta reflects the additional personal costs that apply only to imputation credits and not to dividends and capital gains.

35 In our view, theta should be estimated in a way that captures *all* of the reasons why credits are less valuable than dividends and capital gains, and we show below that the market value approach does exactly that. By contrast, the AER's redemption rate approach reflects the fact that some credits are distributed to non-residents (item (a) in the list above) but none of the other reasons why credits are less valuable to investors.

36 With this framework in mind, we now consider a number of recent Court and Tribunal decisions. We explain that some Courts and Tribunals have been led into very complex-sounding worlds of marginal versus average investors and of discussions about whether cash flows should be considered to be pre or post personal taxes and personal costs. But that complexity is entirely unnecessary and is only likely to lead into confusion and error. As set out above, all that has to be estimated is the relative value of credits on the one hand to dividends and capital gains on the other. This is because the regulatory framework first estimates the

amount of dividends and capital gains that are due to shareholders and then reduces that for the estimated value of imputation credits.

- 37 To extend the legal fees analogy from above, all that is required is an estimate of the exchange rate between Malaysian and Australian currency. It does not matter whether we define revenue as gross revenue (\$70) or net revenue (\$50) or whether or not we consider the complexity of how much personal tax the lawyer might have to pay. All that is required is an estimate of the value of receiving a unit of Malaysian currency relative to the value of receiving a unit of Australian currency. So it is with imputation credits – all that is required is an estimate of the value of receiving a dollar of credits relative to the value of receiving a dollar of dividends or capital gains.

2.3.1 The February 2016 *PLAC-Ausgrid* decision of the Australian Competition Tribunal

- 38 In our previous report,⁹ we noted that the specific issue of whether theta should be interpreted as the *value* that distributed credits have to investors (relative to the value of dividends capital gains) or as the *proportion* of credits that are available for redemption was the subject of a merits review appeal brought by several NSW electricity networks. Essentially, the network businesses submitted that theta should be estimated in a way that captures *all* of the reasons why credits are less valuable than dividends and capital gains,¹⁰ whereas the AER submitted that theta should be estimated in a way that reflects only the fact that some credits are distributed to non-residents who obtain no value from them.¹¹
- 39 In the *PLAC-Ausgrid* case,¹² the Tribunal held that gamma must be interpreted as the value of credits (i.e., reflecting *all* of the reasons why credits are less valuable than dividends and capital gains) to investors and not simply as the proportion of credits that might be available for redemption:

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.¹³

...the Tribunal does not accept the AER's approach that imputation credits are valued at their claimable amount or face value (as it said in the Final Decisions:

⁹ Frontier Economics, 2017, *Estimating gamma for regulatory purposes*, January, pp. 11-13.

¹⁰ That is, all of the reasons set out in Paragraph 33 above.

¹¹ That is, only reason (a) in Paragraph 33 above.

¹² Applications by Public Interest Advocacy Service Ltd and Ausgrid Distribution [2016] ACompT 1 (26 February 2016).

¹³ *PLAC-Ausgrid*, Paragraph 1100.

the measure is what can be claimed). The value is not what can be claimed or utilised.¹⁴

40 Thus, the Tribunal decided that the AER had estimated the wrong thing – a redemption proportion instead of a relative value – and directed the AER to re-make its decision with a gamma of 0.25 instead of the 0.4 figure that the AER had used.

41 In all of its decisions since 2013 the AER has relied primarily on the “equity ownership” approach to estimate the proportion of credits that might be redeemed. This involves simply estimating the proportion of Australian equity that is owned by resident investors, and reflects only item (a) in the list of reasons why investors value credits less than dividends and capital gains.¹⁵ This equity ownership approach was singled out for special criticism by the Tribunal:

The AER’s equity ownership and tax statistics approaches consequently make no attempt to assess the value of imputation credits to shareholders...The Tribunal considers these approaches to be inconsistent with a proper interpretation of the Officer Framework.¹⁶

The Tribunal considers that the equity ownership approach overstates the redemption rate. We agree with the Network Applicants’ submission that “even on the AER’s own definition of theta (focussing on potential utilisation by eligible investors), equity ownership rates are above the true maximum possible figure for theta”.¹⁷

42 The *PLAC-Ausgrid* Tribunal also noted that the AER’s approach to estimating theta was inconsistent with the approach to estimating all other WACC parameters. All other parameters are estimated as market values using the prices of traded securities:

Moreover, the AER’s reasoning ignores the fact that other parameters in the WACC calculations are market values.¹⁸

...the Tribunal considers the use of market studies to estimate the value of imputation credits is consistent with the methods used to calculate other parameters of the costs of debt and equity from market data.¹⁹

Consequently, placing significant weight on market value studies is, in the Tribunal’s view, consistent with evidence relied on by the AER to calculate the rate of return on capital.²⁰

43 The Tribunal’s conclusion was very clear on this point:

...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

¹⁴ *PLAC-Ausgrid*, Paragraph 1081.

¹⁵ See Paragraph 33 above.

¹⁶ *PLAC-Ausgrid*, Paragraph 1095.

¹⁷ *PLAC-Ausgrid*, Paragraph 1093.

¹⁸ *PLAC-Ausgrid*, Paragraph 1073.

¹⁹ *PLAC-Ausgrid*, Paragraph 1097.

²⁰ *PLAC-Ausgrid*, Paragraph 1098.

inconsistent with the concept of gamma in the Officer Framework for the WACC.²¹

44 The Tribunal was also very clear about the fact that it is not enough to simply look at the *number* of credits that might be redeemed – it is also necessary to determine the *value* to investors of any credits that they redeem:

...it is necessary to consider both the eligibility of investors to redeem imputation credits and the extent to which investors determine the worth of imputation credits to them.²²

2.3.2 The May 2017 decision of the Federal Court of Australia

45 The AER appealed the Tribunal’s decision in the *PLAC-Ausgrid* case to the Federal Court, which held that the AER’s Ground 17, in relation to gamma, was made out.²³ The Court held that the Tribunal had erred in its interpretation of r 6.5.3 of the NER, which states that “gamma is the value of imputation credits.” The court stated that the word “value” should not be interpreted in isolation and that gamma must be interpreted and estimated in a way that is consistent with the regulatory framework in which it operates:

In our opinion, 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. In essence, we think this is what the Tribunal did. The Tribunal thereby misunderstood the function of imputation credits under the Rules in relation to the return on capital and the tax building block.²⁴

46 The Court went on to accept the AER’s submission that the relevant regulatory framework is a post-company tax and pre-personal tax and personal costs framework:

We accept the AER’s submission that the context is the determination of a regulated return using a post-tax revenue model based on a nominal vanilla WACC. We accept the AER’s submission that the Rules require consistency in the way the relevant building blocks interact, that is, a post-company tax and pre-personal tax and personal costs basis. We also note that the nature of gamma is an estimate to be used in a model.²⁵

47 In the context of the example above, the \$70 allowed return on equity is on “a post-company tax and pre-personal tax and personal cost basis.” The regulated business generates a profit, pays corporate tax, and then pays a \$70 return to shareholders, who must then fund their own personal tax and personal cost payments out of it.

²¹ *PLAC-Ausgrid*, Paragraph 1100.

²² *PLAC-Ausgrid*, Paragraph 1061.

²³ *Australian Energy Regulator v Australian Competition Tribunal (No2)* [2017] FCAFC 79, Paragraph 757.

²⁴ *AER v ACT*, 2017, Paragraph 751.

²⁵ *AER v ACT*, 2017, Paragraph 752.

48 We agree that consistency requires that imputation credits must also be treated on the same basis. Suppose, for example that the only factor to consider is personal taxes at the rate of 25%. That is, 25% of any receipt of dividends, capital gains, or credits would have to be paid as personal tax. It would be wrong to submit that, since 25% of each credit is lost to personal tax, theta should be set to 0.75 such that every dollar of credits received would reduce dividends or capital gains by 75 cents. This would involve a comparison of the post-personal tax credit with the pre-personal tax dividend or capital gain and would be quite wrong. Since the same tax effect applies to credits and dividends and capital gains, the exchange rate between them would be 1.

49 It is for this reason that theta must reflect only (and all) of those reasons why credits would be valued less than dividends and capital gains. We note that the list set out in Paragraph 33 above are things that apply to credits only, and will therefore affect the value of credits *relative to* dividends and capital gains. This is what should be reflected in the estimate of theta.

50 In our view, the Court has fallen into error on this point. Having correctly identified that it would be wrong for theta to reflect any personal taxes or costs that *equally* affect credits and dividends and capital gains, it then ruled that theta should reflect *no* personal costs or taxes at all – even those that apply only to credits and not to dividends or capital gains.

51 The regulatory framework requires theta must reflect only the reasons, and all of the reasons, why credits are less valuable than dividends and capital gains. This is because the regulatory framework first estimates the amount of dividends and capital gains that would be appropriate and then makes a reduction in relation to the imputation credits that are received. In our view, a finding of fact that the regulatory framework requires theta to be estimated in any other way is simply wrong.

52 The *PLAC-Ausgrid* Tribunal carefully considered this very question and concluded that estimating gamma on the basis of the full face amount of credits available for redemption (ignoring all other reasons why credits might be less valuable than dividends or capital gains) was inconsistent with the regulatory framework:

...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 WACC²⁶

and observed that, within the regulatory framework, all other WACC parameters are estimated as market values using the prices of traded securities:

Moreover, the AER's reasoning ignores the fact that other parameters in the WACC calculations are market values.²⁷

²⁶ *PLAC-Ausgrid*, Paragraph 1100.

²⁷ *PLAC-Ausgrid*, Paragraph 1073.

...the Tribunal considers the use of market studies to estimate the value of imputation credits is consistent with the methods used to calculate other parameters of the costs of debt and equity from market data.²⁸

Consequently, placing significant weight on market value studies is, in the Tribunal's view, consistent with evidence relied on by the AER to calculate the rate of return on capital.²⁹

53 That is, the *PLAC-Ausgrid* Tribunal considered the question of which interpretation of gamma was consistent with the regulatory framework and decided in favour of the market value interpretation that reflects all of the reasons why investors value credits less than dividends and capital gains. However, the Court held that the Tribunal had erred in reaching this conclusion:

...we accept the AER's submission the Tribunal's approach to gamma was underpinned by a misunderstanding on its part about how return to investors was conceptualised in a WACC framework. In our opinion the Tribunal assumed that other parameters in the WACC calculations were market values that already incorporated investors' tax positions and transaction costs but that misconstrued the "post-tax" framework.³⁰

54 This statement from the Court gives rise to two questions of fact:

- a. Whether other WACC parameters are estimated using market values that already incorporate investors' tax positions and transaction costs; and
- b. Whether consistency with the regulatory WACC framework requires an estimate of gamma that reflects all of the reasons why investors would value credits less than dividends and capital gains, or only the extent to which non-residents are unable to redeem credits.

55 On these questions, the *PLAC-Ausgrid* Tribunal decided in favour of a market value estimate that reflects all of the reasons why investors value credits less than dividends and capital gains, but the Court has held that it is open to the AER to disregard everything other than the extent to which non-residents are unable to redeem credits. We consider these two questions in more detail in the following sections.

2.4 Are other WACC parameters market value estimates?

56 In this section, we consider the Court's finding that:

²⁸ *PLAC-Ausgrid*, Paragraph 1097.

²⁹ *PLAC-Ausgrid*, Paragraph 1098.

³⁰ *AER v ACT*, 2017, Paragraph 755.

In our opinion the Tribunal assumed that other parameters in the WACC calculations were market values that already incorporated investors' tax positions and transaction costs but that misconstrued the "post-tax" framework.³¹

57 We explain that other WACC parameters *are* market value estimates that *do* reflect the effects of personal taxes, personal costs, and every other consideration that investors make when determining how much they would be prepared to pay for stocks or bonds.

Risk-free rate

58 The first WACC parameter we consider is the risk-free rate, which is estimated as the yield on government bonds. The yield is computed as the discount rate that equates the present value of the cash flows to be received by the bond holder with the prevailing market price of the bond.

59 The market price of the bond will obviously reflect all of the considerations that investors make when determining the value of the bond to them, including the expected impact of any personal taxes associated with investing in the bond, and any expected personal or transactions costs incurred by the bond holder when investing in the bond.

60 Thus, the risk-free rate that is derived, and used in the WACC calculation, will include compensation that investors require in relation to personal taxes and personal costs – and every other consideration that investors make when considering how much they would be prepared to pay for a government bond.

Return on debt

61 The return on debt is computed in the same way as the risk-free rate, except that corporate bonds are used instead of government bonds.

62 Again, the market price of the bond will obviously reflect all of the considerations that investors make when determining the value of the bond to them, including the impact of any personal taxes and any personal or transactions costs.

63 Thus, the return on debt that is derived, and used in the WACC calculation, will include compensation that investors require in relation to personal taxes and personal costs – and every other consideration that investors make when considering how much they would be prepared to pay for a corporate bond.

Market risk premium – dividend growth model estimate

64 One set of evidence that the AER considers when estimating the market risk premium (MRP) is dividend growth model estimates. Just as for the bond yields above, the implied return on the market portfolio is computed as the discount rate that equates the present value of the cash flows (in this case, dividends) to be received with the prevailing market price of the portfolio of shares.

³¹ AER v ACT, 2017, Paragraph 755.

65 The market price of shares will obviously reflect all of the considerations that investors make when determining the value of the shares to them, including the impact of any personal taxes and any personal or transactions costs.

66 Thus, the MRP that is derived will include compensation that investors require in relation to personal taxes and personal costs – and every other consideration that investors make when considering how much they would be prepared to pay for shares.

Market risk premium – historical excess returns

67 When estimating the MRP, the AER also considers evidence from historical excess returns. This evidence is based on the annual returns of a broad portfolio of shares, calculated from the observed market prices of those shares. The idea behind this method is that the price that investors would be prepared to pay to buy shares today is the present value of the expected dividend over the next year and the expected sale price at the end of the year:

$$S_t = \frac{E[DIV_{t+1}] + E[S_{t+1}]}{1 + r_{m,t}}.$$

68 This is precisely the same as for the parameters above – the implied return on the market portfolio is computed as the discount rate that equates the present value of the cash flows to be received (in this case, from dividends and the sale of the share a year later) with the prevailing market price of the portfolio of shares.

69 As above, the current share price will reflect all of the considerations that investors make when determining the value of the shares to them, including the impact of any personal taxes and any personal or transactions costs.

70 Thus, the market return that is derived will include compensation that investors require in relation to personal taxes and personal costs – and every other consideration that investors make when considering how much they would be prepared to pay for shares.

Equity beta

71 The AER estimates equity beta from a regression analysis of stock returns (for domestic comparator firms) on returns from a broad market index. As explained above, the returns, which are derived from observed market prices, will reflect all of the considerations that investors make when determining the value of the shares to them, including the impact of any personal taxes and any personal or transactions costs.

72 Thus, the equity beta will also reflect any compensation that investors require in relation to personal taxes and personal costs – and every other consideration that investors make when considering how much they would be prepared to pay for shares.

Conclusion

73 In our view, the evidence set out above clearly supports the contention that other WACC parameters *are* market value estimates that *do* reflect the effects of personal taxes, personal costs, and every other consideration that investors make when determining how much they would be prepared to pay for stocks or bonds. This is because they are all derived from the observed prices of traded securities. It then follows that the estimates of the required return on equity and debt are estimates that include the compensation that investors require in relation to personal taxes and personal costs.

74 We note that the *PLAC-Ausgrid* Tribunal made precisely this point:

The Tribunal accepts the Network Applicants' submission that the return on equity is derived from the market prices of government bonds (the risk-free rate) and from the market prices of shares (beta and MRP). The cost of debt is calculated by reference to bond yields. Bond yields are derived directly from the traded market prices of bonds. Further, we accept the Network Applicants' submission that these market prices reflect every consideration that investors make in determining the worth of shares to them and that the bond prices, and the yields that are derived from them, reflect every consideration that investors make in determining the worth of the asset to them, including "personal costs".³² Consequently, placing significant weight on market value studies is, in the Tribunal's view, consistent with evidence relied on by the AER to calculate the rate of return on capital.³³

75 The passage above makes clear that the *PLAC-Ausgrid* Tribunal's conclusion that other parameters in the AER's WACC calculations are based on market values was not an assumption but, rather, a finding of fact based on a proper understanding of the WACC framework within the NER.

2.5 Are market value or "utilisation" estimates consistent with the regulatory framework?

Analysis

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

- a. a market value estimate of gamma that reflects all of the reasons why investors value credits less than dividends and capital gains; or
- b. a utilisation estimate of gamma that reflects only the extent to which non-residents are unable to redeem credits.

77 In our view, the best way to consider this question is in the context of Dr Lally's 2013 report for the AER. Our earlier report³⁴ noted that Lally (2013 AER)

³² The AER had used the term "personal costs" to summarise the various reasons why investors would not value credits that they redeemed at the full face amount.

³³ *PLAC-Ausgrid*, Paragraph 1098.

³⁴ Frontier Economics, 2017, *Estimating gamma for regulatory purposes*, January, pp. 9-10, 16.

Equation (3) shows that what is relevant is the extent to which imputation credits are capitalised into the stock price:

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

78 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;
- b. Theta times the face amount of imputation credits distributed during the year; and
- c. The stock price at the end of the year.

79 As set out above, the discount rate (R_e) includes the compensation that investors require in relation to personal taxes and personal costs on dividends and capital gains (from share sales). The framework adopted by the AER assumes that investors are indifferent between dividends and capital gains, so the same discount rate is applied to both components in the formula above and both components are treated as equally valuable to investors when estimating other WACC parameters. In summary, R_e is the discount rate that capitalises the face amount of dividends and capital gains into the current stock price. In the example above, R_e is the 7% required return that includes the 2% compensation that investors require in relation to any personal taxes and personal costs that apply to dividends and capital gains.

80 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 than dividends or capital gains. This is where theta comes in – it reflects the extent to which imputation credits are less valuable to investors than dividends or capital gains.

81 A list of reasons why investors value credits less than dividends and capital gains is set out in Paragraph 33 above. One of those reasons is the fact that some credits are distributed to non-residents who do not value them at all, but there are many other reasons. We note that the list does not include the fact that credits are subject to personal tax. That is because dividends and capital gains are similarly subject to personal tax, so the effect of personal taxes will already be taken into account in the 7% discount rate that is used. In summary, theta is a relative valuation term – it will reflect only those reasons that cause credits to be less valuable relative to dividends and capital gains.

82 In our view, theta should be estimated in a way that captures *all* of the reasons why credits are less valuable than dividends and capital gains, and we show below that the market value estimation approach does exactly that. By contrast, the AER's redemption rate approach reflects only the fact that some credits are distributed to non-residents but none of the other reasons why credits are less valuable to investors.

Consistency with dividend drop-off analysis

83 To show that dividend drop-off analysis properly estimates theta as the value of credits relative to dividends and capital gains, we note that Dr Lally's formula can be rearranged slightly as follows:

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

84 Dividing all terms by the current stock price gives:

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

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

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

86 That is, in a dividend drop-off analysis, theta estimates the value of credits relative to the value of dividends and capital gains – exactly as required.

Numerical example

87 Suppose that:

- a. The proportion of credits that are distributed to resident investors is 0.55, so theta would be set to 0.55 if this was the only reason that was contemplated for why credits are less valuable to aggregate investors than dividends and capital gains; and
- b. Investors in aggregate actually value credits at 35% of dividends or capital gains. This figure reflects *all* of the reasons why investors value credits less than dividends and capital gains.

88 Now suppose that a regulator uses the 0.55 figure for theta. Under the regulatory framework and post-tax revenue model (PTRM), this would result in the regulator reducing the allowed dividends and capital gains by 55 cents for every dollar of imputation credits that are distributed to investors. But in this example, investors value a dollar of credits as equivalent to only 35 cents of dividends or capital gains. Thus, investors would be under-compensated by 20 cents in relation to every dollar of credits that is distributed – the additional personal costs that apply only to credits would be left uncompensated.

Conclusion

89 In the regulatory WACC framework, and within the PTRM, the return on equity (R_e) includes the compensation that investors require to cover the personal taxes and personal costs that relate to dividends and capital gains. It does not cover the additional reasons why imputation credits are less valuable to investors than dividends or capital gains. That is the role of theta (which recognises the extent to which distributed credits are less valuable than dividends or capital gains) and ultimately gamma (which also recognises that some of the credits that are created will not be distributed to investors).

- 90 The regulatory framework and PTRM serve to reduce the allowance of dividends and capital gains for the assumed value of imputation credits. For investors to end up with appropriate compensation, it is essential that an appropriate “exchange rate” is used. What is required is an estimate of the ratio of the extent to which investors value imputation credits relative to the extent to which they value dividends and capital gains. This provides the proper indication of the amount of dividends or capital gains investors would give up in order to obtain an imputation credit. This ratio is precisely what is estimated by dividend drop-off analysis.
- 91 As noted above, the Court appears to have fallen into error on this point. Having correctly identified that it would be wrong for theta to reflect any personal taxes or costs that *equally* affect credits and dividends and capital gains, it then ruled that theta should reflect *no* personal costs or taxes at all – even those that apply only to credits and not to dividends or capital gains.

2.6 The October 2016 SAPN Tribunal decision

- 92 We note that the *SAPN* Tribunal has also held that it is open to the AER to adopt the redemption rate interpretation for theta.³⁵ The reason for this finding was based around that Tribunal’s independent development of a distinction between “average investor” and “marginal investor” theoretical frameworks, which appears to be quite orthogonal to the issue at hand. In particular, neither the AER nor SAPN had made submissions on that point, and the AER’s decision was not based on a distinction between average and marginal investors.

- 93 On this point, in the hearing before the Victorian Distribution Businesses (*Vic DB*) Tribunal, Counsel for the AER agreed with the proposition that:

...the discussion in SAPN about the distinctions between marginal and average investors is not of much assistance to us³⁶

and also agreed with the proposition that:

...you seem to be relying rather a lot on the conclusions in SAPN, and not too much on the reasoning that gets them³⁷

and concluded that:

...the primary reasoning of the AER is not dependent upon that analysis, and I don’t make any submissions about that analysis.³⁸

- 94 Moreover, in its recent decisions the AER does not rely on the average vs. marginal investor distinction that was developed by the *SAPN* Tribunal. Consequently, it seems that the approach of the *SAPN* Tribunal is now redundant, so we do not consider it further in this report. Rather, it seems that there is now broad

³⁵ Application by SA Power Networks [2016] ACompT 11, Paragraph 196.

³⁶ *Vic DB* Transcript, p. 653.

³⁷ *Vic DB* Transcript, p. 653.

³⁸ *Vic DB* Transcript, p. 654.

agreement (including by us) that the key issue is not around the theoretical excursion that was embarked upon by the *SAPN* Tribunal, but around the question of which estimate of theta is properly consistent with its role within the regulatory framework.

2.7 Final conclusions and implications

95 In our view, the answers to the two key questions that arise from the recent Federal Court judgment are as follows:

- a. Any suggestion that other WACC parameters are anything other than market value estimates that *do* reflect the effects of personal taxes, personal costs, and every other consideration that investors make when determining how much they would be prepared to pay for stocks or bonds is clearly wrong. This is because other WACC parameters are all derived from the observed prices of traded securities. It then follows that the estimates of the required return on equity and debt are estimates that include the compensation that investors require in relation to personal taxes and personal costs; and
- b. Under the regulatory WACC framework and PTRM, theta is an estimate of the ratio of the extent to which investors value imputation credits relative to the extent to which they value dividends and capital gains. This provides the proper indication of the amount of dividends or capital gains investors would give up in order to obtain an imputation credit. Only if theta is interpreted and estimated in this way will investors be appropriately compensated.

96 The main implication of these answers is that theta should be estimated using dividend drop-off analysis. As noted above, that method provides a direct estimate of the extent to which investors value imputation credits relative to the extent to which they value dividends and capital gains.

3 Two rationales for the utilisation rate

3.1 Overview

97 In this section, we note that the AER has provided two mutually exclusive rationales for interpreting and estimating theta as a utilisation/redemption rate, rather than as an estimate of investors' exchange rate between credits and dividends or capital gains. In particular:

- a. The AER's first rationale is that the first step of the regulatory framework estimates the before-personal-tax and before-personal-costs dividends and capital gains that investors would require in the absence of any imputation credits, so the second step of the process must subtract the before-personal-tax and before-personal-costs value of imputation credits. Thus, any additional personal costs that apply only to imputation credits (making them relatively less valuable than dividends and capital gains) are not considered. This is the line of argument run by the AER before the *PLAC-Ausgrid* Tribunal.
- b. The AER's second rationale is that the additional personal costs that apply only to imputation credits *are* relevant, but they have already been taken into account in the return on equity, so to also take them into account when estimating the value of imputation credits would amount to double counting. This is the line of argument run by the AER before the *Vic DB* Tribunal in November 2016 and in the appeal of the *SAPN* proceedings to the Federal Court in June 2017.

98 Clearly, these two rationales are mutually exclusive. The additional personal costs that affect the market value of credits (relative to dividends and capital gains) cannot be simultaneously irrelevant and already taken into account.

99 This is an important consideration because:

- a. If the AER now relies on Rationale 2, the recent judgment of the Federal Court would appear to be redundant because that court considered Rationale 1. Indeed, if Rationale 2 is correct, it must be the case that Rationale 1 is incorrect, so any findings based on it would be irrelevant; and
- b. If the AER now reverts back to Rationale 1, that would imply that the AER now considers its submissions to the *Vic DB* Tribunal and the *SAPN* Court to be incorrect.

100 Our view is that neither rationale is correct. As set out above, we consider that theta is an estimate of the ratio of the extent to which investors value imputation credits relative to the extent to which they value dividends and capital gains. If that is right, *all* of the reasons why credits are less valuable than dividends or capital

gains would have to be considered, not just the extent to which credits are distributed to non-resident investors.

101 That is, if the “utilisation” interpretation of theta is wrong, the reason for proposing it is moot. However, if the utilisation interpretation of theta is proposed, it would be necessary to clearly state the rationale on which that proposal is based.

3.2 Rationale 1: A pre-personal-tax and pre-personal costs regulatory framework

102 In its Ausgrid Final Decision the AER sets out the rationale for its utilisation approach to estimating theta as follows:

...to be consistent with the Officer framework (and therefore the building block framework in the NER/NGR) the utilisation rate should reflect the before-personal-tax and before-personal-costs value of imputation credits to investors. On a before-personal-tax and before-personal-costs basis, an investor that is eligible to fully utilise imputation credits should value each dollar of imputation credits received at one dollar (that is, have a utilisation rate of 1).³⁹

103 It was this rationale – that the value of imputation credits must be estimated on a pre-personal-tax and pre-personal cost basis to be consistent with the regulatory framework in which it is used – that formed the basis of the Court’s judgment in the *PLAC-Ausgrid* appeal. The court held that:

We accept the AER’s submission that the Rules require consistency in the way the relevant building blocks interact, that is, a post-company tax and pre-personal tax and personal costs basis...we accept the AER’s submission the Tribunal’s approach to gamma was underpinned by a misunderstanding on its part about how return to investors was conceptualised in a WACC framework.⁴⁰

104 For the reasons set out above, our view is that the Court has fallen into error on this point. Having correctly identified that it would be wrong for theta to reflect any personal taxes or costs that *equally* affect credits and dividends and capital gains, it then ruled that theta should reflect *no* personal costs or taxes at all – even those that apply only to credits and not to dividends or capital gains. This leaves a hole in the regulatory allowance whereby the additional personal costs that apply to imputation credits are uncompensated.

³⁹ Ausgrid Final Decision, April 2015, Attachment 4, pp. 44-45.

⁴⁰ AER v ACT, Paragraphs 752, 755.

3.3 Rationale 2: Personal taxes and personal costs are relevant, but the allowed return on equity has already taken them into account

The allowed return on equity only reflects some personal taxes and personal costs

105 In the *Vic DB* Tribunal hearing, the AER introduced a new rationale for its “utilisation” approach to theta. This rationale appears to recognise that other WACC parameters *do* reflect the effects of personal taxes and personal costs. It posits that personal taxes and personal costs *are* relevant (including those that apply to credits), but they have already been taken into account in the return on equity, so to also take them into account when estimating the value of imputation credits would amount to double counting.

106 Counsel for the AER began the explanation of this rationale as follows:

Obviously, the amount of dividends is observed as well but they’re observed at their dollar value, but the market values are the asset prices, and they do – that’s quite right, that they already incorporate the effects of the differences in investors’ tax positions and transaction costs.⁴¹

107 We agree entirely with this statement. As we have set out above, the return on equity that the AER estimates will reflect the personal taxes and personal costs that pertain to dividends and capital gains. For example, if the AER estimates a required return on equity of 7%, that indicates that the dividends and capital gains that investors receive would have to provide a 7% return, which includes any compensation required to cover the effects of personal taxes and personal costs related to those dividends and capital gains.

108 For example, if there were no personal taxes or personal costs relating to dividends and capital gains, investors may have required a return of only 5%. In this case, the additional 2% is compensation to cover the effects of personal taxes and personal costs. If a regulated business had \$1,000 of equity capital, it would be allowed to charge prices so that it was able to provide \$70 of dividends and capital gains to its shareholders, of which \$20 (the additional 2% return) is to compensate investors for the personal taxes and personal costs that relate to dividends and capital gains.

109 The AER’s submission then continued as follows:

But that’s where we depart with the applicants because those matters are incorporated into the asset prices and, therefore, they are incorporated into the allowed rate of return and, therefore, they are incorporated into the allowed revenues for the service provider...these personal costs, personal valuation matters will be reflected in the return on equity, will be included in the allowed revenues, to then undertake an exercise of seeking to value imputation credits

⁴¹ *Vic DB* Tribunal hearing transcript, p. 650.

in the allowance for company tax to reduce it by these matters, does bring about an inconsistency in the logic of the post-company tax model and, effectively, provides a second form of compensation for precisely the same costs.⁴²

110 In our view, this submission fundamentally misunderstands the role of theta. Theta represents the rate at which investors would be willing to exchange dividends and capital gains. It does *not* double count any compensation in relation to personal taxes and personal costs. Theta represents only the extent to which the personal costs in relation to credits *exceed* those in relation to dividends and capital gains. It represents only the *additional* costs. Any suggestion that it double counts the *same* costs is simply wrong.

111 That is, the AER appears to have committed a logical fallacy. Having correctly identified that it would be wrong for theta to reflect any personal taxes or costs that have *already* been taken into account in the return on equity, the AER then concludes that theta should reflect *no* personal costs or taxes at all – even those that have not yet been taken into account in the allowed return on equity.

112 For example, as explained in Paragraph 48 above, the effect of personal taxes has already been taken into account in the allowed return on equity, so it would be wrong to again take it into account when estimating the value of imputation credits. This is precisely why theta must represent only those matters that are unique to imputation credits and which have not yet been taken into account when the AER estimates the required return on equity from dividends and capital gains.

113 This is also precisely why dividend drop-off analysis estimates the value of imputation credits *relative to* dividends and capital gains – to estimate only the effect of those matters that have not already been taken into account in the required return on equity from dividends and capital gains.

The incorporation of the market value of credits

114 In its submissions to the Court in relation to the appeal of the *SAPN* Tribunal's decision, the AER appears to submit that even the personal costs that relate only to imputation credits (over and above those that relate to dividends and capital gains) are incorporated into the allowed return on equity.

115 Our understanding of the AER's argument is as follows. Suppose that, in the absence of imputation, investors would require a return on equity (from dividends and capital gains) of 7%. As set out above, this would include the compensation that investors require to cover the personal taxes and costs that apply to dividends and capital gains. Now suppose that, in line with our earlier example, that:

- a. Imputation credits with a face amount of 1% are distributed to investors;
- b. 55% of those credits are distributed to resident investors; and
- c. Investors in aggregate value imputation credits at 35% of the value of dividends and capital gains. (That is, for the reasons set out in

⁴² *Vic DB* Tribunal hearing transcript, p. 650.

Paragraph 33 above, investors would only be prepared to give up \$35 of dividends and capital gains to receive the \$55 of imputation credits that is distributed to resident investors.)

116 In this case, investors will reduce their requirement for dividends and capital gains by 0.35% to 6.65%. Thus, when the AER uses market data to estimate the required return on equity, they will see that the market requires a return of 6.65% from dividends and capital gains. This 6.65% reflects the personal costs that apply only to imputation credits – if those personal costs were lower, the credits would be relatively more valuable and investors would require less return from dividends and capital gains.

117 The AER uses data from 1883 to estimate the required return on equity. For the period up to 1987 there were no imputation credits, so the entire return on equity had to be provided in the form of dividends and capital gains. Thus, in our numerical example, the estimate of the required return from dividends and capital gains will be 7% for the period up to 1987 and 6.65% for the period after 1987. These figures cannot be averaged because they are estimates of different things – the 7% figure reflects the total required return on equity and the 6.65% figure is net of the value of imputation credits. It is for this reason that the regulatory framework requires, via a process known as “grossing up,” that the value of any imputation credits must be added back to the return from dividends and capital gains to produce an estimate of the total return on equity. In this case $6.65\% + 0.35\% = 7\%$ for the post-1987 period. Now the estimates from both sub-periods are comparable and they can be assessed together. The AER explains this point in its submissions in relation to the SAPN appeal:

The return on equity must be grossed up by the value of distributed imputation credits. The increase reflects the fact that the return on equity is estimated from observed returns in the market (the returns comprise dividends and capital gains and are divided by the stock price to derive a rate of return). However, the observed returns in the market reflect the payment of a proportion of personal taxes at the company level - under an imputation system, the returns received by equity investors include three components: capital gains, dividends and imputation credits. Imputation credits are personal tax paid at the company level. Asset prices (and the resulting “market observed” return on equity) will reflect the value of those three components of return. In other words, asset prices will be higher, and the resulting rate of return on equity that is observed from those asset prices will be lower, in the presence of imputation credits than without them. To derive a nominal vanilla return on equity, that is, on a post company tax pre personal tax basis, an adjustment must be made to the return on equity to take account of the effect of imputation credits. That is done by grossing up the return on equity by the value of imputation credits. The grossed up return on equity is then a rate of return on a post company tax pre personal tax basis. Under the NER, that adjustment is made in accordance with cl 6.5.2(d)(2).⁴³

118 The AER now accepts that the reduction in the return that investors require from dividends and capital gains (0.35% in the example above) reflects all of the personal

⁴³ AER submissions in relation to SAPN appeal, Paragraph 32(c).

costs that cause investors to value credits less than dividends and capital gains – it is the market value of credits (relative to dividends and capital gains):

The observed returns in the market in terms of asset prices are assumed to reflect the full range of personal taxes and personal costs that affect investors' valuations of the asset. In other words, to the extent that personal taxes and personal costs associated with returns on the asset (capital gains, dividends and imputation credits) diminish the value of an equity investment, that will be reflected in the asset price and thereby reflected in the resulting return on equity. The resulting (and required) return will be higher as a result.⁴⁴

119 Consequently, it must be the very same market value of credits (relative to dividends and capital gains) that is added back in the grossing-up step of the regulatory process. If anything other than the same market value of credits is added back, the result will be meaningless – it certainly will not produce an estimate of the (7%) total required return on equity that is commensurate with the pre-1987 data.

120 However, the AER has submitted that because the (0.35%) reduction in the market's required return from dividends and capital gains reflects the market value of credits, using the same market value of credits in the grossing-up step of the regulatory process would amount to double counting.

...the AER adjusts the return on equity estimated from the market by the amount of personal tax paid at the company level, ie the value of distributed imputation credits. It would be incorrect to use the "market" value of imputation credits to make that adjustment because the "market observed" return on equity already incorporates the effects of any personal costs (time value of money, transaction costs etc). The AER adopts the same approach to the allowance for company tax.⁴⁵

121 In our view, this is exactly wrong. It is precisely *because* the reduction in the market's required return from dividends and capital gains reflects the market value of credits that the same market value of credits *must* be used in the grossing-up step of the regulatory process.

122 The correct approach is as follows:

- a. Estimate the total required return on equity from the pre-1987 data as 7%.
- b. Estimate the total required return on equity from the post-1987 data as 6.65% and grossed-up for the market value of credits of 0.35% to obtain a gross-up estimate of 7%.
- c. Average the estimates over the two periods to produce an average estimate of 7%.
- d. Deduct the market value of credits of 0.35% and allow revenues to provide a return from dividends and capital gains of 6.65%.

⁴⁴ AER submissions in relation to SAPN appeal, Paragraph 32(e).

⁴⁵ AER submissions in relation to SAPN appeal, Paragraph 32(g).

- 123 The AER's proposed approach, which results in investors being under-compensated, is as follows:
- a. Estimate the total required return on equity from the pre-1987 data as 7%.
 - b. Estimate the total required return on equity from the post-1987 data as 6.65% and gross-up for the proportion of credits distributed to resident investors of 0.55% to obtain a grossed-up estimate of 7.2%.
 - c. Average the estimates over the two periods to produce an average estimate of 7.04%.⁴⁶
 - d. Deduct the proportion of credits of distributed to residents of 0.55% and allow revenues to provide a return from dividends and capital gains of 6.49%, which is less than the 6.65% return that they require.
- 124 The result is an internally inconsistent implementation of the regulatory model whereby investors are properly compensated for all personal taxes and costs that apply to dividends and capital gains, but not compensated at all for the additional personal costs that apply to imputation credits.

⁴⁶ There are 105 years of data prior to imputation and 29 years post imputation.

4 The interpretation of redemption rate estimates

4.1 Point estimates or upper bounds?

125 In the sections above, we have demonstrated that, in the context of the regulatory framework, θ represents the exchange rate at which investors would exchange dividends and capital gains for imputation credits. In Paragraph 33 above, we set out a number of reasons why investors in aggregate would value imputation credits less than dividends and capital gains. In relation to those reasons:

- a. The equity ownership approach provides a noisy estimate of the effect of (a) only – the fact that some credits are distributed to non-residents who obtain no value from them;
- b. ATO tax statistics provide an estimate of the effects of (a)-(c) – that approach produces a direct estimate of the proportion of credits that are *actually* redeemed from the Tax Office; and
- c. The dividend drop-off approach provides a direct estimate of the extent to which investors value imputation credits relative to dividends and capital gains. This estimate includes all of the effects set out in Paragraph 33, and any other reasons why investors would value credits less than dividends and capital gains.

126 Consequently, if one accepts that θ does properly represent the exchange rate at which investors would exchange dividends and capital gains for imputation credits, dividend drop-off analysis would provide a direct estimate and the other approaches would only serve as upper bounds – because they include the effects of only a sub-set of the reasons why investors would value credits less than dividends or capital gains.

127 However, if one concludes (contrary to the analysis above) that θ should be interpreted as the proportion of credits that are redeemed, the ATO approach would provide a direct estimate, the dividend drop-off approach would provide a lower bound (as it includes the effects of additional factors) and the equity ownership approach would provide an upper bound (because it does not consider the effects of the 45-day rule or indeed *any* reason why investors would not redeem credits other than their ineligibility as foreign investors).

4.2 The reliability of ATO tax statistics

128 In its recent decisions, the AER has questioned the reliability of using tax statistics to inform the estimate of θ and states that it applies limited weight to such estimates.⁴⁷ The issue is as follows:

⁴⁷ CitiPower Final Decision, Attachment 4, p. 13.

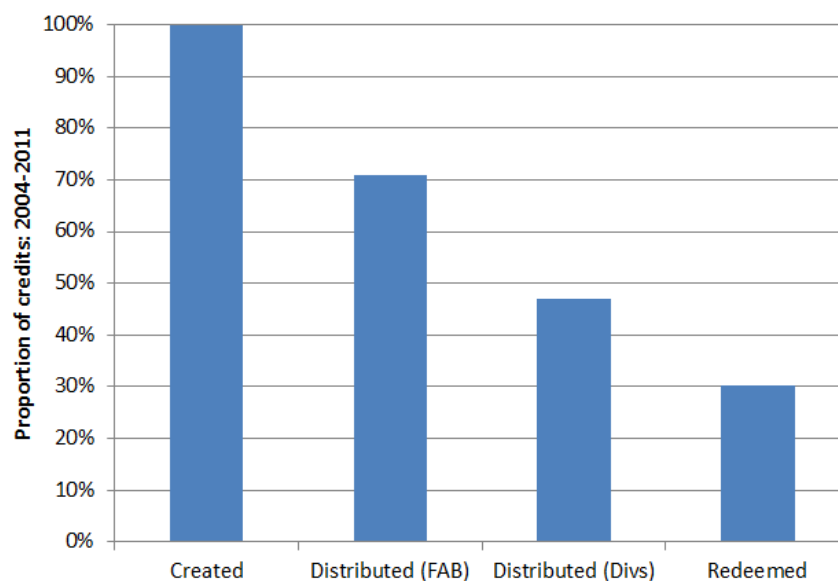
- a. Each year a certain amount of credits are created, some of those are distributed to shareholders, and some of those distributed credits are redeemed by shareholders.
- b. The ATO provides data on the quantum of credits that are created each year and on the quantum of credits that are redeemed each year. There has never been any dispute about either of these items.
- c. The ATO does not provide direct data on the number of credits that are distributed each year – so that quantity has to be derived. Two approaches have been proposed:
 - i. The franking account balance (FAB) approach – whereby the amount of distributed credits is derived as the sum of all credits created less those that are retained by firms as reported in the firms’ franking account balances;⁴⁸ and
 - ii. The dividend approach – whereby the amount of distributed credits is estimated by tracking dividend payments and making assumptions about the flow of dividends between companies, trusts and life offices.
- d. The FAB and dividend approaches produce different estimates of the amount of credits that are distributed each year.

129 The difference between the FAB and dividend estimates of the amount of credits distributed was first identified by Hathaway (2013).⁴⁹ His estimates are summarised in Figure 1 below.

⁴⁸ A firm’s ‘franking account balance’ is a record of the face amount of imputation credits the firm has available for distribution.

⁴⁹ Hathaway, N., 2013, “Franking credit redemption ATO data 1988 to 2011,” Capital Research, September.

Figure 1: Summary of ATO tax statistics



Source: Hathaway (2013), p. 9.

130 Figure 1 shows that the FAB method indicates that 71% of created credits are distributed, whereas the dividend method produces a distribution rate of 47%.

131 Under the AER's contention that theta should be interpreted as the proportion of distributed credits that are redeemed, the ATO tax statistics can be used to estimate theta, and consequently gamma. Under this approach:

$$\gamma = F \times \theta = \frac{\text{Credits Distributed}}{\text{Credits Created}} \times \frac{\text{Credits Redeemed}}{\text{Credits Distributed}}.$$

132 Note that the amount of credits distributed cancels out, so we are left with:

$$\gamma = \frac{\text{Credits Redeemed}}{\text{Credits Created}}.$$

133 In this case, there is no issue with the measurement of either term, so no reason to consider the estimate to be unreliable. Hathaway (2014) recognises this point and reports that the proportion of credits redeemed to credits created is 30%.⁵⁰

134 Moreover, it is clear from Figure 1 above that the same outcome would be obtained whether one adopted the FAB approach:

$$\gamma = F \times \theta = \frac{\text{Credits Distributed}}{\text{Credits Created}} \times \frac{\text{Credits Redeemed}}{\text{Credits Distributed}} = \frac{71}{100} \times \frac{30}{71} = 0.30$$

or whether one adopted the dividend approach:

$$\gamma = F \times \theta = \frac{\text{Credits Distributed}}{\text{Credits Created}} \times \frac{\text{Credits Redeemed}}{\text{Credits Distributed}} = \frac{47}{100} \times \frac{30}{47} = 0.30.$$

⁵⁰ Hathaway (2013), Paragraph 99.

135 In its October 2015 Final Decisions, the AER recognised that it must adopt the same estimate of credits distributed in the two places it appears in the above equation.⁵¹ The AER favoured the FAB method and adopted a gamma estimate of 0.31 based on that approach,⁵² and would clearly have arrived at the same estimate of gamma if it had used the dividend approach in both places in the above equation.

136 In its most recent decisions, the AER has updated this estimate to 0.34.⁵³

137 As set out above, if it is accepted that theta properly represents the value of credits relative to the value of dividends and capital gains, the ATO tax statistics will only produce an upper bound, which implies that $\gamma < 0.34$.

138 However, in its most recent decisions, the AER has downplayed the use of ATO tax statistics:

In this final decision, we consider there are potential underlying data issues with tax statistics and as a result, the utilisation rate cannot be estimated reliably from this data. As outlined by Lally, the data issues with tax statistics are generally accepted by service providers, the Tribunal, Hathaway, NERA, Handley and Frontier. For this reason, in this decision, we have placed limited weight on tax statistics.⁵⁴

139 In this regard, the AER notes that Lally (2016) has restated the issue relating to using the tax data to estimate the amount of distributed credits. Lally (2016) does not present any new evidence, but simply restates the well-known issue in relation to the quantum of credits distributed:

...variation arising from two possible approaches (ATO dividend data and ATO tax data) whose results should match and the divergence cannot be reconciled. This variation casts doubt on all estimates using ATO data, and this problem with the ATO data alleged by Hathaway is generally accepted.⁵⁵

140 As set out above, the fact that it is generally accepted that there are two different estimates of the amount of credits distributed does not mean that the ATO data should be abandoned entirely. The 0.34 upper bound (which had been used as a point estimate by the AER) does not require an estimate of the amount of credits distributed. It is a ratio of redeemed credits to created credits, and there has been no question raised about the reliability of either of these quantities.

141 Whereas the ATO has no direct reason to monitor the number of “Credits Distributed” in a given year, it would be extraordinary to suggest that either:

- a. The ATO does not know how much corporate tax was paid in a given year, this being the “Credits Created” figure; or that

⁵¹ See, for example, SAPN Final Decision, Attachment 4, p. 18.

⁵² See, for example, SAPN Final Decision, Attachment 4, p. 18.

⁵³ AusNet Draft Decision, Attachment 4, p. 16.

⁵⁴ Citipower Final Decision, Attachment 4, p. 13.

⁵⁵ Lally (2016), p. 20.

- b. The ATO does not know how many credits were redeemed from them in a given year, this being the “Credits Redeemed” figure.

142 In our view, the 0.34 figure is relevant evidence that is unaffected by any concerns about the estimate of the quantum of distributed credits. The issues raised by Dr Lally and the AER about the unreliability of tax statistics are not relevant to the calculation of the 0.34 figure, which is independent of the estimate of the quantum of credits distributed (which is the only figure about which concerns have been raised).

4.3 The role of the equity ownership estimate

143 The equity ownership approach provides an upper bound for the proportion of credits that are redeemed. Whereas the ATO data provides a direct estimate of the proportion of credits that are actually redeemed from the Tax Office, the equity ownership approach (at best) captures the effect of non-residents, but no other reason why credits might not be redeemed. That is, if any credit is not redeemed for any reason other than it being distributed to a non-resident, the equity ownership estimate will be overstated. Consequently, it should be interpreted as an upper bound for the redemption rate.

144 In summary:

- a. If one accepts that θ does properly represent the exchange rate at which investors would exchange dividends and capital gains for imputation credits, dividend drop-off analysis would provide a direct estimate, ATO tax statistics would provide an upper bound, and the equity ownership estimate would be of little relevance because the ATO estimate provides a tighter upper bound.
- b. If one concludes that θ should be interpreted as the proportion of credits that are redeemed, the ATO approach would provide a direct estimate and the equity ownership approach would provide an upper bound (because it does not consider the effects of the 45-day rule or indeed *any* reason why investors would not redeem credits other than their ineligibility as foreign investors).

5 Recommendations

145 In our view, proper regulatory transparency requires that a determination should set out clear answers to the following questions:

- a. Does the AER agree that its allowed return on equity includes compensation for the personal taxes and personal costs that apply to dividends and capital gains?
- b. Does the AER consider that its allowed return on equity should also include compensation for any additional personal costs that apply to imputation credits (beyond those which apply to dividends and capital gains)?
 - i. If not, why not?
 - ii. If so, where in the regulatory model is such compensation accounted for?
- c. If investors reduce the dividends and capital gains that they would otherwise require by the market value of imputation credits (i.e., reflecting any additional personal costs that apply only to imputation credits), and if the AER then applies a different definition of value in the grossing-up step, how should the resulting figure be interpreted? In particular, can total return on equity estimates computed in this way for post-1987 data be averaged with return on equity estimates from pre-1987 data as like with like?

