

22 August 2016

Mr John Hindmarsh  
Chief Executive Officer  
Queensland Competition Authority

Dear Mr Hindmarsh

**Response to Dr Lally's review of the Australia Competition Tribunal's gamma decision (Feb 2016)**

On 8 July 2016, DBCTM submitted its response to the QCA's draft decision on the 2015 draft access undertaking (2015 DAU). As part of this response, DBCTM sought clarification on whether the approach the QCA had adopted for determining gamma had given sufficient regard to the Australian Competition Tribunal's reasoning for setting aside the Australian Energy Regulator's determination on gamma.

The QCA engaged Dr Lally to review the Tribunal's decision, and published his views on 25 July 2016. The QCA then sought comments from stakeholders on Dr Lally's review. This submission sets out DBCTM's response to that review.

DBCTM's principal concern having read the review was Dr Lally's claim that the Tribunal had made an error *of theory* in recommending an approach to estimating gamma that was inconsistent with the "Officer" framework. DBCTM sought the advice of Professor Officer, the originator of the Officer framework, on this point and on the question of whether the Tribunal's recommended approach is consistent with the framework.

DBCTM's attached submission summarises Professor Officer's advice and provides an interpretation of his views in the context of Australian regulators' responsibilities. Professor Officer's advice is that Dr Lally is incorrect in claiming that the Tribunal made an error of theory. Professor Officer has confirmed that DBCTM's submission interprets his views accurately.

Following its review of Professor Officer's advice, DBCTM maintains its support for the Tribunal's conclusion that a value of 0.25 for gamma is appropriate for the Australian regulatory context. Given that Dr Lally's principal objection to the Tribunal's position is invalid, DBCTM is strongly of the view that the QCA should follow the Tribunal's precedent.

The full text of Professor Officer's advice is attached to this submission. Neither DBCTM nor Professor Officer has any objection to the publication of the advice on the QCA website.

Please contact me or Jonathan Blakey if you have any queries or require more information on DBCTM's submission.

Yours sincerely



Anthony Timbrell  
Chief Executive Officer  
**DBCT Management**

DBCT MANAGEMENT



**Response to Lally's review of Australian Competition  
Tribunal's decision relating to gamma**

**22 August 2016**

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## 1 GAMMA

DBCTM welcomes the opportunity to comment on Dr Lally's review of the Australian Competition Tribunal's February 2016 decision in the *PIAC-Ausgrid* case to set aside the Australian Energy Regulator's (AER's) determination on the appropriate value for gamma<sup>1</sup>.

### 1.1 PIAC-AUSGRID CASE

DBCTM notes that the AER relied heavily on Lally's views in the *PIAC-Ausgrid* case. Overall, the Tribunal regarded Lally's views as inappropriate for the estimation of gamma in the Australian regulatory framework. Like the AER, the QCA relies heavily on Lally's advice for estimating gamma in the determination of allowable revenues for Queensland regulated infrastructure businesses, including DBCTM.

In its July 2016 response to the QCA's draft decision on the 2015 DAU, DBCTM sought clarification on why the QCA did not regard it appropriate to amend its gamma-estimation procedures to conform to the Tribunal's ruling. While acknowledging that the QCA is not formally bound by Tribunal decisions, DBCTM noted that the QCA has previously recognised the importance of regulatory precedents set by the Tribunal.<sup>2</sup>

DBCTM notes that Lally's review of the Tribunal's decision does not provide the QCA with a new third-party opinion on the issues that were before the Tribunal. Rather, it just establishes that Lally does not accept the Tribunal's decision that his views are in tension with key requirements of Australian regulatory determinations. DBCTM notes that Lally's review comprises mainly a restatement of his previous positions and a series of assertions that the Tribunal did not adequately substantiate its rulings.

A central issue considered by the Tribunal was whether the value of imputation credits should be determined on the basis of:

- what market evidence reveals about the value that investors actually assign to them, or
- theoretical assumptions about what the credits could be worth if they are fully exploited.

Lally takes the latter view and argues that this is what is implied by a formal derivation of the "Officer" framework<sup>3</sup> that Australian regulators have adopted in estimating the cost of equity in regulatory determinations.

The Tribunal took the former view. It emphasised that gamma must be determined in the context of the need to ensure that the regulated entity is adequately recompensed for its corporate income tax liability, recognising the impact of dividend imputation in reducing the burden of personal tax liabilities on the entity's shareholders:

*The proper concern is not the extent to which imputation credits may be translated to real money. Instead, it involves a determination of the cost of taxation to a network service provider, and the extent to which that cost must be reduced to reflect the impact of the dividend imputation system on the network service provider. The reduction in the cost of income tax represented by gamma reflects the personal taxation benefits (as opposed to other benefits such as dividends) gained by shareholders from holding equity in the network service provider and the value of those benefits as ascribed by shareholders. Consequently, 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.<sup>4</sup> (emphasis added)*

<sup>1</sup> Lally (2016) Review of the ACT's Gamma Decision.

<sup>2</sup> DBCTM's response to QCA's draft decision on 2015 DAU: 29

<sup>3</sup> Officer (1994) *The cost of capital of a company under an imputation system*, Accounting and finance; vol 34(1), May 1994

<sup>4</sup> *PIAC-Ausgrid* decision, para 1061.

and

*...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: the measure is what can be claimed). The value is not what can be claimed or utilised, but what is claimed or utilised as demonstrated by the behaviour of the shareholder recipients of the imputation credits.<sup>5</sup> (emphasis added)*

The Tribunal also regarded market-based estimation of gamma as important to ensure consistency with the market-based approach conventionally used to estimate other parameters of the costs of debt and equity<sup>6</sup>.

Lally claims that the Tribunal's market-based approach is inconsistent with the Officer framework<sup>7</sup>.

As noted in DBCTM's response to the QCA's draft decision, the AER has applied to the Federal Court for judicial review of the Tribunal's *PIAC-Ausgrid* decision. DBCTM understands that this appeal is strictly on legal grounds. To succeed in this appeal, the AER would have to show *either*:

- that the applicants in the *PIAC-Ausgrid* case had not established as grounds for review that the AER had:
  - made an error of fact;
  - exercised its discretion incorrectly; or
  - been unreasonable in making its original determination;

*or*

- that the Tribunal had not correctly applied the grounds of review that the applicants had established.

In the absence of assurance to the contrary, DBCTM remains concerned that the QCA might retain its existing approach to gamma determination even if the Federal Court dismisses the AER's judicial-review application.

DBCTM's main concern arising from Lally's review was his claim that the Tribunal's preferred approach to estimating gamma was incompatible with the Officer framework as a matter of theory.

DBCTM's position in its response to the QCA's draft decision was predicated on the belief that the Tribunal's preferred position was one of the approaches that could legitimately be adopted (not necessarily the only approach) consistent with the theory of the Officer framework and the way in which the framework is applied by Australian regulators. DBCTM understood that the Tribunal had considered all the arguments advanced by proponents of competing legitimate approaches and had ruled on which of them was most appropriate in the Australian regulatory context.

To check that the Tribunal's preferred approach was among the set of theoretically legitimate approaches, DBCTM sought advice from Professor Officer.

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<sup>5</sup> *PIAC-Ausgrid* decision, para 1081.

<sup>6</sup> *PIAC-Ausgrid* decision, paras 1073, 1074 and 1097.

<sup>7</sup> See for example, Lally (2016), p.42.

## 1.2 OFFICER'S VIEWS ON LALLY'S REVIEW<sup>8</sup>

Officer confirms that the approach for estimating a value for gamma was not mandated by the theory of the Officer framework. Officer's view is that the WACC definitions in this framework:

*... do not imply any particular value of  $\gamma$ .  $\gamma$  is simply defined as the value of a \$1 of imputation credits in these models, the models say nothing about how this value should be estimated.<sup>9</sup> (emphasis added)*

All that Officer asserts about the value of gamma as a theoretical proposition is that it is bounded by 0 and 1.

Officer explicitly refutes Lally's claim that Lally's 2003 paper with van Zijl provides "rigorous proofs" of the Officer model that imply a unique legitimate approach for estimating the value of gamma:

*Lally (2016) argues that he and van Zijl (Lally and van Zijl 2003) "provide rigorous proofs" of the Officer (1994) model. This is not correct. Lally and his co-author derive a variation of what might be used for estimating  $\gamma$ . They do not re-define  $\gamma$ , nor do they provide a unique means of legitimately estimating  $\gamma$ . Their derivation does not possess the generality of the Officer (1994) model, it is simply one way of extending the model to derive estimates. I have addressed above some of the variations in methods that might be used to estimating  $\gamma$  and the Lally and van Zijl (2003) is simply one among several.<sup>10</sup>*

[...]

*...the Lally estimate for  $\gamma$  is just one of several legitimate methods that could be used.<sup>11</sup>*

Officer's advice also includes commentary on a number of aspects of face-value-based and market-based approaches to estimating values for gamma. He notes that:

- the value of an imputation credit to a shareholder is its face value if:
  - the shareholder is able to redeem the credit (i.e. that (s)he is a domestic taxpayer, not a foreign taxpayer); and
  - the personal income tax relief afforded by the credit can be obtained costlessly and contemporaneously with the company-tax payment that it reflects.<sup>12</sup>
- there exists no explicit market for the trading of credits:

*It is fairly clear that the tax legislation attempts to prohibit the trade in imputation credits.<sup>13</sup>*

He speculates that in a "frictionless and competitive" market for credits, the market value would be the face value so long as "*... the amount of personal tax liabilities of Australian taxpayers was greater than the available imputation credits.*"<sup>14</sup> DBCTM understands that this could be the case so long as the lack of friction in the hypothetical market is taken to mean that credits can be redeemed costlessly and contemporaneously with the company-tax payments that they reflect.

- in view of the absence of direct trading in credits, market-based approaches must rely on making inferences from "*... effective trade in ... shares where credits are an important component of value.*" – dividend drop-off studies, for example.<sup>15</sup> It is clear that these markets do not exhibit the

<sup>8</sup> Officer (2016) *Commentary on the DBCT matter before the QCA: Focussing on Gamma in the Officer (1994) Model.*

<sup>9</sup> Officer (2016), p.3.

<sup>10</sup> Officer (2016), p.6.

<sup>11</sup> Officer (2016), p.8.

<sup>12</sup> Officer (2016), p.4.

<sup>13</sup> Officer (2016), p.4.

<sup>14</sup> Officer (2016), p.4.

<sup>15</sup> Officer (2016), p.5.

properties that would be required for a direct market in credits to yield the face value as the market value for credits.

Much of Officer's discussion relates to the value of credits to a shareholder of a particular firm (e.g. DBCTM) once they have been allocated to the shareholder. That is, they are *ex post* concepts. In setting gamma for regulatory determinations, two additional considerations are required:

- First, under incentive regulation, the regulator determines cost-of-capital parameters on the basis of data for a hypothetical efficient benchmark firm for the regulated entity, not on the basis of data for the entity itself.
- Second, the rate of return on equity that the regulator allows is an *ex ante* concept, related to the rate of return that the efficient benchmark firm would have to be able to pay in order to attract and retain capital. Officer's discussion recognises that the values that investors attach *ex ante* to the imputation credits that they could receive if they invest in the entity might diverge from their *ex post* face values. One reason is that the timing of the personal tax relief afforded by credits will not coincide precisely with the receipt of the credits, much less with the time at which the associated company tax is paid. The Officer framework does not deal with factors that might cause investors' *ex ante* valuations of credits to diverge from their *ex post* face values.

### 1.3 CONCLUSION

Informed by Officer's advice, DBCTM retains its initial view that the Tribunal's ruling is consistent with the Officer framework, notwithstanding Lally's assertion to the contrary. Lally's view was considered (and rejected) by the Tribunal. Officer has confirmed that Lally is incorrect in claiming that the Tribunal's ruling is inconsistent with the Officer framework.

In view of this, DBCTM reiterates the position on gamma that it adopted in its response to the QCA's draft decision:

*While acknowledging that the QCA is not formally bound by the Tribunal decision, DBCTM notes that the Tribunal considered and rejected all the arguments upon which the QCA relies to justify the 0.47 value proposed in the draft decision on the 2015 DAU. Hence, DBCTM submits that the QCA should adopt the Tribunal's preferred value for gamma of 0.25.<sup>16</sup>*

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<sup>16</sup> DBCTM's response to QCA's draft decision on 2015 DAU: 29

**Commentary on the DBCT matter before the QCA:  
Focussing on Gamma in the Officer (1994) Model**

**R.R.Officer**

**12<sup>th</sup> August 2016**



## Introduction

The paper by Officer (1994)<sup>1</sup> as the title indicates developed a model or models to estimate a company's cost of capital under an imputation tax system. The paper illustrated how important it was to match the appropriate definition of the weighted average cost of capital (WACC) for a company to the definition of the cash flows that are to be used in conjunction with the WACC to derive values. Appendix 1 defines the variety of WACC models and their cash flows.

I have a preference to use as an after-tax definition of WACC that has become known as the 'Vanilla WACC'. In the 'Vanilla WACC' the effect of company taxes are incorporated in the cash flows where they can be identified on a period by period basis, also this definition of WACC is intuitively more appealing because it is a simply weighted average of expected/required debt and equity returns.

'Vanilla WACC' (Equation 12 in Officer 1994)

$$r_{iv} = r_e \cdot \frac{S}{V} + r_d \cdot \frac{D}{V}$$

Cash flows

$$X_o - X'_g = X_o - T(X_o - X_d)(1 - \gamma)$$

Possibly a more common definition of the after-company tax WACC (Equation 10 in Officer 1994) because it more closely resembles the equation used in international textbooks is:

$$r_{iii} = r_e \cdot \frac{S}{V} + r_d \cdot \frac{D}{V} \cdot (1 - T)$$

Whose cash flows are defined as:

$$X_o(1 - T) + \gamma \cdot T(X_o - X_d)$$

The definition of the terms in these equations are:

$X_o$  represents operating net cash flows, i.e. the net cash flows that are distributed to shareholders, debt holders and the government through taxation i.e.

$$X_o = X_e + X_d + X_g$$

$X_e$  is the net cash flows that are attributable to shareholders.

$X_d$  is the net cash flows that are attributable to debt holders

$X_g$  is the net cash flows that are attributable to government through taxation

$T$  is the effective tax rate

$\gamma$  is the value of imputation tax credits as a proportion of the tax credits paid

$r_e$  is the required return to equity holders

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<sup>1</sup> R.R. Officer "The Cost of Capital of a Company Under an Imputation Tax System", *J. of Accounting & Finance*, May 1994, Pp. 1-17.

$r_d$  is the required return to debt holders  
 $S$  is the value of shares or equity  
 $D$  is the value of debt  
 $V = S + D$  is the value of the assets of the company.

The commentary that follows will focus on the parameter  $\gamma$  (Gamma) but I refer to the full and alternative definitions of the WACC because they have been misinterpreted in papers before the QCT. In this context it should be noted that they are definitions and not empirical models; they are relevant for an individual company, they do not have a time dimension.<sup>2</sup> The models are perfectly consistent with segmented and/or non-segmented markets, international and/or domestic investors. We would expect the value of the parameters to change for varying circumstances but not the models! In short, they are general definitions of WACC appropriate for particular definitions of the cash flows.

### ***Gamma ( $\gamma$ )***

In the context of these equations  $\gamma$  is the value of a \$1 of imputation tax credits, it is bounded by 0 and 1.0. At  $\gamma=1.0$  a dollar of imputation credits is worth a \$1 and for  $\gamma=0$ , a dollar of imputation credits has no value.

Because they can be used as a credit against personal taxes, the value of imputation credits reduces the effective amount of company tax paid. Conceptually, the credits, are a withholding of personal taxes by the company that are paid to the tax office. Therefore, estimating the parameters of the models on an after-company tax basis but before personal taxes (which is how most securities are traded in capital markets) cause an effective reduction of the amount of company tax paid. The reduction in company tax is by the amount of personal tax withheld that is implied by the value of the imputation tax credits.

### ***Estimating the Value of Gamma ( $\gamma$ )***

The various WACC definitions defined by Officer (1994) do not imply any particular value of  $\gamma$ .  $\gamma$  is simply defined as the value of a \$1 of imputation tax credits in these models, the models say nothing about how this value should be estimated.

Insofar as  $\gamma$  relates to personal taxes it is related to the tax paid by an individual investor. Contemporaneously with the tax paid by the company, an investor can either use or not use the imputation credits therefore the value of  $\gamma$  is either 0.0 or 1.0. Where an investor can only use a proportion of the imputation credits associated with a franked dividend, the value of  $\gamma$  is still either 0.0 for those credits which cannot be used against personal taxes or 1.0 if the credits can be used – pragmatically, the value of  $\gamma$  for such an investor might be estimated as the weighted average of the two where the weights reflect the relative proportions of usable tax credits and non-usable credits to total credits.

Where the credits distributed are not contemporaneous with the company tax paid, in effect they reflect company tax paid in previous periods (credits can only be earned from company

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<sup>2</sup> The paper (Officer 1994) used a perpetuity framework to illustrate the use of the models but the principles, i.e. the defined parameters, of the models can be used for any time horizon.

tax paid), the value of the credits as they are earned may be less than 1.0 to the investor because of the time value of money. At the extreme where they earned but are never distributed they are worth zero. While such withholding behaviour may affect the value of the credits as they are earned they do not affect them on distribution. Different circumstances may change the value of  $\gamma$  but not the definition of  $\gamma$  nor the definition of WACC.

I understand the role of the regulators as prescribed by the Trade Practices Act and case law is to set a 'fair price' of the product or service under review such that it reflects an efficient use of resources to ensure that consumers of the service/product are protected against a misuse of any 'market power' – See Appendix 2 for support for this interpretation. The price that could be obtained in a competitive market is often used a guideline for setting such prices but at times or in some circumstances such a market cannot be assessed and alternative methods must be used to achieve the goal of 'fair prices'.

In the context of a value for  $\gamma$  let us assume we have frictionless, free and competitive market for imputation credits (something the legislation expressly prohibits). The value of  $\gamma$  or the price of imputation credits will be determined by the intersection of supply and demand for the product (imputation credits). In such a frictionless and competitive market  $\gamma$  would have a value of zero or 1.0. It would be zero if the amount of imputation credits generated by the company tax system was greater than the amount of personal tax liabilities of Australian taxpayers and it would be 1.0 if the amount of personal tax liabilities of Australian taxpayers was greater than the available imputation credits. What it would be is an empirical question but I believe they would be equal to 1.0.

Now let us assume that there are impediments to free trade of credits. These impediments could affect both the producers of credits (supply) and the users of credits (demand) such that the price or value of  $\gamma$  would lie between the two extremes of 0.0 and 1.0. Where between these bounds would depend on who the market makers were i.e. the marginal traders, those who could produce the lowest cost credits (supply) and those who got greatest value (demand) for the credits. If the market is legitimate and organised we can usually easily observe the values. However, where such trade in credits is deemed illegal we have to look for 'black markets' to try and estimate a value. Moreover, in my experience of 'black markets' we are likely to find many different prices reflecting segmented or different markets where the costs of arbitraging between the markets is too great to allow a single market to form. It is worth noting that such markets may be separated spatially, by size and in time, implying an estimate of value for  $\gamma$  could be different between an overseas price of credits from an Australian price, different values of  $\gamma$  could be attributed to different classes of stock e.g. 50 leaders from 'small caps', and credits could have different values in different time periods.

It is fairly clear that the tax legislation attempts to prohibit the trade in imputation credits. It was clearly the intention of the legislators that the value of a credit generated by a company should be restricted to the shareholder of that company who received the franked dividend. In these circumstances I find it surprising that government sponsored regulators appear to be condoning a 'black market' in credits by looking beyond the value of the credits to the shareholders of DBCT to establish a value. Even a 'pragmatic' regulator would at least start by asking the question of can we establish a value for credits for the shareholders of DBCT before perhaps proceeding further afield to examine what the credits appear to be worth elsewhere,

particularly where they believed there was trade in credits such that the ‘face value’ to the shareholders was not an appropriate value.

What is required to estimate a value for  $\gamma$  for the shareholders of a particular company? In the first instance whether they are able to use the credits e.g. are they Australian personal taxpayers or superannuation funds who can directly benefit from the credits? If they are we would then need to establish what and when credits are being distributed to the shareholders. If only a portion of the credits generated in any period are being distributed as franked dividends then only that proportion of the ‘face value’ of the credits which if they can use the credits would be  $\gamma = 1.0$ , alternatively if they could not use the credits i.e. they are foreign investors, then  $\gamma = 0.0$ .

A pragmatic regulator in such circumstances where there was a mix of domestic investors (those who can use the credits) and foreign investors (those who cannot) might decide that a ‘fair value’ for  $\gamma$  reflected the respective proportions. As an example of such an individual company approach, where we have no intra-company ‘market’ for credits where, say, 60 % of credits are typically distributed in a franked dividend (implying 60% of taxable profit is distributed as a franked dividend) and 70% are domestic shareholders and 30% overseas shareholders we could set a value for  $\gamma$  of  $0.6 \times 0.7 = 0.42$ . The value is not market determined – there is no market – whether this approach reflects a ‘fair value’, one that is based on proportions of credits distributed and the proportion of investors who can use them, is really a legal issue and not an economic one.

An alternative approach might be to try and establish who was or is the marginal investor, the one who determines the share price and set the value of the credits i.e. the value to that investor. If it was a foreign investor the  $\gamma$  would be 0.0 and conversely an Australian investor personal investor it could be set at  $\gamma = 1.0$ . The difficulty in determining the marginal investor and the greater variance in the  $\gamma$  estimate might dissuade a regulator from adopting such a ‘market approach’.

Another non-market approach that has been used is to use the tax statistics provided by the ATO. Such an approach uses the **average percentage** companies’ taxable income paid out as franked dividends (i.e. the percentage credits distributed of available credit) times the **average percentage** of imputation credit claims against personal income tax. Such an approach can only be justified if the average  $\gamma$  value for Australian companies is considered a ‘fair value’ for the company’s  $\gamma$ . It is a legal issue not an economic one, moreover, the problems with tax statistics in the context of imputation credits is a further dissuader of using this approach.

Returning to our ‘black market’, there are a variety of approaches that could be used to try an estimate  $\gamma$ , recognising that such an approach does imply there is an effective trade in credits or at least in shares where credits are an important component of value. The most popular one is to use ‘dividend drop-off’ studies to try and establish a value for  $\gamma$  when they are distributed, often called the theta ( $\theta$ ) such that when the fraction of credits distributed, often called F, times  $\theta$  gives an estimate of  $\gamma$ , i.e.  $F \times \theta = \gamma$ . Such an approach again, typically, uses a large number of company estimates so that the  $\gamma$  provided is an **average** which may or may not represent a ‘fair value’ for the company’s  $\gamma$  depending on the legal interpretation under the Trade Practices Act or common law of what constitutes ‘fair value’ in the context of the case.

An obvious question is why aren't 'dividend drop-off' studies used for the company under regulatory review? The issue is basically an econometric one, it is difficult to get reliable estimates (in a statistical sense) from a large number of companies over extended time periods using 'dividend drop-off' methods so that any estimate provided by an individual company would be far too unreliable to use as an estimate of  $\gamma$ .

Other market methods of estimating value for  $\gamma$  include directly interrogating the 'black markets' for a value. In the author's experience this was possible when the tax office turned a 'blind eye' to the trade in credits which was in the early years of the introduction of the imputation tax system but when the loss of revenue became too great legislative restriction were placed on the trade such as the '45 day Rule'. The difficulty in finding evidence that would 'stand-up in court' has meant that such approaches are not used although there is still clearly an indirect trade in imputation credits.

### **Commentary on Lally (2016)<sup>3</sup>**

In order to try and provide a cohesive commentary on Lally (2016) I will work through the seven points he makes in the Executive Summary and refer, where necessary, to other parts of his paper.

1. Lally (2016) argues that he and van Zijl ( Lally and van Zijl 2003) "provide rigorous proofs" of the Officer (1994) model. This is not correct. Lally and his co-author derive a variation of what might be used for estimating  $\gamma$ . They do not re-define  $\gamma$ , nor do they provide a unique means of legitimately estimating  $\gamma$ . Their derivation does not possess the generality of the Officer (1994) model, it is simply one way of extending the model to derive estimates. I have addressed above some of the variations in methods that might be used to estimating  $\gamma$  and the Lally and van Zijl (2003) is simply one among several.
2. The Officer (1996) version of the CAPM, adopted a domestic definition of the 'market portfolio's return' ( $R_M$ ) for the simple reason nearly all uses of CAPM in an Australian context adopt such an estimate. Therefore, there was a need to be cognisant that the estimates of the 'market risk premium' ( $R_M - R_f$ ) were typically based on a period when the company tax system was a Classical system where there were no imputation credits. There is no implication "that all investors could use the credits, the natural choice for theta is 1 despite the fact that many investors in Australian equities are foreigners and cannot use the credits", Lally p.3. In fact the Officer (1996) paper does point out the effect of foreign investment on the values of credits.

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<sup>3</sup> M.Lally "Review of the ACT's Gamma Decision", dated 13<sup>th</sup> July 2016.

The cost of capital reflects the required return by providers of capital and in this context, it is akin to a price. As such it will vary with supply and demand conditions in the capital market. Further, Australia's capital market is open so that Australian companies' costs of capital will be determined, in part at least, by world market conditions. However, the question still remains as to whether the measurement of this required return will differ under an imputation tax relative to a classical tax. Moreover, insofar as it is only the does not imply that measured rates of return, as they are usually measured, have not altered.

Officer (1996, pp 8,9)

and

This raises the important question of whether we can use conventional measures of the risk premium, such as an  $x$  percent premium over the risk free rate, when the  $x$  percent is based on historical rates under a classical tax system. If the imputation tax does *not* affect the cost of capital on an *after-company tax basis* as I have argued, then we could estimate  $E(r_{jt})$  using historical rates estimated under a classical tax regime. However, where estimates of returns are derived under an imputation tax using equation (16), some personal tax payments will be capitalized into the risk premium which consequently will be lower. In these circumstances, an adjustment (add  $\tau$ ) will be needed to include the personal tax credits so that the cost of equity capital is calculated to reflect an *after-company tax* but *before personal tax* return consistent with the definition of cash flows.

Officer (1996,p.10)

3. At his third point Lally is arguing for an overall Australian equities average  $\gamma$  as the appropriate measure for a 'fair value'. It is a legitimate approach but as I have argued above this is not an economic issue but a legal issue.
4. At this point Lally considers the use of ATO redemption rates and basically rejects them for much the same reasons I gave above – the unreliability of ATO data.
5. Under this point Lally considers and rejects the 'dividend drop-off' methods basically because of econometric problems. The paper tediously canvasses examples of problems with the approach making a number of contentious statements on the way.
6. Here Lally legitimately points out that the distribution rate ( $F$ ) should be a firm specific parameter, having rejected using ATO statistics but his approach to estimating  $\gamma$  is a market measure using market wide data. He is unconcerned with the consistency but never canvasses the idea of using a firm specific  $\gamma$  as I discussed and argued for above.
7. In the seventh point Lally (p.5) at last recognises that the Officer (1996) paper was not an attempt at giving empirical estimates or methodology to estimating  $\gamma$ : "*However, this view that theta is the market value of the credits is not supported by any statement in the Officer paper nor by any rigorous derivation of the model.*" This is despite making claims that the model supported a particular approach or value for  $\gamma$ . Further, as I have

pointed out above the Lally estimate for  $\gamma$  is just one of several legitimate methods that could be used.

My concluding remarks on Lally concern his estimate of the distribution rate  $F=0.83$ . He has selected one of among many possible approaches. His argument for such an estimate is that it is market based. He fails to acknowledge there is no clear or recognisable single market, he implies a market but as I have pointed out it is likely there are several separate 'black' markets because it is illegal to trade credits.

Lally (p.33) canvases using a firm's distribution rate but rejects it because "*...it will be able to manipulate (raise) its price or revenue cap by reducing its dividends (so as to reduce its distributed credits, which lowers its distribution rate and therefore raises its cost of capital estimated from the Officer model used by regulators).*" A firm is going to deliberately raise its cost of capital to 'fool' regulators? What does he think shareholders are going to do with such a management that would trash their shares to mislead a regulator. There are many easier ways to raise a firm's cost of capital but I would have thought the whole exercise of a successfully managed firm is to get their share price as high as possible and implicitly their cost of capital as low as possible for the operating activities!

Lally prefers company-wide estimates or averages for  $\gamma$ , presumably because he believes such will yield 'fair prices' when used in cost of capital framework. As I have argued it is a legitimate approach but is really a legal issue as to whether such an approach will yield 'fair prices'. Lally does refer to the ACT's preference for market rates for  $\gamma$  but I don't believe the ACT has properly considered alternative approaches. If we extended the average estimates for  $F$  and  $\theta$  subsequently  $\gamma$  across all estimates of the cost of capital we would use an average industry wide cost of capital which would not recognise specific advantages or disadvantages particular regulated firms may have that are out of their control (like taxes). A point Lally recognises when he discusses market wide distribution rates (P p.33-37).

Lally criticise the ACT of  $\theta$  of 0.35 but fails to offer a better estimate, simply pointing out there are alternative approaches to estimating  $\theta$  and by implication  $\gamma$ . Here I agree but I would have thought he should have articulated the approach he would adopt.

## APPENDIX I

### DEFINITIONS OF WACC

There are a variety of WACC that could be used and the most commonly used formulae for the WACC and the appropriate definition of net cash flows, given the WACC, are given below. The proof of these definitions can be found in Officer, R.R. [1994], "The Cost of Capital of a Company Under an Imputation Tax System". *Accounting and Finance*, Vol. 34, No. 1, pp. 1-17.

#### Define

$X_0$	represents operating net cash flows, i.e. the net cash flows that are distributed to shareholders, debt holders and the government through taxation i.e. $X_0 = X_e + X_d + X_g$
$X_e$	is the net cash flows that are attributable to shareholders.
$X_d$	is the net cash flows that are attributable to debt holders
$X_g$	is the net cash flows that are attributable to government through taxation
$T$	is the effective tax rate
$\gamma$	is the value of imputation tax credits as a proportion of the tax credits paid
$r_e$	is the required return to equity holders
$r_d$	is the required return to debt holders
$S$	is the value of shares or equity
$D$	is the value of debt
$V = S + D$	is the value of the assets of the company

#### Before tax Cost of Capital

Definition of cash flows:

$$X_0 = X_e + X_d + X_g$$

Cost of capital:

$$r_0 = \frac{r_e}{(1 - T(1 - \gamma))} \cdot \frac{S}{V} + r_d \cdot \frac{D}{V}$$



### After tax Cost of Capital

1. Definition of cash flows:

$$\mathbf{X}_0(1 - \mathbf{T})$$

Cost of capital:

$$r_i = r_e \cdot \frac{S}{V} \cdot \frac{(1 - T)}{(1 - T(1 - \gamma))} + r_d \cdot \frac{D}{V} (1 - T)$$

2. Definition of cash flows:

$$\mathbf{X}_0(1 - \mathbf{T}(1 - \gamma))$$

Cost of capital:

$$r_{ii} = r_e \cdot \frac{S}{V} + r_d (1 - T(1 - \gamma)) \cdot \frac{D}{V}$$

3. Definition of cash flows:

$$\mathbf{X}_0(1 - \mathbf{T}) + \gamma \cdot \mathbf{T}(\mathbf{X}_0 - \mathbf{X}_d)$$

Cost of capital:

$$r_{iii} = r_e \cdot \frac{S}{V} + r_d \cdot \frac{D}{V} \cdot (1 - T)$$

4. Definition of cash flows:

$$\mathbf{X}_0 - \mathbf{X}'_g = \mathbf{X}_0 - \mathbf{T}(\mathbf{X}_0 - \mathbf{X}_d)(1 - \gamma)$$

Cost of capital (the "Vanilla" WACC):

$$r_{iv} = r_e \cdot \frac{S}{V} + r_d \cdot \frac{D}{V}$$

## **APPENDIX 2**

### **AUSTRALIAN COMPETITION TRIBUNAL**

#### **Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1**

(Tribunal's decision in the PIAC Ausgrid case)

78 In broad terms, it can be said that the economic foundations of the regulatory regime are well understood. In *Application by ElectraNet Pty Limited (No 3) [2008] ACompT 3* at [15], the Tribunal said:

The national electricity objective provides the overarching economic objective for regulation under the Law: the promotion of efficient investment in the long term interests of consumers. Consumers will benefit in the long run if resources are used efficiently, i.e. resources are allocated to the delivery of goods and services in accordance with consumer preferences at least cost. As reflected in the revenue and pricing principles, this in turn requires prices to reflect the long run cost of supply and to support efficient investment, providing investors with a return which covers the opportunity cost of capital required to deliver the services.

79 As noted above, reference to the Second Reading Speech on the introduction of the National Electricity (South Australia) (New National Electricity Law) Amendment Bill (South Australian House of Assembly Hansard, 9 February 2005, p 1451) states (at p 1452):

The national electricity market objective in the new National Electricity Law is to promote efficient investment in, and efficient use of, electricity services for the long term interests of consumers of electricity with respect to price, quality, reliability and security of supply of electricity, and the safety, reliability and security of the national electricity system. The market objective is an economic concept and should be interpreted as such. For example, investment in and use of electricity services will be efficient when services are supplied in the long run at least cost, resources including infrastructure are used to deliver the greatest possible benefit and there is innovation and investment in response to changes in consumer needs and productive opportunities. The long term interests of consumers of electricity requires the economic welfare of consumers, over the long term, to be maximised. If the National Electricity Market is efficient in an economic sense the long term economic interests of consumers in respect of price, quality, reliability, safety and security of electricity services will be maximised. ... Applying an objective of economic efficiency recognises that, in a general sense, the national electricity market should be competitive, that any person wishing to enter the market should not be treated more or less favourably than persons already participating in the market, and that particular energy sources or technologies should not be treated more or less favourably than other energy technologies.

80 Thus, in Application by Envestra Limited (No 2) [2012] ACompT 3 (Envestra (No 2)), the Tribunal summarised with approval certain submissions by the AER, which were not challenged in that case (at [183]):

The AER submitted that rule 91 requires the AER to permit service providers a reasonable opportunity to recover what the AER considers "legitimate costs". Legitimacy, according to the AER is informed by the NGO and, in particular, means costs that would be incurred in a "workably competitive market". The requirement for replication of a workably competitive market outcome is said to be derived from the intent of the regulatory framework. This phrase appears to come from the Australian Energy Market Commission, Rule Determination, National Electricity Amendment (the Economic Regulation of Transmission Services) Rule 2006 No. 18, published on 16 November 2006. In this determination, the Australian Energy Market Commission, at page 93, describes the fundamental objective of regulation as being:

to reproduce, to the extent possible, the production and pricing outcomes that would occur in a workably competitive market in circumstances where the development of a competitive market is not economically feasible...

81 A similar point was made in the High Court with respect to a very similar progenitor under the then applicable gas regime, in *East Australian Pipeline Pty Ltd v Australian Competition and Consumer Commission* (2007) 233 CLR 229 at [18] (*East Australian Pipeline*):

The context and purpose of the Code is well understood, not least because the objectives of the legislation are articulated in the legislation itself in considerable detail. The Code as a whole provides for a regulatory regime of a kind which is "a surrogate for the rewards and disciplines normally provided by a competitive market". Competitive pressures in a market stimulate efficiency of production and resource allocation, they stimulate efficient investment decisions and they minimise costs. No party disputed the fact that the regulatory process set out in the legislation was directed to eliminating monopoly pricing whilst nevertheless providing a rate of return to pipeline owners, commensurate with a competitive market.

82 Those references have a particular significance in this matter as appears in the Tribunal's consideration of the issues concerning rate of return on debt.