

## Appendix A



### Comments on the review by Martin Lally of “The Value of Imputation Credits for Regulatory Purposes<sup>1</sup>”

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<sup>1</sup> Envestra wishes to thank Dr Steven Bishop for support in preparing this paper

## Introduction and Key Points

We note with interest the review of our submission, "The Value of Imputation Credits for Regulatory Purposes", prepared for the QCA by Martin Lally. In response, we acknowledge appreciation of the thoughtful review and comments, some with which we agree and others not. Overall the comments have not changed our position that the most likely value of gamma is zero for the reasons described in our submission and discussed further below.

The Lally review has enabled us to refine our analysis but most of the review is focussed on the assessment of an average value of gamma which we do not support as a basis for setting the gamma used for regulatory pricing, i.e. it was secondary to our primary position that the marginal investor sets the value of gamma rather than some average of investors. As we argue below, averaging tax positions is an outcome of a post personal tax view of the CAPM, a model which has not been adopted by the QCA or other Australian regulators and one that is not well supported by empirical evidence. As we read it, much of the review has been undertaken through the lens of a post personal tax model of the CAPM and as such is inappropriate.

Additionally, we note the argument by the Strategic Finance Group<sup>2</sup> ("SFG") that there should be consistency between the value of gamma employed and the market risk premium (MRP) employed. SFG argue that a gamma of 0.5 is inconsistent with an MRP of 6% given imputation credits are distributed via dividends and the most consistent solution is a gamma value of zero. This is in sharp contrast to Lally who argues that gamma should be closer to one using averaging of investors. The inconsistency between a gamma near 1 and an MRP of 6% is even greater and, by our analysis of the SFG paper, requires a market dividend yield of circa 8.4% which implies a negative yield from capital gains of around 2.4% if the MRP is to be 6%. The SFG position is consistent with ours and we look forward to a reconciliation of the Lally position that gamma should be close to one and an MRP of 6%.

This response is organised as follows

- a) A brief restatement of key points and the basis of our position;
- b) Comments on average versus marginal investor based assessments of gamma and its subcomponents;
- c) Response to specific Lally commentary – the five points analysed in his review;
- d) SFG Consulting argument for consistency between gamma and MRP.

### a) Envestra Position

Our position is captured in the following passage from our submission:

"[Our] analysis places the most likely marginal value for Envestra's and the utility sector's investors at zero, with a possible value in around 24% if the marginal investor is a domestic taxpaying investor, and an average value for the capital market in the range 0 to 35.5%. However we do not find the average value to be relevant to the [QCA's] determination of prices for regulated assets nor do we believe that the domestic taxpaying investor determines the value of gamma and therefore the effective corporate tax rate." p2

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<sup>2</sup> SFG Consulting, "The Relationship Between Franking Credits and the Market Risk Premium: Implications for the Regulatory Cost of Capital" Submission to QCA, 2005

Given the different points of view among researchers and writers in regard to marginal versus average investors setting prices, Envestra decided to estimate both a marginal gamma and an average gamma. This was despite our 'belief' and interpretation of the evidence and literature that overseas investors can set the cost of capital for specific companies and sectors and are the most likely marginal investors for the Utility sector. Table 2 in our submission showed our progressive analysis from the marginal investor in the Utility sector to the average investor in the market overall. This also reflects the progressive decline in our view about the appropriate way to estimate gamma.

We have updated our analysis in light of the comments and the revised position appears in Table 2 towards the end of this submission. Our range is now 0 – 0.40 with the most likely value at 0. The upper end of the range has been revised slightly upwards as a result of adjustments to reflect some comments from the Lally review.

### **b) Marginal versus Average Investor Setting the Value of Gamma**

The position presented in our submission is that the marginal investor in Envestra is of primary interest to us in assessing a value for gamma. Given practical challenges in estimating this we examined the marginal investor in the Utilities sector as a 'benchmark' investor. We note that regulators have used an average investor construct (e.g. ESC) so we included an average assessment for the utility sector and for the market as a whole to better understand what a value of gamma might be under these conditions (see Table 2 of our submission for a summary). The average investor data is from ABS, ATO data and from other research.

It appears that the role of the marginal investor versus the average investor is central to the difference in position between that summarised by Envestra and that proposed by Lally. We are of the view that much of Lally's argument is based on the view that the utilisation rate should be a weighted average over all investors rather than reflective of the marginal investor, see for example p10 and as stated in footnote 4 Lally's agrees that:

“ . . . the averaging is a consequence of aggregating over investors in order to obtain market equilibrium. In intuitive terms the explanation is that market prices are determined by investors in aggregate.”

This last statement is in contrast to market prices being determined by the marginal investor and reflects the outcome of post personal tax CAPM modelling rather than the outcome of a post corporate but pre personal tax model used in Utility regulation in Australia.

We are unable to find anything in the 'Officer Model'<sup>3</sup> that argues that the utilisation rate should be a market-wide value weighted average across investors. In fact we note from Officer (1994) that it is the marginal, not average shareholder that is relevant:

“Where there is a market for tax credits one could use the market price to estimate the value of  $\gamma$  for the marginal shareholder i.e. the shareholder who implicitly sets the price of the shares and the price of  $\gamma$  and the company's cost of capital at the margin . . .”<sup>4</sup>

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<sup>3</sup> Lally refers to the Officer (1994) version of the CAPM (p4)

<sup>4</sup> Officer 1994 footnote 4 p 5

Consequently, we interpret the Lally view as looking at the Officer model through the lens of a post personal tax model rather than the post corporate, pre personal tax model used by Australian regulators, consequently his criticism is flawed.

We note that there are other views and models to Lally about the relevance of the marginal investor versus some notion of an average investor, see for example Cannavan, Finn, & Gray<sup>5</sup>, Officer<sup>6</sup> (as noted above) the discussion about marginal investors in The Allen Consulting Group<sup>7</sup>, KPMG<sup>8</sup> and our references and discussion on p 7-8 of Envestra's submission. These researchers argue and provide evidence that the marginal investor is of prime interest and is, or has been foreign investors. This is also our understanding of how most markets work, for example the spot market for electricity and gas is set by the intersection of the demand and supply curves leading to a price at the margin rather than one that reflects some average of demand and / or supply. Interestingly, Lally acknowledges the role of the marginal investor in his critique of dividend drop off studies where it is acknowledged that arbitrageurs affect pricing.<sup>9</sup>

### Post Personal (and Corporate) Vs Pre Personal Tax Versions of the CAPM

The CAPM employed by regulatory authorities describes expected returns as a function of the risk free rate, the market risk premium and beta. The CAPM presented by Lally is a post personal tax model<sup>10</sup> which contains additional dividend and tax terms and we are of the view that Lally has extrapolated outcomes from this model to the pre personal tax model which is silent about personal taxes.

An implication of explicitly allowing for differing personal tax rates and different rates on capital gains and dividend income is that investors will perceive a different efficient frontier to the SLM CAPM. Consequently the equilibrium relationship derived has a complex aggregation of investor's tax positions and the pricing model includes dividend yield in addition to beta.

The Appendix to Lally (2004) provides an explanation and illustration as to why the argument is advanced that equilibrium reflects some averaging of investor's post all taxes position. We turn to that explanation, in particular the illustration, to assist tease out the differences in approaches apparent in the relative importance of the marginal and average investor.

Lally demonstrates an equilibrium position whereby all investors facing the same expected payoff on 2 risky securities, given a risk free asset, and a defined variance / covariance matrix, will price these securities the same. In the illustration, both securities are priced so that they earn the same expected return of 16.3% in the example compared to a risk free rate of 10%. This is consistent with what we would expect for assets with the same beta.

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<sup>5</sup> Cannavan D., F. Finn & S. Gray (2004), "The value of dividend imputation tax credits in Australia", The Journal of Financial Economics, Vol 73 167 - 197

<sup>6</sup> Officer (1994), "The cost of capital of a company under the imputation tax system", Accounting and Finance, Vol 34, No. 1

<sup>7</sup> The Allen Consulting Group, "Cost of capital for Queensland gas distribution," December 2005

<sup>8</sup> KPMG for AGL Electricity Ltd "Weighted Average Cost of Capital" October 2004 p52

<sup>9</sup> Lally M, "Estimation of the Utilisation Rate on Imputation Credits By the Dividend Drop-Off Method", Prepared for QCA, 2205 p2

<sup>10</sup> In the spirit of Brennan (1971), and Elton & Gruber, (1978), Lally M and T van Zijl (2003)

Lally then adjusts the expected post tax pay-offs by assuming one investor receives a personal tax rebate not available to the other (kin to a franking tax credit ('FTC')). This leads to a different pricing relationship and different expected rate of return across the two assets in the modelling presented. Risky asset 3 is priced as in the prior scenario to provide an expected return of 16.3% commensurate with its risk profile whereas risky asset 2, with the same risk profile as risky asset 3 is priced to provide a return of 17.8% commensurate with its risk profile and the now different dividend / personal tax profile of one investor. Both investors still hold both risky assets and the risk free rate but the relative weights in their portfolios now change. Lally then argues that the pricing outcome is now determined by a weighting of the personal tax position of both investors thus equilibrium prices are not set by the 'marginal investor' or by beta alone.

Lally argues that there is a trade off arising from the now assumed tax subsidy (making one security more attractive) versus moving away from the best risk diversified position in the first equilibrium.

“Thus, the price of the asset must rise by less than the present value of these tax benefits do as to provide an incentive for investor A [who enjoys the tax benefit] to increase their holding of the assets that compensates for the adverse risk effect from doing so”  
[i.e. taking on otherwise diversifiable risk – investors hold both systematic and unsystematic risk].

It is instructive to note that in the example there has *not* been a change in the beta of either risky asset, i.e. the variance / covariance matrix is the same – so the change in expected return is due to the impact of dividends and taxes.

By contrast, in the second scenario, the post corporate, pre personal tax CAPM would price both risky assets so that the expected return was 16.3%, i.e. it is 'agnostic' to personal taxes<sup>11</sup>. One view would be that on an after all tax basis, investor A could expect a consumer surplus from holding risky asset 2 – dividend / tax clienteles could form to match personal tax positions with dividend policy. A weighted average of investors' positions would not be required to explain an utilisation rate in the manner that would be required in the model containing the dividend term.

It is our view that this example contrasts the difference in equilibrium positions presented by the marginal investor sets prices view when the CAPM does not have a dividend (tax driven) term in it versus some average of investors tax positions view arising from a CAPM with a dividend term in it.

Which should be preferred?

This is clearly a complex question to answer as well. However, we do observe that the QCA and other regulators have adopted the pre personal tax model to assess the cost of equity component of an allowable return built in to price determinations.

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<sup>11</sup> Term used by Capital Research "Issues in Cost of Capital for QCA" 2004 p 2 when referring to sources of composition of returns.

If we are concerned about explaining expected returns as implicit in share prices then the ultimate test must be which of competing models better explains and predicts risky asset pricing. The models referred to above differ in underlying assumptions and are logical and sensible outcomes from these assumptions but it is generally the predictive / explanatory power of models that is more important than assumptions - often "unrealistic" assumptions are made to make modelling tractable so it's not the reality of the assumptions that is critical. Our sense is that we have to look to the empirical evidence to assess whether a CAPM model containing a dividend term better explains return behaviour than one without i.e. are higher dividend yield stocks priced to earn a higher rate of return than low dividend yield stocks? This may then provide some direction as to whether aggregating investors tax positions (gamma values) is required or whether a marginal position might be more appropriate.

We note there are mixed outcomes of research – we quote a review paper<sup>12</sup>

"The empirical evidence based on this approach [i.e. whether including a dividend term to explain observed returns] has been mixed. For example, using United States data, Black and Scholes (1974), Gordon and Bradford (1980), Miller and Scholes (1982), and Chen, Grundy and Stambaugh (1990) find support for the notion that the dividend/capital-gains tax differential does not affect before-tax returns, while Litzenberger and Ramaswamy (1979, 1980, 1982) find evidence to the contrary."

Quoting from the abstract of the study by Nai-Fu Chen, Bruce Grundy and Robert Stambaugh<sup>13</sup>

"We investigate the cross-sectional relation between dividend yield and expected return and attempt to include various effects of changing risk measures and changing risk premiums. A stock's risk is measured by its sensitivities to two factors, a market factor and a changing-risk-premium factor. After analyzing dividend-related changes in risk measures, we investigate the presence of dividend effects in expected returns using four methods, each imposing a different structure on the temporal behavior of risk measures and risk premiums. For each method, we find no reliable cross-sectional relation between dividend yield and risk-adjusted expected return."

Additionally, we note Officer (1994) expressing concerns about the burden of obtaining accurate data for post personal tax models<sup>14</sup>:

"There are versions of the CAPM and definitions of the cost of capital e.g. Ashton (1989) which have been derived on an after personal tax basis. Such models are difficult to test empirically and, therefore, difficult to use because most securities are traded on an after company but before personal tax basis. The exception is equities under an imputation tax system but even in this case it is difficult to use an after personal tax model because usually only *some* of the values of the personal tax liability is captured in the traded price. Also, such approaches are not consistent with, nor readily reconcilable with the approaches adopted for a classical tax system."<sup>15</sup>

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<sup>12</sup> McKenzie KJ & AJ Thompson "The Economic Effects of Dividend Taxation," Working paper 96-7 University of Calgary. Also see a comprehensive review paper by Allen, F & R Michaely "Payout Policy" Wharton Financial Institution Centre April 2002 prepared for North Holland Handbook of Economics

<sup>13</sup> "Changing risk, changing risk premiums and dividend yield effects" Journal of Business, 1990 Vol 63, No1 Pt2

<sup>14</sup> Lally and van Zijl (2003) demonstrate the sensitivity of the cost of equity to potential errors in estimation.

<sup>15</sup> Officer (1994) p3

In summary, we note, therefore, that Lally's comments about averaging across investors to obtain a utilisation rate appears to be driven by a view derived from a post personal tax CAPM and this may not be consistent with a post corporate, pre personal tax CAPM currently used by most Australian regulators. On these grounds we do not agree with Lally that our arguments around marginal versus average investors are flawed. There may be alternative views to Envestra's but it is inappropriate to refer to our argument as flawed. It is also inappropriate, in our view, to cherry pick arguments across models e.g. to define a utilisation rate across investors as defined by a post personal tax model and apply it to a pre-personal tax model.

We would hope that if the QCA (or other regulators) was considering adopting a different version of the CAPM that there would be an open debate about whether such an action is warranted.

For completeness, we reinforce the discussion in our submission that the gamma adjustment in the pre personal tax models recognises the intent of the imputation tax system – to redress the tax imbalance in the treatment of dividends compared to interest, by reducing the double taxation of dividends. The gamma adjustment changes the after corporate pre personal tax cash flows generated to reflect corporate tax becoming a pre-payment of personal tax for investors who can access the imputation tax rebate. In the regulatory models in Australia, imputation tax is exogenous to the estimation of the cost of equity determined by the CAPM.

### **c) Response to specific Lally commentary – the five points analysed**

Lally refers to five specific 'flaws' in our submission:

- i) the relevant distribution rate is that for the individual firm rather than the market;
- ii) consistent with the way in which Envestra has estimated the distribution rate using imputation credit data from the same year as that of the tax payments, no timing correction is warranted;
- iii) the use of a utilisation rate of zero in accordance with the alleged price-setting role of foreign investors is inconsistent with the definition for this parameter as a value-weighted average over all investors, inconsistent with the use of the Officer version of the CAPM in recognising foreign investors, and inconsistent with the way in which investors trade-off expected return and risk in making portfolio decisions;
- iv) the estimate of  $U$  of .30 is flawed in ascribing a utilisation rate to superannuation funds and insurance companies of .50 rather than 1, in including inter-corporate holdings of equity and foreigners in the analysis, and in overestimating the weight of government holdings of equity;
- v) the estimate of  $U$  of .375 is flawed in failing to adopt market-wide value weights in the averaging process in accordance with the definition of  $U$  in the Officer model. Taking account of all of these points, an appropriate estimate of  $U$  is .92, and this is consistent with the conclusion reached in Lally (2004). Even in conjunction with Envestra's estimate of .70 for the distribution rate, the implied value for gamma is 0.64 rather than the values in the range of 0.26 argued by Envestra.

We discuss each in turn:

- i) the relevant distribution rate is that for the individual firm rather than the market.

As noted above, our view is consistent with this statement that the individual company is most relevant for determining gamma so we don't see the flaw. We recognised on pragmatic grounds that a sector solution is more appropriate to reduce regulatory intrusion at the individual firm level. We estimated and presented a distribution rate for the sector and average market in Table 2 of our submission with the sector rate taken from annual report data.

The comment was passed that the sector data would have been better calculated using 'tax paid' rather than 'tax expense' data given that there can be a timing difference.<sup>16</sup> While this appears quite reasonable at first, there are three (partially related) issues to consider when making the choice. The first consideration is that over a long period of time any timing differences should have a small impact i.e. tax expense and tax paid should converge. Additionally, implementation of the Ralph reforms is bringing these items closer together. As advice from Deloitte to Envestra notes

*“ . . . it can be observed that since the 1999-2000 year deferred tax liabilities have been decreasing across a broad range of companies (i.e. closer alignment of tax expense and tax paid than previously). Over time the differences will continue to narrow compared with the situation previously.”*

The second consideration relates to the nature of incentive regulation. Regulators have generally used a 'benchmark business' approach basing taxation on a benchmark company and leaving each regulated company to manage its tax affairs as it sees fit and it is the former that is of interest for the purpose at hand. Consequently tax paid for a benchmark company will be higher than a company that pursues the intended incentives and 'manages' its tax – i.e. the tax expense number will be closer to a benchmark company than tax paid and would be a more appropriate base. Thirdly, reported data is generally not just for the regulated business but reflects the tax effects of other business operations i.e. the companies in the data sample are not pure play distribution companies and that may cloud the data. Consequently there may be differences in tax paid and tax expense especially for a 'benchmark company' for these reasons. Consequently it is not as obvious as it first appears that tax paid is the appropriate variable to use in this case.

Nevertheless, we have shown the ratio "Imputed Franking Tax Credits to Tax Paid" in Table 1 below. The difference is surprisingly large and appears to be due to reasons other than simply timing. Cumulative tax paid was only 48% of cumulative tax expense over the 5 years of data. Timing differences are unlikely to explain much of this. We speculate that it is due to matters such as carried forward losses and tax management practices associated with the broader entity.

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<sup>16</sup> This point was also made by Allen Consulting Group (2005) p41 ff

Consequently we are of the view that the time accumulative ratio based on tax expense is more appropriate for a benchmark company than the ratio based on tax paid.<sup>17</sup> Consequently we are comfortable with the 39% used in our original submission. Nevertheless we have moderated the position and for our subsequent analysis we have used a mid point of the two as the estimate (i.e. the mid point of 39% and 82%).

Table 1: Selected Tax and Dividend Statistics for Regulated Utility Businesses

	2000	2001	2002	2003	2004	Cumulative
Tax Expense	191,895,000	208,149,000	245,997,000	302,687,000	399,411,000	1,348,139,000
Tax Paid	101,981,000	119,850,000	105,875,000	149,983,000	170,755,000	648,444,000
Dividends	443,802,000	330,640,000	375,953,000	503,020,000	551,956,000	2,205,371,000
Franked Dividends	121,177,800	200,201,736	259,689,166	221,520,000	354,310,088	1,156,898,790
Franking %	27%	61%	69%	44%	64%	52%
Implied FTC Distributed	68,162,513	103,134,228	111,295,357	94,937,143	151,847,181	529,376,420
FTC Distributed / Tax Paid	67%	86%	105%	63%	89%	82%
FTC Distributed / Tax Expense	36%	50%	45%	31%	38%	39%

Deloitte point out that the difference between business expenses and tax allowable expenses means many franking tax credits will not be distributed i.e. the distribution rate is highly unlikely to be 1:

“ . . . a surprising number of normal business expenses are not deductible or otherwise appropriately recognised under our tax system. Black hole costs are an example. Consequently, a majority of companies end up with a situation where taxable income (the amount on which tax is payable) significantly exceed reported profits (the basis on which dividends are payable) over the long term. So for many companies tax paid can be substantially greater than 30% of reported profits and the excess franking credits created are effectively unusable.”<sup>18</sup>

- ii) **consistent with the way in which Envestra has estimated the distribution rate using imputation credit data from the same year as that of the tax payments, no timing correction is warranted.**

Our analysis included an assessment of what gamma might be if the marginal investor in the Utility sector was an Australian Resident Personal Taxpaying Shareholder ('ARPTS'). Here we estimated the distribution rate from Utility data and, rather than use \$1 as the value of the imputation credit to such investors we endeavoured to recognise that \$1 is an inappropriate value. The argument advanced was that an ARPTS would not value a dollar of imputation credit at \$1 because the shareholder does not receive the tax benefit at the time it is paid to the ATO by the company – it is received when personal tax is paid, which is some time later. This timing delay will reduce the value of a FTC received below \$1.

This delay can be quite different in two circumstances:

- a) when the dividend is paid 'directly to the ARPTS' – approx 15% of shareholdings<sup>19</sup>;
- b) when paid via ownership in corporations (the pass through) – approximately 18% of shareholdings.

<sup>17</sup> While we are of this view, we do recognise that further research in the area may shed further light on the measure to use to reflect the ratio for a benchmark company.

<sup>18</sup> Letter to the Editor "Billions of dollars locked in franking credits" Financial Review 18 Nov 2005 – reinforced in a letter from Deloitte to Envestra

<sup>19</sup> The 15% and 18% are from ABS data as presented in our original submission.

Lally acknowledges the point being made by Envestra on Page 9 “Notwithstanding the above analysis, there is a rationale for timing delays in the area, in the form of the lag between companies attaching imputation tax credits to dividends and shareholders receiving the tax benefit.”

Lally argues that our estimate of 0.75 for the value of a redeemed dollar of imputation credits (utilisation rate) for an ARPTS is understated and that we have ‘cherry picked’ across definitions of the distribution rate and the utilisation rate. We acknowledge that we have traced the timing of the payout of \$1 of tax paid as imputation credits through the dividend payout ratio rather than the timing of the receipt and personal tax claim of \$1 that is attached to a dividend payment.

To this end we have re-estimated the delays ignoring the payout ratio for direct ownership taking account of the difference between the time a dollar of tax that has been distributed to shareholders via imputation benefits is paid to the ATO by the company and when an ARPTS ‘banks’ the credit. The analysis considered a \$1 paid directly to an individual when attached to a dividend and \$1 paid indirectly via an intermediate company pass through. In the latter case, the FTC will be further delayed while the pass through takes time to attach to that company’s dividend. This analysis estimates a value of \$0.87 for the direct flow and \$0.76 if received as a pass through inter-company holdings.<sup>20</sup> This leads to a weighted average value of \$0.81 given 15% of investors are in the former group and 18% in the latter. Further details are included in the Appendix.

We have discounted the timing at the cost of equity despite Lally’s argument that it should be at the risk free rate. Our view is that an investor desires to earn the cost of equity from the time cash is invested to the time it is received. The gamma based adjustment is an adjustment to corporate taxes and when valuing a business, the tax flows are not valued at one rate and pre-tax cash flows valued at another – the discount rate is an after corporate tax rate. If we are to follow Lally and dissect the cash flow into different components and use different discount rates to reflect the different risks of each component then it would be necessary to raise the cost of equity on other cash flows so that the weighted average remained the same. The Lally approach would lower the ‘average’ rate if a risk free rate was used on one component without a compensating adjustment.

Accordingly, we have updated our original Table 2 shown later in this submission.

- iii) **“the use of a utilisation rate of zero in accordance with the alleged price-setting role of foreign investors is inconsistent with [1]) the definition for this parameter as a value-weighted average over all investors, [2]) inconsistent with the use of the Officer version of the CAPM in recognising foreign investors, and [3]) inconsistent with the way in which investors trade-off expected return and risk in making portfolio decisions.”**

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<sup>20</sup> These estimates are based on advice from Deloitte on the timing of FTC ‘claims’ from the ATO by each group. Deloitte provide a conservative estimate that the inter-company pass through is 3 years with a more reasonable assumption being 4 to 6 years. Nevertheless we have used a conservative delay of only one year. Deloitte also note that privately-owned companies generally take longer to pay out FTCs via dividends than public companies. Note that the distribution rate is relevant for these companies because it delays the receipt of the FTC from the originating company i.e. \$1 distributed to an individual via a company structure (18% of economy wide investments) has to flow through its dividend policy before it can be claimed.

We respond to each of the numbered sub-points.

1). Section b) above points out our view that Lally appears to view price setting from the perspective of a version of the CAPM requiring some aggregation of personal tax rates across investors. This is not required in the post corporate, pre personal tax version of the CAPM used by regulators in Australia. Accordingly we don't believe our argument to be flawed from this perspective – in fact the Lally position is flawed because it is mixing different theoretic models.

2). Lally also argues that we should ignore foreign investors if a domestic version of the CAPM is used for regulatory purposes because of the apparent inconsistency and potential for cherry picking inputs. The argument is that if an international CAPM was employed instead, it is likely that the beta and / or potentially market risk premium would be lower.

As we noted in our submission, the home bias in investment behaviour of domestic investors in many countries around the world is inconsistent with the predictions of an international CAPM.

Consequently, there is a dilemma facing those estimating the cost of equity using the CAPM framework because neither the domestic nor international theoretic versions of the CAPM appear to fit with what we observe. However we do know that foreign investors influence 'domestic' company and market returns through investing and buying behaviour and therefore will influence beta as measured. *That is, there is a natural recognition of foreign investor influence in market parameters as measured* and used by regulatory authorities as opposed to choosing a theoretical model that assumes they either do not exist (domestic CAPM) or do exist (international CAPM). Given their influence is recognised in the parameters as measured, we believe it to be consistent to recognise them in estimating gamma. It may be inconsistent if markets were fully segmented and the 'domestic' CAPM could measure 'domestic' parameters that were free of international investor influence -- but they are not free of such influence. We argue it would be inconsistent to deny them in estimation of gamma when they are not denied in the measurement of the market return and beta. For the Lally position to be reasonable, it would be necessary to extract the impact of foreign investors on measured market returns!

Additionally, and importantly, the value of imputation credits is exogenous to the post corporate, pre personal tax CAPM used to estimate the cost of equity. As used in the Australian regulatory system, gamma is used to effectively adjust the corporate tax rate. Consequently we don't see an inconsistency in being realistic about the impact of foreign investors on the value of gamma and the use of a domestic CAPM for estimating the cost of capital. The consistency issue may be more relevant for choice of a model that estimated gamma endogenously.

3) Lally's point is captured in the following extract:

“. . . Envestra's line of argument presumes that investors choose assets on the basis of whether the expected rate of return perceived by them is at least as great as their "required return" (the expected return that just compensates for risk). This is not a plausible description of how investors select portfolios and it is completely

inconsistent with the assumptions about investor behaviour that underlie all versions of the CAPM.

While we recognise the theoretical purity of this argument, we do believe that investors, particularly those investing for control, invest to earn a positive NPV. With control, and informational asymmetry about the probability of success this is possible through changing operating behaviour to earn above the cost of capital – the nature of incentive regulation. Passive investors can expect to earn the risk adjusted return if capital markets are informationally efficient and domestic investors may earn something akin to a ‘consumer surplus’ if the marginal price setter is overseas investors. Earning such a surplus by investors in different tax brackets is apparent from their apparent popularity among the low tax bracket investors relative to the higher tax brackets in “buy-backs”.

We do not deny that foreign investors may invest to earn a risk adjusted return and that they may benefit from risk diversification from investing in Australia. The significant investment and in most case, control based investment, we would hope is value creating for such shareholders i.e. that they can pursue the incentives proposed under the regulatory regime and earn above the risk adjusted cost of capital (despite the theoretical CAPM models not really allowing for this)

In summary, we do believe that it is the marginal rather than average investor that sets security prices, that the utilisation rate and gamma can be 0 for the utilities sector and that foreign investors do influence the returns and parameters as measured.

- iv) **the estimate of  $U$  of .30 is flawed in ascribing a utilisation rate to superannuation funds and insurance companies of .50 rather than 1, in including inter-corporate holdings of equity and foreigners in the analysis, and in overestimating the weight of government holdings of equity**

Lally also argues that the weights for investor groups should be based on Listed Company data rather than ABS data which includes unlisted companies on the ground that the market proxy for beta is based on Listed companies. Thus there is an inconsistency.

As to the latter argument, the value of imputation tax credits is exogenous to the post corporate, pre personal tax CAPM consequently there is no estimation inconsistency. If a notion of an average investor is accepted (which we have rejected) then it is reasonable to include all investors’ investments to assess the value of gamma exogenously from the CAPM. The consistency argument might apply if a model where gamma was endogenous to the CAPM was used e.g. the post personal tax models but use of listed data is still a subset of investments. However we note 2 points; firstly, the CAPM should include all investments i.e. listed and unlisted, it is the practical use that leads to only the subset of listed companies used to estimate beta; and secondly, there is no need to constrain investors to listed companies when estimating gamma exogenously to the CAPM. The constraint to listed companies is a CAPM estimation matter arising because of measurement challenges with the market but it doesn’t follow that we have to apply the same constraint when broader measurement data is available to an exogenous variable. As a result we are comfortable with using ABS and ATO data (ATO data can also be broader than listed companies).

We have ascribed a value of \$0.90 to the value of imputation credits to Pension and Insurance funds to reflect the present value of the timing difference between the tax being paid and the Funds being able to claim the 'benefit'. This estimate is based on modelling the actual timing of the flow and discounting it to a present value. The basis for this calculation is described in the Appendix.

- v) the estimate of  $U$  of .375 is flawed in failing to adopt market-wide value weights in the averaging process in accordance with the definition of  $U$  in the Officer model. Taking account of all of these points, an appropriate estimate of  $U$  is .92, and this is consistent with the conclusion reached in Lally (2004). Even in conjunction with Envestra's estimate of .70 for the distribution rate, the implied value for gamma is .64 rather than the values in the range of 0-.26 argued by Envestra.

Again we refer to the discussion on marginal investors versus average investors to point out that the average across investors notion appears to arise from a form of the CAPM that has not been adopted by the regulators.

We comment on the utilisation rate being closer to 1 as argued by Lally in section d) below.

We summarise our revised analysis of an average value of gamma in the third last row of Table 2 below which takes account of the comments from Lally and the revisions we believe to be appropriate. For the distribution rate, we have used the average dividend payout rate of 71% which is also the estimate in Hathaway and Officer from ATO data. The derived gamma is 0.40.

We re-iterate that, in our view, the Table shows the most likely view in the first row with the appropriateness of the estimate in descending order.

Table 2: Possible Values for Derived Gamma

Type	$f$	$\omega$	gamma	Comment
Sector marginal investor foreign	0.6	0	0	Most likely case
Sector marginal investor ARPTS	0.6	0.81	0.49	Unlikely given recent transactions
Average investor in Sector	0.6	?		Data not readily available but average investor not relevant
Average investor in Australia	0.71 0.71	0.5 0.56	0.355 0.40	Hathaway & Officer but not applicable Envestra assessment using ATO & ABS data
Large company			0	Cannavan, Finn & Gray finding since trading in FTC uneconomic due to regulatory change
Regulatory Practice	0.8	0.6	0.5	Assumed to be based on early

				Hathaway & Officer paper
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\* based on share ownership – conservative about foreign ownership (17.5% at 0, 82.5% at 0.81)

\*\* assumed to be determined by average dividend payout

#### d) SFG Consulting Argument for Consistency between Gamma and MRP

Lally argues for an appropriate estimate of the utilisation rate to be 0.92 (or 1) and, while not actually proposing a distribution rate of 0.7 the review does note that the product of these provides a gamma of 0.64 (see quote above). Lally (2004) appears to be arguing that the distribution rate should be close to 1<sup>21</sup> and therefore gamma should be close to 1. We also note Lally (2004) accepts that 6% is an appropriate estimate of the MRP<sup>22</sup>.

Following the SFG Consulting paper, consider the case of a company with a beta of 1, the risk free rate of 6% and an MRP of 6%, here the cost of equity capital is 12%. The paper demonstrates that given equity investors receive a benefit from imputation tax in addition to a post corporate tax company generated return,

- the imputation tax generated component from the tax system is  $\gamma T / 1 - T(1 - \gamma)$ , where T is the corporate tax rate, and
- the company generated component of the 12% is  $(1 - T) / 1 - T(1 - \gamma)$  – analogous to the cost of debt being viewed as  $r_d T$  being the tax benefit arising from interest being tax deductible, and  $r_d (1 - T)$  from the company, where  $r_d$  is the interest rate on debt.

Applying this logic, the 12% cost of equity can be viewed as comprising 8.4% from the company and 3.6% from company tax through the imputation system if gamma is 1.

Since imputation benefits attach to dividends then there is an implied dividend yield to 'carry' these credits (rebate) to shareholders, found by dividing the 3.6% by  $T / (1 - T)$ . With  $T = 30\%$ , the required dividend yield is 8.4%. This is not only well above actual average dividend yields<sup>23</sup> but also above the 6% MRP which should comprise dividend yield, capital gain yield and imputation tax yield.

There appears to be a logical inconsistency between a gamma of 1 and a 6% MRP. SFG Consulting demonstrates that the inconsistency applies to a gamma of 0.5 and an MRP of 6% and argues the inconsistency is removed if gamma is 0.

Consequently we observe a potential flaw in the Lally position which argued for a gamma close to 1 and rejected Envestra's argument that it should be zero.

<sup>21</sup> Lally (2004) p 40

<sup>22</sup> Lally (2004) p 59

<sup>23</sup> see SFG Consulting p19 where the Australian Market Dividend Yield range is shown to be between circa 2.8% and 4.4% over the period 1990 to 2005

## References

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## Appendix: Value of \$1 in imputation payments paid to ARPTS.<sup>24</sup>

### Base information

The company has a tax year July 2005 to June 2006 paying tax to ATO quarterly in October, February, April and July.

The date of interest for calculating the present value of the flow of FTC to individuals is December 2005 which is the date of interest for assessing the revenue requirement.

The value of \$1 distributed as franking tax credits was distributed as follows:

- 50c as an attachment to an interim dividend paid in May 2006;
- 50c as an attachment to a final dividend of 50c paid in November 2006.

There are 3 groups of individual taxpayers who may receive the FTC through direct ownership and / or indirect ownership

- non instalment taxpayers with tax finalisation in November;
- annual instalment taxpayers with tax finalisation in October;
- quarterly instalment taxpayers with relevant quarterly finalisation in July, October, February and April.

### Direct Ownership Group

The subgroups described above actually obtain the tax benefits of the FTC when they 'pay' the relevant tax assessment as follows:

- non-instalment taxpayers receive the tax cash flow benefit of the interim dividend attachment in November 2006 and for the final dividend a year later. The present value of this with quarterly compounding is \$0.85;
- annual instalment taxpayers receive the tax cash flow benefits in October 2006 and a year later. The present value of this with quarterly compounding is \$0.85;
- quarterly taxpayers receive the tax cash flow benefit in July 2006 and February 2007. The present value of this with quarterly compounding is \$0.90.

Assuming equal weighting across the groups, because data on the relative importance of each group is not readily available, gives an average present value of \$1 of FTC as \$0.87.<sup>25</sup>

### Indirect Ownership Group

A conservative assumption is used that there is only one company the FTC passes through and the company receives the FTC at the same time as an individual with direct ownership:

- This company has a 50% dividend payout policy to which the FTC is attached;
- The company pays an interim and a final dividend with the FTC attached;
- The first two subgroups obtain the tax benefit one year later than the direct ownership group. Thus these groups receive tax benefit from the flow through in the December quarters of 2007 and 2008 based on 50% of the \$1 FTC received by the company. The

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<sup>24</sup> The cash flows and timing were provided to Envestra by Deloitte.

<sup>25</sup> This information may be available from the ATO by special request however the time frame to prepare this response has not allowed this data to be gathered.

subsequent payout of \$0.25 (50% of the balance in the following December (2008)) and \$0.25 in December 2009 (for simplicity rather than spread it out over another year). The present value of this flow was \$0.75;

- The quarterly instalment group obtain a tax benefit of \$0.25 in March 2007 and September 2007, \$0.125 in each of the same quarters in 2008 and the \$0.125 in these quarters in 2009. The present value of this flow was \$0.79.

Assuming equal weighting across the groups, because data on the relative importance of each group is not readily available, gives an average present value of \$1 of FTC as \$0.76.

### **Individuals Overall**

Using the relative proportions of 15% of shares are held directly by individuals (who on average value \$1 of FTC at \$0.87) and 18% of shares are held indirectly through other company holdings (who on average value \$1 of FTC at \$0.76) the weighed average of the value of \$1 of FTC paid out is \$0.81.

### **Pension and Insurance Company Holdings**

This group receive cash flow with similar timing to individuals who make quarterly payments and therefore value a \$1 of FTC distributed at \$0.90.