

GPU Gasnet

Imputation credits

1 Introduction

Under the imputation tax system, dividends that are paid to Australian resident shareholders have been exempt from personal income tax to the extent that there is recognition of company tax having already been paid on profits from which the dividends are paid. Dividends that are paid out of after-corporate-tax profits can be accompanied with a 'franking' credit to the extent of the corporate tax paid. The value of franking credits is represented with the parameter gamma (γ).

The value of a franking credit to a particular investor will be influenced by its own tax circumstances. As these will differ across investors, the result will be that for any particular investor, the franking credit will be valued between nil and full value (i.e., a gamma value between zero and one). At the company level, the valuation of imputation credits is determined by the following three key events in the life of imputation credits:

- creation of imputation credits;
- distribution of imputation credits; and
- redemption or utilisation of imputation credits.

Creation of imputation credits

Franked dividends are those dividends paid out of profits on which Australian corporate tax has been levied and hence carry a credit for income tax paid by the company. The return on a share with a franked dividend will be greater than the return on an equivalent share with a non-franked dividend. Dividends can be franked if the entity's income is earned and taxed in Australia. It should also be noted that both dividends and franking credits can be issued from retained earnings and not just from the current year's free cash flows.

Distribution of imputation credits

An entity's dividend policy affects the value of imputation credits. The smaller the payout ratio the less value imputation credits hold as the time value of imputation credits diminishes if a company defers payment of fully franked dividends. The introduction of dividend imputation in Australia has resulted in companies adopting generally higher payout ratios than during the pre-imputation period. Hathaway and Officer¹ found that 80% of company tax payments are distributed as imputation credits.

Redemption or utilisation of imputation credits

Each shareholder attaches a different value to imputation credits depending on his or her tax status. The treatment of this issue is contingent on the ownership assumption and in particular whether utilisation should reflect that of the marginal shareholder in the market.

Key regulatory issues

The discussion above raises a number of issues in how imputation should be treated in a regulatory decision. In this paper we:

- overview the debate on imputation credits, noting in particular how this issue is currently being dealt with by regulators;
- assess how the estimate for gamma in the CAPM may be influenced by recent developments in taxation; and
- suggest an appropriate range for gamma.

2 Key issues of debate

The key areas of contention in the estimation of gamma are:

¹ Hathaway, N., and Officer, R. (1999), 'The Value of Imputation Tax Credits', Finance Research Group, Melbourne School of Business.

- the appropriate benchmark ownership profile, of which two key issues are:
 - the treatment of foreign investors; and
 - the treatment of the marginal and average investor; and
- the best empirical technique to estimate gamma, which encompasses all three factors discussed above.

These are discussed in turn.

2.1 Benchmark ownership profile

The ownership profile assumed in estimating gamma is important given the varying degree of foreign ownership in regulated businesses – and therefore the varying ability to take up imputation credits. The key questions, therefore, revolve on whether the regulated gamma should take account of foreign ownership of regulated businesses – and also whether the estimate should be based on the marginal or average investor.

2.1.1 Treatment of foreign ownership

Many companies have argued that the regulated gamma should reflect the level of foreign ownership of Australian utility companies. However, regulators have not accepted this argument and assumed full Australian ownership as their basis for determining the value of gamma, for two main reasons.

Domestic nature of CAPM parameters

Regulators have argued that as the key parameters of CAPM assume domestic ownership, in particular the beta, market risk premium and tax, then an assumption of domestic ownership is appropriate for setting gamma. The argument continues by saying that if gamma is to be adjusted for foreign ownership, then it would be appropriate to adjust the beta, market risk premium and effective tax rate – suggesting the adoption of an international version of CAPM. While the ACCC does not support the use of the international version of CAPM, it notes that this may result in a lower WACC where the corresponding parameters of beta and

market risk premium are lower. In a submission to the ORG, quoted by the ACCC², Lally states:

In summary, once we acknowledge the existence of foreign investors, there are three effects to consider: gamma falls, betas may fall and the MRP falls. The first point leads to a rise in the cost of capital whereas the last two lead or may lead to a fall. Thus, by limiting the recognition of foreign investors to their effect upon gamma, the result may be an upward bias to the cost of capital. Lally (1998a) suggests that the net effect of these three factors is to lower the cost of capital for New Zealand firms, and the same may be true of the firms in question here. Thus, the effect of reducing gamma, but otherwise ignoring the presence of foreign investors, is to raise the cost of capital when the overall effect of foreign investors may be to lower it. This does not seem sensible. If the full effects of foreign investors are to be ignored it seems better to ignore foreign investors completely, and therefore employ a gamma value of 1.³

The claim that the use of an international version of the CAPM would produce a lower WACC may not be true. In moving to an international version of CAPM, the MRP may fall relative to a properly determined domestic MRP. But this does not mean it will fall from where regulators have placed it previously. For example, in assessing the available literature and evidence, the bounds of a reasonable range for the US MRP is 6% to 9% with a mid-point estimate of 7.5% - significantly higher than the 6% generally allowed by the ACCC/ORG. A recent paper by Bowman⁴ suggested that the net impact of differences in taxation, in equity markets and indices and estimation time horizons might cause the Australian *ex ante* MRP to be higher than the US MRP by at least 0.3%, giving an estimate for Australia of an MRP of 7.8%. This is substantially greater than the MRP assumed by the ACCC.

It is also not clear that beta will rise rather than fall under the international CAPM. For example, historically, the volatility of the Australian market, with its relatively heavy weighting towards resource stocks, has exceeded that of the US market, although this has not always been the case in recent times.

² ACCC, Final Decision – Access Arrangement proposed by Epic Energy South Australia Pty Ltd for the Moomba to Adelaide Pipeline System, September 2001 p42

³ Lally, M, Response to 2001 Electricity Distribution Price Review Draft Decision, 17 July 2000

⁴ Bowman, R: Estimating the Market Risk Premium, JASSA, Spring 2001, pp 10-13.

We do not believe that it would be appropriate to use an international version of the CAPM at this time. The international version of the CAPM is complex and there is too little experience with estimating its parameters. Any attempt to apply the international CAPM in Australia would be fraught with myriad problems and large estimation error.

Avoidance of price discrimination

The second reason regulators have not chosen to acknowledge the presence of foreign investors in gamma estimates is that the CAPM provides basis for discrimination between types of investors, and as a result there is no firm ground for assuming other than full Australian ownership. Otherwise, differential ownership structures would result in price differentials that do not reflect difference in costs or services performance. The ACCC's view is summarised in its Draft Statement of Principles for the Regulation of Transmission Revenues:

there is no well founded basis for discriminating in favour of one type of investor or another - such discrimination may lead to different network pricing outcomes emerging purely on the basis of ownership⁵

For public listed companies, the market value of distributed franking credits should be established at the market level, not the firm level. So for regulatory purposes, current shareholding should be irrelevant, at least for publicly listed companies. Therefore, in principle we agree with the ACCC and others that current ownership should not form the basis for setting gamma.

This point also applies for unlisted companies. The fact the owner has chosen an ownership structure that doesn't allow ready valuation doesn't alter the fact that the CAPM treats the company as if it were traded.

There are a few cases where it may be appropriate to set a company specific benchmark, for example where regulatory requirements prevent a company from issuing dividends. Otherwise we agree with the ACCC that a benchmark assumption should be adopted. However, we disagree on the form of this benchmark, which we consider next.

⁵ ACCC: Draft Statement of Principles for the Regulation of Transmission Revenues, May 1999, p82

2.1.2 Marginal or average investor

The gamma used in the CAPM is generally derived as an industry average. However, there is debate whether an average value is appropriate for the basis of setting a forward-looking value consistent with the aims of the CAPM. The ACCC believes it may be more appropriate to consider the marginal investor – which it claims would move the gamma closer to 1. In its draft decision on EAPL (December 2000), the ACCC states:

For regulatory purposes it is debatable whether an average for the value of imputation credits is appropriate. Generally, if an average rate is used in the regulatory rate of return, investors who are able to take advantage of more than the average will receive a rate of return greater than their expected rate of return. As a consequence the company's share price will be bid up until the actual rate of return (based on market value of the assets and not the regulated value) equals the required rate of return of those investors able to take the most advantage of the tax credits. Investors who are at a comparative disadvantage will either sell their shares or accept a lower rate of return. This argument tends to suggest that the appropriate value for utilisation of imputation credits for regulatory purposes should approach 100 per cent⁶.

In theory, the use of the marginal investor is appropriate.⁷ However, the ACCC's idea that share price will be bid up to match the gamma of the investor who has the highest gamma is unrealistic. In effect, the ACCC are prescribing how security prices will be set and identifying the marginal investor based on one dimension only - utilisation of franking credits. However, taxation, and imputation, is but one of a host of factors that drive investment decisions (diversification, opportunity, growth, synergistic benefits and so on). Accordingly, this argument completely ignores all other factors that determine the marginal investors and hence security prices.

Share prices are set by price setting (marginal) investors, and this set of investors may have little relationship to the shareholder mix of a company at a point in time. However, it is likely that the marginal investor for publicly listed Australian companies is an international

⁶ ACCC: Draft Decision, Access Arrangement by East Australian Pipeline Limited for the Moomba to Sydney Pipeline System, 19 December 2000, p77-78

⁷ Officer RR (1994) "The Cost of Capital under an Imputation Tax System", Accounting and Finance, 34, 1-18

investor. Australian equities represent approximately 1% of the global market. More than 30% of the trading on the Australian share market is due to foreign investors.⁸

Indeed, if the ACCC's reasoning was correct, we would be unlikely to see substantial Australian investment abroad since such investments do not gain the benefit of imputation. However, Australian investment overseas is considerable, the importance of accessing imputation credits is unlikely to be of key importance.⁹

Australia is a net importer of capital. It is suggested that the marginal investor in the Australian equity market is not an Australian domestic investor but instead is an international investor who at best will experience considerable difficulty accessing imputation credits.¹⁰ In turn, these factors suggest that gamma should be the greater of zero and the value of credits on a secondary market.¹¹

2.1.3 Empirical estimates

There is an increasing body of literature focused on estimating the value of gamma. The early literature generally found a value of about 0.5 or slightly below. More recently, there

⁸ ASX Fact Book 2001.

⁹ For example, total Australian overseas investment accounts to over \$375 billion, approximately one half of the capitalisation of the Australian Stock Exchange.

¹⁰ This holds irrespective of whether or not Australian residents are the first to invest in these companies. See also Officer (1988), "A note on the Cost of Capital and Investment Evaluation for Companies under the Imputation Tax", *Accounting and Finance*, 28, 65-71.

¹¹ In a study of warrants, it was found that warrant buyers receive about 32% of the face value of the imputation credit (see Wood, J. (1995), "A simple Model for Pricing Imputation Credits Under Australia's Dividend Imputation Tax System" < Working Paper, Australian Graduate School of Management, 95-105.

has been additional research. But rather than focusing the plausible values on a smaller range, it has tended to widen the range and uncertainty about the value of gamma.¹²

For example:

- Walker and Partington (1999)¹³ estimated the value of imputation credits based on the difference in the price of shares that were trading simultaneously pre-dividend and ex-dividend (in contrast to previous conventional drop off studies that measured the drop-off in share price between two trading days). Their research produced an estimate of gamma close to one; while
- Lonergan (2001)¹⁴ reviewed the ownership of Australian listed equities and found that only 18.3% of the value of the Australian Stock Exchange is owned by Australian resident individuals, who are the most likely to be able to utilise franking credits. He discusses a range of considerations and concludes that gamma should be close to zero.
- Carnavan, Finn and Gray show that for large companies with substantial foreign investment the market value of tax credits is close to zero.¹⁵

In the face of wide ranging ambiguity, regulators have generally adopted a gamma value of 0.50 or a range with mid point of 0.5 (refer table 1). The key exceptions are IPART and ICRC who have consistently adopted ranges of 0.3-0.5.

¹² Moreover, these studies are not without their methodological limitations (eg multicollinearity) and results have tended to display relatively high standard errors.

¹³ S. Walker and G. Partington, The value of dividends: Evidence from cum-dividend trading in the ex-dividend period, *Accounting and Finance*, November 1999, pp 275-296.

¹⁴ W. Lonergan, The Disappearing Returns, *JASSA*, Autumn 2001, pp 8-17.

¹⁵ Carnavan D, Finn F. and Gray S. (2000) 'The Value of Dividend Imputation Tax Credits, unpublished working paper, Department of Commerce, The University of Queensland.

Table 1: Gamma – regulatory decisions

Regulatory Decision	Industry	Gamma (%)
<i>ACCC:</i>		
Epic Energy ¹⁶	Gas distribution	50
Central West Pipelines ¹⁷	Gas distribution	50
Snowy Mountains Hydro Transmission Network ¹⁸	Elec. Transmission	0
NSW & ACT Transmission networks ¹⁹	Elec. Transmission	50
<i>IPART:</i>		
AGL Gas Networks ²⁰	Gas distribution	30-50
NSW Electricity Distribution networks ²¹	Electricity distribution	30-50
Albury Gas Company ²²	Gas distribution	30-50
Electricity Networks & Retail Supply ²³	El. Distribution/retail	30-50
NSW Rail ²⁴	Rail	30-50
Great Southern Energy ²⁵	Gas distribution	30-50
<i>OffGAR:</i>		
Parmelia Pipeline ²⁶	Gas transmission	50
Tubridgi Pipeline ²⁷	Gas transmission	50
Mid-west and South-West Pipeline ²⁸	Gas transmission	50
<i>ORG:</i>		
Victorian electricity distribution ²⁹	Electricity distribution	50
Victorian ports ³⁰	Ports	50
Victorian gas distribution ³¹	Gas distribution	50
<i>SAIPAR:</i>		
South Australian gas distribution ³²	Gas distribution	50

¹⁶ Australian Competition and Consumer Commission (2000) Access Arrangement proposed by Epic Energy South Australia Pty Ltd for the Moomba to Adelaide Pipeline System, Draft Decision, 16 August 2000

¹⁷ Australian Competition and Consumer Commission (2000) Access Arrangement by AGL Pipelines (NSW) Pty Ltd for the Central West Pipeline, Final Decision, 30 June 2000

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- 18 Australian Competition and Consumer Commission (2000) Australian Snowy Mountains Hyrdo-Electric Authority Transmission Network Revenue Cap 1999/00-2003/04, Draft Decision, 6 June 2000
- 19 Australian Competition and Consumer Commission (2000) NSW and ACT Transmission Network Revenue Caps 1999/00-2003/04, Final Decision, 25 January 2000
- 20 Independent Pricing & Access Regulation Tribunal (2000) Access Arrangement for AGL Gas Networks Limited Natural Gas System in New South Wales, Final Report, July 2000
- 21 Independent Pricing & Access Regulation Tribunal (1999) regulation of New South Wales Electricity Distribution Networks, December 1999
- 22 Independent Pricing & Access Regulation Tribunal (1999) Access Arrangement for Albury Gas Company Limited, Final Report, December 1999
- 23 Independent Pricing & Access Regulation Tribunal (1999) Pricing for Electricity Networks and Retail Supply, June 1999
- 24 Independent Pricing & Access Regulation Tribunal (1999) Aspects of the NSW Rail Access Regime, Final Report, April 1999
- 25 Independent Pricing & Access Regulation Tribunal (1999) Access Arrangement for Great Southern Energy Gas Networks Pty Limited, Final Report, March 1999
- 26 Office of Gas Regulation (2000) Access Arrangement Parmelia Pipeline, Final Decision, 20 October 2000
- 27 Office of Gas Regulation (2000) Access Arrangement Tubridgi Pipeline, Draft Decision, 7 August 2000
- 28 Office of Gas Regulation (2000) Access Arrangement Mid-west and South-west Gas Distribution Systems, Final Decision, 30 June 2000
- 29 Office of the Regulator-General, Victoria, (2000) Electricity Distribution Price Determination 2001-05, Vol 1 Statement of Purpose and Reasons, September 2000

The ACCC's frequently used estimate of 0.5 is derived primarily from dividend drop off studies, which suggest a range of 0.5-0.9 for gamma. These are adjusted to take into account that about 80% of imputation credits are deferred (due to factors such as accelerated depreciation), producing a range of 0.4-0.7, which the ACCC further adjusted for 'other tax concessions', to give a range of 0.4-0.6, with a mid point of 0.5.

The drop-off measure used in virtually all tests of the value of gamma is an indirect and noisy test at best, and it only measures the value of distributed franking credits.³³

3 Changes to taxation law

Prior to 1 July 2000, any imputation credits that exceeded a taxpayer's basic income tax liability were disregarded and could not be refunded. The Review of Business Taxation recommended that resident individuals, superannuation funds and like entities should be taxed on dividend income at their appropriate tax rates, rather than at the company tax rate.

³⁰ Office of the Regulator-General, Victoria, (2000) Victorian Ports Price Review – Melbourne Port Corporation and Victorian Channels Authority, Final Decision, 13 June 2000

³¹ Office of the Regulator-General, Victoria, (1998) Access Arrangements – Multinet Energy Pty Ltd & Multinet (Assets) Pty Ltd, Westar (Gas) Pty Ltd & Westar Assets Pty Ltd and Stratus (Gas) Pty Ltd & Stratus Networks (Assets) Pty Ltd, Final Decision, October 1998

³² South Australian Independent Pricing & Access Regulator (2000) Access Arrangement for the South Australian Distribution Systems, Draft Decision, 13 April 2000

³³ An alternative approach may prove fruitful. In spite of anti-streaming provisions, there is a limited secondary market in franking credits, frequently through some contractual structure. An understanding of the value of distributed franking credits in such a market could be useful. Data on the value of imputation credits from these trades is not and is unlikely to become publicly available.

The changes introduced on 1 July 2000 expands the class of tax offsets³⁴ that are subject to the refundable tax offset rules to include imputation credits³⁵.

These changes have the effect of changing the order of allowable deductions for tax purposes to ensure franking credits are deducted last.

The ACCC has stated that these changes are likely to move the appropriate value for gamma closer to 1.0. It states:

The change results in franking credits being treated as a refundable rebate, similar to the private health insurance rebate, to resident individuals rather than merely a deductible rebate as it previously applied. In addition, the order of allowable deductions for tax purposes has been amended so that franking credits are deducted last when calculating taxable income. This approach ensures the optimal utilisation of tax deductions and franking credit rebates. Therefore, in line with these changes, the Commission believes that a more appropriate value for gamma would be closer to 1.0. The Commission envisages undertaking further work before altering its current position³⁶

We do not know of any investigation of the impact of the 1 July 2000 tax changes. The ACCC's statement that the tax changes provides a basis for estimating gamma as closer to 1.0 is, with respect, rather meaningless without any assessment of the extent of the impact of the change.

Moreover, NECG believes that is good reason to suggest there would be little change at all, based upon the impact on the marginal investor. The tax law change will only impact gamma to the extent that the impacted investors play a part in the determination of equilibrium security prices, that is, they are marginal investors. We have already stated that this is not likely to be the case because of the extent of foreign ownership in Australia and the

³⁴ The only tax offset that was refundable before the introduction of this measure is the private health insurance tax offset

³⁵ For further details see:
<http://www.taxreform.ato.gov.au/publications/2000b/nat3481/part4.htm>

³⁶ ACCC, Draft Decision Queensland Transmission Network Revenue Cap 2002-2006/07, July 2001 p17

extent of foreign investment by Australian and Australian companies. Tax and Imputation considerations are but one factor influencing valuation decisions.

Furthermore, the ACCC is only considering one side of the story. Another factor arising is that the changes in a low inflation environment encourage a lower payout ratio on account of the concessional treatment of capital gains (taxed at half the rate of income from dividends). Accordingly, even leaving aside the marginal shareholder issues, it is not at all clear that the tax changes will move gamma towards one – indeed, in times of low inflation it could well be the case that taxation would tend to lower gamma (because of incentives to lower payout ratios with shareholders securing returns through capital gains which attracts a lower taxation rate).

4 Estimate of gamma

A value of 0.5 is well established in Australian regulatory decision making. This is probably a reasonable result. However, it is critical that the ACCC's suggestions concerning an increase in gamma are effectively rebutted. This is likely to be possible given the uncertainty surrounding the full impact of The New Tax System, particularly given the concessional treatment of capital gains relative to income.