The disappearing returns

Why dividend imputation has not reduced the cost of capital

According to one view, the introduction of dividend imputation credits has resulted in a reduction in the cost of capital to companies. WAYNE LONERGAN holds that the reduction is an illusion and, as a result, some investors are being deprived of proper rates of return.

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Returns to shareholders include the value of dividend imputation credits to the extent that these can offset the shareholders' tax liabilities. However, the ability to take advantage of the imputation credits varies significantly, depending on whether the shareholder is an Australian resident individual, institution, corporate or foreign shareholder.

At the time of the introduction of dividend imputation, Australian resident individual shareholders owned about 18.3% of shares listed on the Australian Stock Exchange.[1] These individuals can generally utilise the benefits of imputation.

For example, consider a company with a before-tax profit of $100. If the corporate tax rate is 36% the company is liable for $36 corporate tax. If all earnings after tax (ie, $64) are fully distributed as dividends, then to an Australian resident individual shareholder, the taxable income is $100, comprising the cash dividend ($64) and the value of imputation credits ($36). In effect, the corporate tax paid by the company can be used to offset the resident shareholder's personal tax liability. Thus, tax paid at the corporate level is essentially a withholding tax on account of personal tax.

However, it is important to note that taxable income is first "grossed up" by the value of the imputation credit received, tax is calculated on the grossed-up income and a tax credit is allowed equal to the value of the imputation credit.

In assessing any impact of imputation on the cost of capital, an important consideration is that the imputation system has eliminated the double taxation of dividend income for individuals. Its effect on companies was generally neutral, as dividend income of companies pre-imputation was effectively tax-free because of the intercompany dividend rebate. Similarly, for the majority by value of overseas investors imputation was also neutral because many of them received a full credit in their own countries for either the underlying rate of tax or at least the withholding tax.

This can be demonstrated by the examples in Table 1.

The ability to use the whole of the tax credit varied depending on the tax jurisdiction and the tax affairs of the investor. In the US, excess foreign tax credits could be grouped, and carried back two years or forward five years. In the UK, excess foreign tax credits were lost.

The introduction of imputation had no effect on US and UK corporate shareholders owning less than 10% of an Australian company. This is because the withholding tax "saved" following the introduction of imputation was not a real saving (except for a slight timing benefit) as it merely resulted in the dividend being subject to a higher rate of domestic tax in the US or UK.

As set out in Table 1, imputation:

- had no impact on tax payable by Australian companies compared with the position before imputation;[2]
- made individual Australian resident shareholders substantially better off post-imputation;[3] and
- had little or no effect on the major overseas investors in the Australian equity market.

Value of imputation credits

The value of imputation credits is a function of:

- dividend payout ratios, since imputation credits can only benefit shareholders when companies actually distribute franked dividends;
- whether, and the extent to which, the shareholder receiving the franked dividend can utilise the imputation credits; and
- whether benefiting shareholders are prepared to pay for those benefits.

Various symbols are used to describe the value to shareholders of one dollar of imputation credit attached to dividends. These symbols include gamma, theta and lamda. For the purposes of this article the term gamma (γ) is used.

The value of an imputation credit, once received, varies according to the:

- identity of the shareholder;
- the marginal rate of tax;
- the extent to which they have other Australian taxable income to offset any

TABLE 1 **Taxation effects of imputation**

COMPANIES	Pre-Imputation $	Post-Imputation $
Cash dividend income	64	64
Taxable income[1]	64	100
Tax thereon[2]	-[2]	36
Less: Imputation credit	-[3]	(36)
Total tax payable on dividend income	nil	nil
Income after tax	64	64

Notes:
(1) Assumes 36% company tax rate.
(2) No tax payable due to intercompany dividend rebate.
(3) Not applicable.

INDIVIDUALS	Pre-imputation		Post-imputation	
	21.5% marginal rate $	48.5% marginal rate $	21.5% marginal rate $	48.5% marginal rate $
Cash dividend income	64	64	64	64
Taxable income	64	64	100	100
Tax thereon (rounded)	14	31	21	48
Less: Imputation credit	-[1]	-[1]	(36)	(36)
Total tax payable	14	31	(15)[2]	12
Income after tax	50	33	64-79[3]	52
Increase in after-tax income			28%-58%	58%

Notes:
(1) Not applicable.
(2) The balance of the tax credit may be offset against other personal income.
(3) Income after tax will vary depending on whether the balance of the credit can be used to shelter other taxable income.

UK AND US INVESTORS owning more than 10%	Pre-imputation $	Post-imputation $
Cash dividend paid	64	64
Less: Dividend withholding tax (rounded)	6	–
Net cash received by ultimate investor	58	64
Credit received for underlying rate of tax paid	36-42	36
Income before domestic tax	94-100	100
Domestic tax	35	35
Unrecovered tax credit	1-7	1
Income after domestic tax	58-64	64

UK AND US INVESTORS owning less than 10%	Pre-imputation $	Post-imputation $
Cash dividend paid	64	64
Less: Withholding tax (rounded)	6	–
Net cash received by ultimate investor	58	64
Less: Domestic tax	(22)	(22)
Credit for withholding tax	6	
	(16)	(22)
Income after domestic tax	42	42

TABLE 2 **Issues affecting value of imputation credits**

	Ownership of listed equities	Marginal rate of tax %	Probability of having other taxable income to offset	Maximum value of imputation credit (% of face value)	Actually better off following imputation	Notes
Category of investor						
Little or no benefit from imputation						
Foreign	32.2					
- US corporate		35.0	n/a	Nil	No	(1)(2)
- UK corporate		33.0	n/a	Nil	No	(1)(2)
- Individuals		33/35	n/a	Nil	No	(2)(3)
Australian life and superannuation funds	26.6					
- Superannuation funds		15.0	High	100	No	(4)
- Life funds		36.0	High	100	No	(4)
Other Australian institutions	11.3	15/36	Medium/High	100	No	(7)
Australian corporate	10.0	36.0	Medium	100	No	(7)
Tax-exempt investors	n/a	0.0	n/a	nil	No	(8)
Significant benefit from imputation						
Australian resident individuals	18.3	48.5 (5)	High	100	Yes	
		44.5 (5)	High	100	Yes	
		35.5 (5)	High	100	Yes	(6)
		21.5 (5)	Medium	100	Yes	(6)

Notes:
(1) Receive credit for underlying rate of tax where they own 10% or more of foreign company.
(2) Imputation credit is offset against Australian withholding tax of 15%. However, this is generally only a timing difference benefit except where a full credit is obtained for the underlying rate of tax. In the latter case imputation does not reduce tax because a credit was given for withholding tax anyway.
(3) The taxation treatment of foreign individual shareholders differs from that of foreign corporates. Broadly, foreign individuals can offset imputation credits against their liability to pay Australia withholding tax but do not receive a credit for the underlying rate of Australian tax paid.
(4) Most superannuation and life funds have taxable income other than dividend income and could (since 1987) generally use most if not all of the imputation credits received. Prior to 1986, superannuation funds were not generally subject to tax. Since then they have been subject to tax on their income and capital gains but they can utilise imputation credits to offset this tax.
(5) Includes 1.5% Medicare levy. The personal income tax rates vary slightly from year to year.
(6) Shareholders need to have other taxable income to obtain maximum value of imputation credits received when marginal tax rate is less than the corporate tax rate.
(7) Prior to imputation, Australian corporate investors received the benefit of the section 46 dividend rebate and therefore dividend income was largely tax-free both before and after imputation.
(8) Not separately categorised by ASX.

Source: Stock Exchange Journal, May 1996.

excess imputation credits received;
- their country of tax residence; and
- their ability to indirectly trade the credit and the cost of availing themselves of such opportunities.

A summary of the key issues affecting the value of imputation credits is set out in Table 2.

If the true after-all-taxes position of investors is examined (rather than just the Australian tax position), then most investors in Australian listed equities were either little or no better off after imputation than before its introduction. The major exception to this proposition were Australian individual shareholders, who owned such a small proportion of listed equities (18.3%) that, even before international capital flows are considered, it is unrealistic to suggest that the cost of equity capital was reduced because of imputation.

IMPACT OF DIVIDEND IMPUTATION ON THE COST OF CAPITAL

In assessing the impact of dividend imputation on the cost of capital, it is necessary to examine its impact on each component of that cost. The classical Capital Asset Pricing Model (CAPM) is the most common method of assessing the cost of equity capital. This and the cost of debt are then weighted to arrive at the Weighted Average Cost of Capital (WACC). The components of these formulae are shown in Table 3.

Effective corporate tax rate under imputation

The impact of imputation is for tax paid at the corporate level to effectively become a withholding tax on behalf of the underlying shareholders whose taxable incomes, in turn, are grossed up for the imputation credit they do not receive in cash. The

TABLE 3 **Components of cost of capital**

			Effect of imputation (in theory)
Cost of equity components			
β	=	Beta	None (1)
R_f	=	Risk-free rate	(2)
R_m	=	Return on market portfolio of investments	(3)
$R_m - R_f$	=	Market risk premium	(3)
Cost of debt components			
K_d	=	Pre-tax cost of debt	None (4)
T_c	=	Effective corporate tax rate	Yes

Notes:

(1) Dividend imputation has no impact on the relative systematic riskiness or volatility of individual company returns (except perhaps the short-term impact, if any, at the time of its introduction). Hence dividend imputation has no impact on Beta.

(2) The risk-free rate can be assessed accurately at the relevant date. Accordingly it is unnecessary to hypothesise whether or not (and if so to what extent) the relative attractiveness and hence cost of risk-free investment has been affected by dividend imputation.

(3) The determination of R_m and $R_m - R_f$ should be based on long-term studies. The following issues therefore arise:

(a) The period since the introduction of dividend imputation is still relatively short.

(b) R_m is determined by, or at least significantly affected by, international capital market considerations and capital flows. The Australian equities market is immaterial relative to the size of the international capital market. Therefore the effect of imputation on international R_m is arguably, for all practical purposes, zero. The ability of international investors to access Australian imputation credits varies. Some cannot access the credits at all. Those that could, wholly or partly, have become increasingly constrained by changes to the tax law.

(c) Conventionally, $R_m - R_f$ is based on studies of up to 100 years to eliminate the effects of short-term abnormalities in the measurement of R_m. There was no dividend imputation before July 1987.

(4) There is no empirical evidence or academic literature that measures the extent to which debt costs fell as a result of imputation. However, as a matter of logic, if the proposition were valid that the cost of equity fell as a result of imputation then the effective tax shelter on debt must also have fallen, partly neutralising the purported benefit of imputation on the cost of equity. However, refer to the following further discussion of this issue.

effective corporate tax rate under imputation therefore reflects:

- the degree to which tax paid at the corporate level is not made available via franked dividends to shareholders;
- the degree to which imputation credits are not ascribed a value by the marginal investor (because the marginal investor cannot use the credit, or either cannot obtain it or cannot or will not pay for it); and
- the time delay between the payment of income tax and the subsequent payment of franked dividends.

Before recognising this time delay, under imputation the effective corporate tax rate is equal to:

$$T_c = t_c (1 - (z\gamma))$$

Where:

T_c = the effective corporate tax rate

t_c = the statutory corporate tax rate (say 36%)

z = dividend payout ratio, calculated as a percentage of EBIT less tax; that is, the calculation recognises the tax shield on interest, as any such shield reduces available imputation credits. Such a calculation is also consistent with the determination of WACC which discounts free cashflows before financing. Most investors do not calculate the payout ratio at the EBIT level.

γ = The value placed on $1 of imputation credit by the marginal investor. Where dividend payout ratios and the ability of the marginal investor to utilise the imputations credit exceed zero it is reasonable to assume that the effective corporate tax rate will be less than the statutory tax rate. For example, using a statutory corporate tax rate of 36%, and assuming the marginal investor can utilise 70% of the imputation credit received, and the dividend payout ratio is 60%, then the effective corporate tax rate is 20.88% calculated as follows:

$$T_c = t_c (1 - (z\gamma))$$

$$= 36\% (1 - (60\% \times 70\%))$$
$$= 36\% (1 - 42\%)$$
$$= 36\% \times 58\%$$
$$= 20.88\%$$

If the time delay between the payment of income tax and the subsequent payment of franked dividends is taken into account, the impact of dividend imputation on the effective corporate tax rate is less. This is because at the time the corporate tax is paid, the present value of the imputation credits utilised will be less than their face value. Accordingly, $1 of tax paid will not translate into $1 of imputation credit value, even if all earnings were distributed as dividends and all shareholders could utilise all of the credits.

Cost of debt

Debt is typically a cheaper source of capital than equity.[4] Accordingly, provided gearing levels stay within appropriate bounds, corporates have a bias towards a reasonable level of debt financing.

Under imputation this bias continues. However, under imputation the bias should be reduced because interest payments shield a company from corporate tax, which reduces the level of imputation credits available to attach to dividend payments to shareholders. Thus, the value of the tax shield on debt is reduced as it is effectively only being shielded at the effective corporate tax rate net of the imputation effect as determined above. That is, if imputation reduces the effective tax rate, then the shield will be at a rate less than the statutory corporate tax rate.

Consequently, the after-tax cost of debt is determined using the following formula:

$$K_d = k_d (1 - T_c)$$

Where:

K_d = the after-corporate-tax cost of debt
k_d = the pre-tax cost of debt
T_c = the effective corporate tax rate

Thus, where franked dividends are paid and it can be proved that the market (in the case of fair market value) or individual shareholders (in the case of other valuations) value imputation credits (ie, they have a value) the after-tax cost of debt actually increases (due to the lower tax shield) as a result of dividend imputation.

Cost of equity

Australia's small economy relative to the world market (the value of companies listed on the Australian Stock Exchange currently constitutes about 1% of the total world's sharemarket capitalisation), and its lack of significant impediments to capital flows, means that the after-corporate-tax cost of equity capital should change only marginally, if at all, as a result of imputation. There are two main reasons for this.

First, although imputation could reasonably be expected to increase the supply of funds for investment purposes by Australian resident shareholders (the reduction in tax paid by Australian resident shareholders means that they have more to invest and it is more attractive to invest), it is unlikely to have any material long-term effect on the after-tax cost of equity capital in Australia. This is because any increase in the supply of funds generated locally will tend to drive out overseas sources of funds as the returns trend down in response to an increase in local investment.

Further, Australian investors have international investment opportunities and any differential between the rate of return they believe they can get in Australia on an after-tax company basis and that available overseas is likely to be shortlived and they will either move funds into or out of Australia to take advantage of better returns. Second, in a world made up of open economies, expected real rates of return (subject to differences in macro economic risks, political risks, etc.) should be equivalent throughout those economies. Accordingly, investors throughout the world could be expected to require the same real after-corporate-tax cost of equity capital for investment projects with identical risks, regardless of imputation in Australia.

This analysis assumes companies do not change their capital structure under imputation. To the extent that imputation reduces the tax advantages associated with debt financing, due to a reduction in the tax shield flowing from a reduction in the effective corporate tax rate, a fall in the cost of equity and an increase in the after-tax cost of debt may occur for those companies which are highly geared and move to reduce their gearing, thus reducing their financial risk.

However, the cost of debt (broadly the risk-free rate plus 1% – 2% pre-tax), even without a tax shelter, is generally much lower than the cost of equity (after tax equals the risk-free rate plus the market risk premium of 6% – 8% times the beta). Thus for betas greater than about 0.3, which represents most companies, the cost of debt even before the tax shield remains lower than the cost of equity. Companies will then be unlikely to materially alter their debt/equity ratio simply because the effective tax shelter on debt is reduced (see also note 4).

In summary, dividend imputation has had a negligible impact on the after-tax cost of capital. This is principally because Australia is a price-taker in the world capital market.

Impact of dividend imputation on pre-corporate-tax cost of capital

With a lower effective corporate tax rate under dividend imputation, it is argued that the pre-corporate-tax cost of capital must be lower to achieve the same after-tax cost of capital and the pre-corporate-tax WACC formula becomes:

$$WACC = k_e / (1 - T_c) \times E/V + k_d \times D/V$$

Where:

k_e = the after-corporate-tax cost of equity
T_c = the effective corporate tax rate
E/V = the proportion of equity financing
k_d = the pre-corporate-tax cost of debt
D/V= the proportion of debt financing

(Note that this assumes a perpetuity framework and constant leverage)

There are a number of reasons why this proposition is not valid.

Sharemarket returns

First, if this proposition were correct, then the market value of Australian publicly listed companies would have increased substantially (and the capital returns from holding Australian shares would have exceeded those of overseas markets) in the period immediately following the introduction of imputation. This is because a reduction in the after-tax cost of capital when applied to after-tax cashflows, other things held constant, would result in higher values. Taking the equity market in aggregate, this did not occur. It is possible that the change may have begun to be anticipated before the introduction of imputation, but not perfectly because neither the details nor the timing would have been known.

The adverse impact of capital gains tax and the impact of massive changes in the corporate tax rate appear to have been largely ignored.

Table 4 shows the Australian, UK and US sharemarket returns for various periods following the announcement of the

TABLE 4 **Sharemarket returns following imputation**

	1-day return %	1-month return %	3-month return %	6-month return %	12-month return %
Australian All-Ordinaries Index	-	7.4	14.3	25.0	(13.6)
Australian All-Resources Index	0.3	11.7	16.7	49.9	(7.1)
FTSE 100 Index	(0.1)	7.1	20.6	38.5	(0.2)
S&P 500 Index	0.7	3.8	15.7	19.3	(4.2)

dividend imputation system in Australia on 10 December 1986.

Both the table and a graph of the index movements show that the Australian equities market did not significantly outperform world equity markets following imputation. Accordingly, it can be argued on the basis of this evidence that imputation has had no impact on the cost of capital pre or post corporate tax.

Price-makers in Australian sharemarket

Second, it is generally accepted that the large investors and price-makers in the Australian equities market are foreign investors and Australian life companies and superannuation funds.

Total after-tax returns to these investors, after taking into account tax rate changes, have not changed significantly when their returns before and following imputation are compared.

As their actual returns have not changed significantly, it is difficult to see how it can be argued that their expected returns, and hence the return they seek for their capital, have changed.

Effect on debt/equity mix

Finally, the pre-tax WACC formula set out above indicates that the pre-tax cost of equity reduces under imputation as a result of the lower effective corporate tax rate.

If this were correct, then investors would alter their debt/equity ratio to take advantage of the relatively cheaper pre-tax equity. However, as this "cheaper" equity capital is still likely to exceed the cost of debt, the resulting WACC is not likely to be changed much, given that more (still dearer) equity (relative to debt) would be unlikely to be substituted for debt, compared with the pre-imputation position.

MARKET SUPPORT FOR "NO ADJUSTMENT" TO COST OF CAPITAL VIEW

Independent expert reports

A review of the independent experts' reports which employed, *inter alia*, the discounted cashflow methodology to assess the fairness and reasonableness of takeover bids was made for the period 1 January 1990 to 31 December 1999. This review covered most experts preparing such reports.

TABLE 5 **Expert reports on takeovers**

Year of takeover announcement	Number of reports reviewed(1)	Number of reports for which WACC support provided	Number of reports adopting classical CAPM without adjustment	Number of reports adjusting for imputation(2)
1999	24	13	12	1
1998	27	8	8	-
1997	19	4	3	1
1996	2	2	2	-
1995	9	5	2	2
1994	7	2	2	-
1993	6	2	2	-
1992	4	2	2	-
1991	12	8	7	1
1990	12	2	1	1
Total	122	48	42	6

Note:

(1) The number of reports reviewed was a random sample with a much greater availability of reports in the last three years. Experience in the preparation of such reports is that only a small proportion of reports use the net present value method of valuation. For industrial companies and asset holding entities capitalisation of earnings or net asset backing methods of valuation are used. For mining exploration companies, geological assessments or farm-in values are generally applied. This sample excludes more than 50 reports prepared by the writer and his Coopers & Lybrand partners during the period.

(2) Or calculating multiple values depending on the shareholder tax position.

Table 5 presents a summary of the results of this review.

Of the 122 reports reviewed only 48 (or 39%) provided support showing how they had arrived at the WACC used in their reports. Of these, 42 (or 88%) used the classical CAPM model and made no adjustment for dividend imputation. Only six reports made an adjustment to reflect dividend imputation.

Non-recognition for entity-specific reasons

Entity-specific reasons for excluding any adjustment for dividend imputation include:

- existence of tax losses;
- the fact that the entity is a gold mine (where income, until recently, was not subject to tax); and
- the fact that no dividends were paid.

It should be noted that other conceptual reasons were also given.

Non-recognition for conceptual reasons

Most reports excluded any adjustment for dividend imputation on conceptual grounds, including:

- the value of franking credits is dependent on the tax position of each individual shareholder ("To many shareholders, for example overseas shareholders, they have little value");
- there is no evidence that acquirers of businesses will pay additional value for surplus franking credits;
- most diversified industrial companies already pay fully franked dividends, thus the values determined incorporate any effect of the value of dividend imputation;
- there is little evidence that the value effects of dividend imputation are being included in valuations being undertaken by companies and investors or the broader market;
- the evidence of the value the market attributes to imputation credits is not well developed;
- changes in tax legislation have made it much more difficult to trade in franking credits;

- foreign shareholders are the marginal price-setters of the Australian market yet many such shareholders cannot avail themselves of the benefit of franchising credits;
- "the evidence gathered to date as to the value the market attributes to franking credits is insufficient to rely on for valuation purposes";
- even if imputation reduced the discount rate, acquirers would not pay any more than the value determined;
- there is no generally accepted method of allowing for dividend imputation. In fact, there is considerable debate within the academic community as to the appropriate adjustment or even whether any adjustment is required;
- there is a lack of certainty about future dividend policies, the timing of taxation and dividend payments and consequently about franking credits;
- while acquirers are undoubtedly attracted by franking credits, there is no clear evidence that they will actually pay extra for them or build imputation into values based on long-term cashflows;
- the studies that measure the value attributed to franking credits are based on the immediate value of franking credits distributed and do not address the risk issues associated with the ability to use them over the longer term;
- the fact that the entity utilising the imputation credit (if at all) is the underlying shareholders not the acquiring entity;
- the benefit of imputation for goldmining companies is factually not significantly different from zero; and
- empirical studies of dividend drop-off analysis reveal that smaller companies (whose ownership would generally include a greater number of individual shareholders theoretically able to use imputation credits) have the lowest gamma factor.

Given that many independent expert reports are commissioned to assist target company directors to obtain a higher offer, it is interesting that even this motivation has not attracted more widespread reference to the (alleged) effect of imputation credits on cost of capital and hence discount rates and value.

It is acknowledged that the independent expert market is dominated by a relatively small number of firms. However, there is no evidence to suggest that their reports, which have been widely disseminated in both the public and professional investor market for a decade, are not shared by the investment community.

Value of franking credits versus cost of capital effect

It is also important to distinguish between references in expert reports to the value, or rather lack of value, of imputation credits compared with the effect, or rather lack of effect, of imputation credits on cost of capital.

Imputation has had, at best, a minor impact on most offshore investors who have a tax residence in countries where a foreign tax credit system exists

Most expert reports do not attribute any separate value to the existence of excess franking credits, let alone consider that the introduction of dividend imputation had any measurable impact on the cost of capital.

Reports that did attribute value to imputation credits

Of the seven reports (6%) that did attribute value to imputation credits, it appears that five attributed little or zero net effect on the value of the company being assessed.

Report on Air International Group

In this 1990 report the classical CAPM was adjusted to reflect imputation and the cost of equity was determined by the following formula:

$$K_e = R_f (1 - t_c) + B[R_m - R_f (1 - t_c)]$$

Where
K_e = the after tax required return on equity
R_f = the risk-free rate
t_c = the corporate tax rate
B = the equity beta
R_m = the return on the market portfolio

The report went on to state that the risk-free rate of return was calculated net of tax. However, given McCaughan's (incorrect) analysis of how R_f works in CAPM, if we take the then current risk-free rates of return of around 9%, the market equity beta of 1.0, a market risk premium of 7.0%, and the then current corporate tax rates of 36%, both the classical CAPM formula and ANZ McCaughan's formula described above result in the same market average cost of equity both before and after imputation, as shown over:

Cost of equity using classical CAPM

$$\begin{aligned} ke &= R_f + B(R_m - R_f) \\ &= 9\% + 1.0 \times (16\% - 9\%) \\ &= 9\% + 1.0 \times 7\% \\ &= 16\% \end{aligned}$$

Cost of equity using ANZ McCaughan CAPM

$$\begin{aligned} ke &= R_f (1 - t_c) + B[R_m - R_f(1-t_c)] \\ &= 9\% (1 - 36\%) + 1.0 \times [16\% - 9\%(1 - 36\%)] \\ &= 5.76\% + 1.0 \times [16\% - 5.76\%] \\ &= 5.76\% + 10.24\% \\ &= 16\% \end{aligned}$$

In other words, although the cost of equity was adjusted for the impact of imputation, the effects on the after-tax cost of equity and R_f cancelled out. That most readers of the report would have queried tax affecting the risk-free rate is not the point. The point is that ANZ McCaughan considered that the net effect of imputation on the cost of equity was "very close".[5]

Report on FAI Life by FAI's chief actuary

FAI Life's chief actuary included ". . . 70% of the value of imputation credits. These values are not market values . . ." in his assessment of the embedded value of the life company. However, because of the link between the present value of a life company's liabilities (which are marked to market) and embedded value, the partial allowance for the value of imputation credits substantially cancelled itself out.[6]

Valuation of Homestake

In this 1995 report the discount rate of foreign marginal investors (no imputation benefit) and Australian marginal investors (full impact) were averaged. The difference

in total value was only 5% and the average of 2.5% was adopted.

Report on Petersville
This 1991 report showed the value of franking credits to different classes of individual shareholders but only over a two-year period and with no adjustment to the terminal value at the end of that period, but did not adjust the discount rate.

Report on Carrington
In this 1997 report it was stated that an allowance was made for the "partial utilisation of the benefit of franking credits". However, the actual discount rate quoted made minimal allowance for imputation.

WHY ONLY DIVIDEND IMPUTATION?
It is interesting to question why there is still debate about the impact of imputation on the cost of capital whereas the adverse impact of capital gains tax and the impact of massive changes in the corporate tax rate appear to have been largely ignored.

For those, including the writer, who believe that Australia is a price-taker in international capital markets, the reason is that the impact on the cost of equity in Australia is, in all three cases, immaterial. However, proponents of the proposition that imputation has reduced the cost of capital (referred to as "the proponents") should also adjust the cost of capital for the effects of CGT and the significant fall in company tax rates.

The effect of CGT on cost of capital
CGT is payable by investors on assets acquired or effectively deemed to be acquired by the legislation (eg, because of changes in underlying ownership, etc.) on or after 19 September 1985.

CGT is assessed on the excess of sales consideration over the cost base of the asset.[7]

As the components of R_m are a mixture of capital gains and income it would appear unarguable as a matter of logic that if one accepts the proposition that imputation reduced the effective cost of capital then CGT must have increased the cost of capital. However, the writer is unaware of any academic studies on this. This may be attributable to the fact that the real cost of CGT takes time to affect the market because:

- in the early years of CGT most asset sales were of pre-CGT assets;
- the equities market collapse of 1987 and the subsequent property market collapse in 1989-91 meant that, in practice, CGT was not an issue for many investors for many years after its introduction;
- international investors who are a significant part of the market do not pay Australian CGT on their Australian investments (logically this is the mirror image of the proposition that imputation does not affect a foreign investor's required returns);
- there is rollover relief for some asset transfers;
- CGT is payable only when assets are disposed of. Thus its real impact is deferred in present value terms;
- CGT tax rates have been significantly reduced under the Ralph Committee reforms. However indexation no longer applies; and
- tax rate changes are not the whole story, as there are often other downstream legislation changes.

The real impact of CGT on the cost of capital would be affected by the key variables listed in Table 6.

Given such a wide range in the key variables, calculations of the impact of CGT on investor returns will vary according to the date at which the impact is calculated.

In broad terms, however, the adverse impact of CGT is a function of how much of the return on equity is made up of real capital gains and the applicable tax rate (at a more detailed level the relative impact and timing of that impact on investors and investees would have to be considered).

Given long-term equity returns of 12% – 16%[9], average dividend yields of 3.5% to 5% (plus compounding effect), a corporate tax rate varying between 49% and 33% and significant changes in inflation rates, the broad guidelines in Table 7 apply.

If the proponents are correct, then even when applying relatively generous annual growth rates in the dividend component of equity returns it is clear that the impact of CGT on equity returns for tax paying entities was relatively minor in the high inflation periods of the late 1980s, continuing into the early 1990s[10], and significant in the low inflation periods of the late 1990s.

On that basis, it appears that CGT would have a significant impact on investors' returns, particularly more recently. However, the major investors (and again the price-makers) in the Australian equities market were not directly affected by CGT

TABLE 6 **Effect of capital gains tax**

Variable	Range 1985-2000
Tax rate	33% - 49%
Risk-free rate	6% - 14%
Expected equity return on investment of average risk[8]	11% - 19%
The period for which the investment is held	Varies case-to-case but can be calculated for a range of time periods.
Rate of inflation	1% - 14%

TABLE 7 **Inflation effect**

	High inflation late 1980s	Low inflation late 1990s
Return on equity (based on long-term CAPM)	12% - 15%	12% - 15%
Less:		
Dividend component	4% - 5%	3% - 4%
Inflation	6% - 8%	2% - 3%
Gain subject to CGT	2% - 2%	7% - 8%

following its introduction, because foreign investors in Australia are not subject to CGT. Further, superannuation funds were not subject to CGT when it was first introduced. Following the taxation of superannuation funds at 15%, the impact of CGT on their returns was not significant because of their ability to shelter taxable capital gains with imputation credits.

Thus, if one accepts the proposition that foreign investors and superannuation funds are the price-makers on the Australian equities market, then both imputation and CGT would appear to have had minimal, if any, impact on their returns and hence the cost of capital in Australia.

The impact of company tax rate changes

Since 1985 tax rates have varied between 49% and 33%. If the proponents are correct, then a reduction in the tax rate should:

- increase company after-tax cashflows (in most cases);
- reduce the tax shelter on interest; and
- decrease the cost of equity at the company level (on the assumption that investors require the same after-tax return on equity but get an imputation credit at shareholder level).

For most companies the significant fall in company tax rates (a reduction of about one-third) should, if the proponents are correct, have materially affected investor returns.

An examination of stockmarket movements following the dates of the announcement of major rate changes in tax rates shows that no significant changes occurred.

ARE IMPUTATION CREDITS NOT VALUABLE?

For many Australian investors the answer to this question is clearly yes. However, it does not necessarily follow that the cost of capital for the entire Australian market has been altered.

Marginal investor studies

The marginal investor on the Australian sharemarket represents a mixture of Australian resident, tax-exempt and offshore investors. Accordingly, the gamma of the Australian investors will lie between zero and one. Various studies have shown that the market value of imputation credits lies between 50% and 82% of their face value, as set out in Table 8.

TABLE 8 **Market value of imputation credits (percentage of face value)**

Researcher	Year of study	Value %
McKinsey & Company (1)	1994	68
Hathaway & Officer (1)	1992	58 – 82
Brown & Clarke (1)	1993	72
Australian Graduate School of Management (2)	1993(3)	50

Sources:

(1) McKinsey & Company, *Capturing Value from Dividend Imputation. How Australian Companies Should Recognise and Capitalise on a Major Opportunity to Increase Shareholder Value*. In the view of the writer this study overstates the value of imputation credits because it does not examine the underlying tax position of the ultimate offshore investors.

(2) *Measuring the Economic Performance of Government Enterprises* (Dodd, 1993).

(3) Presumably 1992, as the paper was published in 1993.

An examination of stockmarket movements following the dates of the announcement of major rate changes in tax rates shows that no significant changes occurred.

The above values were determined using dividend drop-off analysis. This involves a comparison of cum-dividend share prices (being the price before the share is quoted as being without the dividend) and ex-dividend share prices (in which the price quoted excludes the dividend). The difference between the cum-dividend and ex-dividend share prices theoretically represents the value of the money distributed.

In the writer's opinion, dividend drop-off is not a reliable method of estimating the value of imputation credits because:

- the analysis is unable to split the value attributable to the franking credit and the value of tax losses accruing to investors who buy the stock before the ex-dividend date and sell soon after;
- there are significant unexplained movements in share prices around the ex-dividend date;
- share-price movements measured as whole cents may imply a value outside the expected range of 0 to 1. This may occur because share prices are prevented by most stock exchanges from trading in fractions of cents above certain price levels;
- transaction costs, including stamp duty and brokerage, are likely to distort the results from dividend drop-off analysis by making it uneconomical to trade on all arbitrage opportunities that exist between the cum-dividend and ex-dividend dates;
- there are significant apparent inconsistencies in the studies. For example, small companies (likely to have the largest number of shareholders able to utilise imputation credits) have the lowest gamma factors; and
- dividend payout ratios for some companies increased following imputation. This behavioural change should be (but is not) backed out when extrapolating the dividend drop-off statistics to the alleged impact on cost of capital.

These difficulties were successfully summarised by Professor R. Officer, who observed that there is an academic "cottage industry" engaged in measuring the value of

imputation credits, and that the correct level to measure the benefit of dividend imputation is at shareholder level. Unfortunately, such data are statistically unobservable.

CONCLUSION

Australia, an open economy representing only around 1% of the total world sharemarket capitalisation, is a price-taker in the world's capital markets. Logically, therefore, imputation cannot have reduced the cost of capital in Australia.

Further, the major investors in the Australian equity markets are foreign investors (about one-third) and Australian superannuation funds (about one-quarter). Imputation has had, at best, a minor impact on most offshore investors who have a tax residence in countries where a foreign tax credit system exists (such as the US and UK). For the first year after imputation was introduced, Australian superannuation funds received no benefit. The taxation of superannuation funds at 15% from 1 July 1988 means that, as they held a relatively balanced portfolio of shares, bonds and property in the long run, they should be able to utilise imputation credits so that they pay little or no tax. Accordingly, their actual after-tax returns have not altered under imputation and consequently their expected returns were unlikely to have changed. Thus imputation has had no material impact on the dominant investors in the Australian equities market.

Despite imputation's alleged significant benefits to investors in Australian equities, sharemarket returns did not outperform overseas markets in the period following its introduction.

A sample of independent expert reports prepared in the period 1990-99 revealed that the cost of capital was not adjusted at all in 88% of cases and to only a minor degree in the rest.

Those who claim imputation has reduced the cost of capital appear to have conveniently ignored CGT, which on their logic would raise the cost of capital. They have also ignored the impact of the large reduction in corporate tax rates.

CGT has had no impact on international investors in Australian equities because they are exempt from Australian CGT. Australian resident superannuation funds are subject to CGT but after allowing for present value consideration and imputation credits, its adverse impact on their returns is relatively minor.

This implies that the introduction of CGT has had no material adverse effect on the returns of the price-makers of the Australian equities market and hence (like imputation) has not had a material impact on the cost of capital.

Imputation credits are clearly valuable to certain classes of Australian shareholders. However, this is a long way from saying that imputation credits have reduced the cost of capital for the entire Australian equities market.

The class of shareholders who benefited from imputation is so small a proportion of the Australian market that they could not reasonably be said to have affected the cost of capital. Thus, from both an international capital flow perspective and a local capital market perspective, the proposition that imputation has reduced the cost of equity capital in Australia can not be supported.

Some serious implications

Allowable rates of return permitted by regulatory authorities in Australia have, on a number of occasions, been reduced because of the alleged reduction in the cost of capital as a result of imputation credits. As a result, some investors are being deprived of part of the rate of return to which they properly should be entitled.

This is not only unjust; it also has serious implications on the future availability of equity capital to invest in major infrastructure projects. It has also affected the capital value of such projects by many tens of millions of dollars and, in some cases by hundreds of millions of dollars.

NOTES

1 *Stock Exchange Journal*, May 1996.

2 Private companies were also subject to sufficient distribution requirements.

3 The extent of betterment varied with the marginal personal tax rate.

4 This is generally clear at the explicit cost level. However, if debt levels are increased excessively this has a consequent adverse impact on the cost of equity and thus an indirect cost effect as well. To simplify the explanation this paper concentrates on the direct cost of debt and equity.

5 The CAPM formula used by ANZ McCaughan does, however, result in different costs of equity than that determined under the classical CAPM where the beta is not equal to 1.0. This suggests that the impact of dividend on cost of capital is a function of an investments beta. As imputation has no impact on the relative systematic or market risk of investments this does not appear logical.

6 For a fuller description of issues relating to life companies see *The Valuation of Businesses Shares and Other Equity* (3rd edition), Chapter 23, by the author of this article.

7 Prior to the Ralph Committee Report the cost base was indexed for inflation.

8 Assuming beta of one and R_m of 5%.

9 R_f and beta of one times R_m of 5%.

10 This is consistent with the relatively low amounts of CGT revenue reported by the ATO. J

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