In the March 1995 issue of JASSA, TIM BRAILSFORD and KEVIN DAVIS discussed the effect of the dividend imputation tax system on the cost of capital and for valuation. In this article, they answer assertions made in a response in the September issue that their analysis is flawed.

In a following article, another commentator joins the debate.

The dividend imputation tax system was introduced in Australia in 1987. An important issue arises as to how the imputation system affects the cost of equity capital of Australian companies. We presented one way to examine this issue ("Valuation with Imputation", JASSA, March 1995). Our article was followed by a comment by Stephen Easton and Peter Howard ("Struggling with Imputation", JASSA, September 1995) which claims that the analysis in our original article is flawed and asserts that there is a preferred approach to the treatment of dividend imputation in capital budgeting and valuation analysis. We welcome this opportunity to:

- clarify for practitioners the confusion that the Easton and Howard article will have created;
- highlight the important and relevant cost-of-capital considerations for practitioners to focus on in capital budgeting and valuation analysis; and
- refute the claims of Easton and Howard.

AREAS OF CONTENTION

There appear to be five questions on which Easton and Howard disagree with our analysis:

- What is the correct definition of the cost of equity capital?
- What is the best practical approach to valuation in order to cope with the introduction of dividend imputation?
- Has the introduction of imputation had any substantive effect on required rates of return demanded by investors?
- Is our original analysis "flawed"?
- Have we miscalculated the return on the Australian equity market over the period since the introduction of imputation?

DEFINITIONAL ISSUES

It is possible to define the cost of equity capital in a number of ways and the effect of imputation upon the cost of equity capital will clearly depend on the definition adopted. Table 1 provides an overview of (some) alternative definitions of the cost of equity capital, by categorising the return to an investor (for different investor groups) relative to their tax status. Table 1 also provides numerical examples of returns in the case where a company pays a franked dividend of cash amount $0.64, based on a before-tax profit of $1.00, a company tax rate of 36% and a share price of $5.00. (For simplicity, we assume no capital gains so that the only returns are in the form of cash dividends).

Our approach adopts the conventional definition of a return - return after company tax but before personal tax - which is commonly used in practice in both Australia and overseas (cases 3A and 3B in Table 1). In our example, the rate of return using definitions 3A or 3B would be $0.64 / $5.00 = 12.8% (ie, dividend divided by price).

Easton and Howard have a definition of the cost of capital that reflects the argument that company tax can be interpreted as a prepayment of personal taxes, and thus opt for cases 2A and 2B in the table. Using our numerical example, the Easton-Howard approach would involve relabelling the company tax of $0.36 as a prepayment of personal tax for an Australian investor with a mar-
The original tax rate of 47% (and thus able to fully use the franking credits to offset tax liabilities). The return, under definition 2A, would then be ($0.64 + $0.36) = $1.00 and the rate of return would be 1.00 / 5.00 = 20.00%.

We have no problems with the logic of this approach or the definition of the cost of capital, provided that cashflows and rates of return are defined consistently, and that comparisons pre-imputation and post-imputation are made consistently. Indeed, in our original paper, we made explicit reference to an article by Professor Bob Officer which outlines alternative approaches to defining the cost of capital. Our preferred definition is based on practical grounds.

Note that if domestic residents can fully utilise franking credits (as in the example above), all company tax can be interpreted as prepayment of personal tax and case 2A is identical with case 1A (the before-tax case). This applies even where the investor’s tax rate is below the company tax rate, provided (as is usually the case) the investor has other taxable income against which the franking credits can be used. In the example, we have used a domestic tax rate of 12.5% to illustrate the point in which the cost of capital is 20% for both cases 1A and 2A.

Category 2A becomes relevant only in the unusual case where an Australian investor can use only some part of the franking credits (for example, if the aggregate receipt of franking credits exceeds the tax liability). If an investor could use only half of the franking credits (ie, $0.18 of the $0.36 of franking credits accompanying the $0.64 cash dividend), then the rate of return under definition 2A would differ, ie, ($0.64 + $0.18) / 5.00 = 16.4%.

In the case of overseas investors who are unable to use imputation credits (in the absence of a black (grey?) market where those credits can be sold), case 2B is identical with case 3B. The reason is that no part of company tax can be interpreted as a prepayment of personal tax.

Finally consider cases 4A and 4B, where the rate of return is calculated after all taxes. Continuing our example, for an Australian investor on a marginal tax rate of 47%, the rate of return after all taxes (case 4A) is calculated by grossing up the dividend of $0.64 to obtain $1.00 and then calculating the after-personal-tax amount which is equal to [$1.00(1 - 0.47)] / 5.00 = 10.6%. For an investor on a personal tax rate of 12.5% (who is able to fully utilise franking credits) the return after all taxes would be [$1.00(1 - 0.125)] / 5.00 = 17.5%. Note also that for foreign investors, subject to tax in their home country at (say) 12.5%, the return after all taxes under definition 4B would be [$0.64(1 - 0.125)] / 5.00 = 11.2%.

<table>
<thead>
<tr>
<th>Table 1: Alternative Cost of Equity Capital Concepts</th>
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<tr>
<td>Investor group</td>
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<td><strong>Investor tax rate</strong></td>
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<td>Before all tax</td>
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* This example is where the investor (taxpayer) can use half of the imputation credits (ie, $0.18).

** These figures can be interpreted as both returns to foreign investors and returns to Australian Investors under the “classical” tax system operating before the introduction of imputation in 1987.
Three important points are illustrated by these examples. First, where investors face different tax rates, definitions of rates of return which incorporate those tax rates (such as cases 4A and 4B) will lead to different rates of return across investors. Second, at any time, all current shareholders must (by definition) be willing to hold the share at the prevailing market price.

We recognise that one particular investor group may dominate in the determination of the current market price, so that the share price reflects the present value of expected future cashflows discounted at their required rate of return. However, other investors with a higher required rate of return will not invest in those shares (unless they have a more optimistic view of future cashflows), and investors with a lower required rate of return will receive a return in excess of that which they require. Third, any definition of the cost of capital may be used to calculate the present value of a set of cashflows provided that the cashflows are measured consistently with that definition.

PRACTICAL CONSIDERATIONS IN VALUATION METHODOLOGY

Our paper did not attempt to analyse the merits of alternative definitions of the cost of capital; we simply focused on one definition. Our rationale for adopting a cashflow definition which was after company tax but before personal tax (cases 3A and 3B in Table 1) was based on several factors.

First, this approach is familiar to analysts. The approach is used in overseas markets where a classical tax system prevails (such as the US). Second, internal corporate policies usually separate the responsibility for the provision of a discount rate from the identification of relevant cashflows. That is, cashflow identification is often a delegated responsibility within an organisation, whereas the discount rate is usually set at a senior level of responsibility. While line management can be asked to add franking credits into cashflows, it seems cleaner to adjust for the franking credits in the discount rate. Third, our approach is consistent with definitions used elsewhere in the literature as discussed in Officer (1994). Finally, our approach uses concepts of rates of return comparable with those directly quoted in the marketplace.

Easton and Howard assert that the correct approach is to add some part (or all) of the imputation credits on to cashflows after company tax, and measure the cost of equity capital after that part of company tax not regarded as a prepayment of personal tax. (This corresponds to cases 2A and 2B in Table 1, or, if all imputation credits are added back, as might be relevant for most Australian investors, Case 1A.) That is a feasible approach, as we have demonstrated, but it is only one of a number of feasible approaches and there is no evidence in the Easton-Howard article of why this should be the preferred approach – only their assertions that our approach is incorrect and likely to induce error. Although we thought our approach was easy to follow, we should perhaps reconsider it in the light of the conclusions we appear to have led Easton and Howard into making.

Hence, the only difference between our approach and that which is so strongly advocated by Easton and Howard is how the cost of capital is defined. Both approaches will yield correct answers if a consistent definition of cashflow is used (as was the case in our original analysis). We therefore find it difficult to entertain the Easton-Howard claim that our analysis contains a "fundamental flaw".

SUBSTANTIVE IMPACTS OF IMPOSITION

Easton and Howard seem to be saying that because the Australian economy is part of the world economy, domestic taxes and subsidies can have no distorting effects by altering relative prices. Australian purchasers of clothing, textiles and footwear might agree that this is a non-sequitur. In this context, imputation can be regarded as a subsidy to domestic purchasers of Australian equity which is not available to foreign investors.

Consider the consequences of the introduction of imputation in terms of Table 1. It is convenient to start with cases 4A and 4B. As the introduction of imputation is unlikely to have had any obvious effect on investor tastes and preferences, it is reasonable to expect that the required returns, after all taxes, on Australian equities are unchanged for both domestic and foreign investors. Under imputation, the effective removal of a level of taxation for Australian investors means that their before-any-tax required rate of return (case 1A) will have fallen in order to be consistent with an unchanged required rate of return after all taxes.

Considering the required rate of return after company tax but before personal tax (case 3A), it is apparent from the above argument that the before-tax return required by Australian investors will have fallen, since the personal tax bill remaining to be paid on returns after company tax has fallen. To achieve an unchanged required rate of return after all taxes, the required return after company tax (case 3A) will thus be lower. Similarly, utilising Easton and Howard's approach (case 2A) we note that case 2A must be equivalent to either cases 1A or 3A or somewhere between, and, as the required rate of return will have fallen in all of these cases, the required rate of return in case 2A will also have fallen.

Now consider the situation for foreign investors. As imputation has no tax consequences for foreign investors, the required rate of return after company tax will be unchanged. Indeed, none of the required rates of return to a foreign investor are affected by imputation.

The issue which arises from recognising possible changes in required rates of return for different investor groups is that of which new market equilibrium will eventuate. In particular, what will be the outcome of potential changed demands for Australian equities by domestic and foreign investors on the
market prices of Australian shares?

At the one extreme, if there are only domestic investors or if their demands alone determine Australian share prices (ie, the Australian market is regarded as closed), then share prices will have increased and the cost of equity capital must have fallen under all definitions, except that of after-all-taxes.

Take for example, a domestic investor on a marginal tax rate of 12.5%. Under the classical tax system which prevailed before imputation, the Australian investor was in the same situation as a foreign investor. The before-any-tax return prior to the introduction of imputation, in our example, was equal to that for a foreigner, in case 1B 20%, and the return after all taxes was 11.2% (case 4B). Assume that, because domestic investors were willing to hold this share, the return of 11.2% was the required rate of return after all taxes. If, after imputation, the share price remains unchanged at $5.00 so that the before-tax rate of return is still 20%, the return after all taxes would rise to 17.5% (with the personal tax rate at 12.5%). Naturally, domestic investors would be willing to pay a higher price for the share, and the share price would be bid up.

We would expect in equilibrium that the share price would rise after the introduction of imputation to $7.8125, thereby maintaining the return after all taxes at the required rate of 11.2% (given by \[ \frac{[1.00(1-0.125)]}{7.8125} \]). The actual and required return before any tax will thus be $1.00 / $7.8125 = 12.8%, which is substantially below the 20% rate required before the introduction of imputation.

At the other extreme, if the only investors are foreigners or if their demands determine Australian share prices (ie, the Australian market is regarded as completely open), there would be no change in share prices. In this case, the cost of equity capital measured before tax, after company tax, or after all taxes would not change. In this world, imputation is largely irrelevant for company financial policy, and Australian investors receive a major subsidy from the government. (From Table 1, the Australian investor on a tax rate of 12.5% would experience an increase in return, after all taxes, from 11.2% to 17.5%.)

We prefer to follow the view that national tax systems have the ability to distort relative prices, which suggests that Australian investors have a role to play. In these circumstances, the expected return on the market portfolio (measured after company tax but before personal tax and in the conventional manner) relative to the risk-free rate will have fallen. Foreign investors, for whom the expected return on Australian shares now falls short of their required return, will choose to invest elsewhere, everything else being equal.

In practice, of course, market prices are set by a combination of both Australian and foreign investors. Further, differences in views on expected profits, the existence of companies paying unfranked returns, and methods for foreigners to gain value from franking credits such as option plays around ex-dividend dates, will mean that foreign investors still participate. However, we recognise that the issue is an empirical question and, as we stated in the original analysis, “only when sufficient time has passed ... can this issue be properly addressed”.

**LOGICAL FLAWS**

We cannot see that Easton and Howard have identified any logical flaws in our analysis. We ensured that our cashflow concepts and rates-of-return measures were consistently defined. In contrast, the arguments of Easton and Howard contain internal inconsistencies. They initially claim that the cost of equity capital has not changed as a result of the introduction of imputation. There are only three cases in which this argument can be sustained.

The first case is if required returns are measured after all taxes. The constancy of that measure was an underlying premise of our argument, and it is clear from Easton and Howard’s comments that they are not referring to this case.

The second case is if Australian equity prices are determined solely by foreign investors who are unable to utilise franking credits. Then Australian share prices will be equal to the present value of cashflows discounted at the foreigners’ required rate of return and, as there have been no changes to these values (under any definition), there will have been no change in Australian share prices. Imputation, in this case, is a damp squib with few substantive implications for the financial policy of Australian companies. As we have suggested, this scenario seems unlikely. And Easton and Howard appear to accept that imputation will have given a boost to equity prices, and they provide a numerical example to illustrate this point.

We are left with a third possibility. If the required return before the introduction of imputation (measured according to definition 3A – after company tax) is compared with the required return following the introduction of imputation (measured according to definition 1A – before tax or the Easton-Howard case of 2A), then it is apparent that these numbers are equal if the required rate of return after all taxes is unchanged. This result follows simply from the fact that the return measures are based in each case on different measures of income.
under different tax systems. Hence, the resultant investor's tax liability is calculated under different tax regimes.

We are happy to concede that if one wants to compare different definitions of the cost of capital (ie, apples with oranges), it is possible to claim that the cost of capital is unchanged. But this semantic result must be accompanied by the caution dove disclaimer that there has also been a change in the definition of cashflows to which that value applies.

EMPIRICAL MISCALCULATIONS
We were surprised that Easton and Howard chose to make an issue of our throw-away comment to the effect that "returns appear to have fallen". Our caveats in the original article that this issue could be properly addressed only when sufficient time had passed and that general conclusions were difficult should have signalled that we were engaging in some casual empiricism.

Their restatement of the obvious also seemed unnecessary. Market returns should incorporate dividends and dividend yields certainly have gone up since the introduction of imputation. But the decline in the annual rate of capital gains that has occurred since the introduction of imputation has not been fully offset by an increase in dividend yields. Our point could have been made with more precision, but we are happy to leave it to JASSA readers to decide whether our comment constitutes a 'fundamental flaw' in the analysis.

We would note that Easton and Howard's Table 1 data confirm the point we were making. In the most adverse case for us, as presented by Easton and Howard, returns on the accumulation index between 31 December 1987 and 31 December 1994 were 10.3% p.a. The risk-free interest rate (proxied by treasury notes) over this period averaged around 10% p.a., giving an observed market risk premium of about 0.5% p.a. compared with a historical average in the range of 6-8% p.a.

Finally, we refer to Officer (1994): "Where estimates of returns are derived under an imputation tax system using [considerations of rates of return], some personal tax payments will be capitalised into the risk premium which consequently will be lower" (p.10).

REFERENCES

ANOTHER VOICE

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The March 1995 issue of JASSA has an article by Brailsford and Davis (BD) on the cost of capital under imputation. The September 1995 issue has a follow-up article by Easton and Howard (EH). These articles are meant to "explain how to use imputation in the cost of capital (BD) and the cost of equity (EH)". After reading both articles, one could not help but be more confused, rather than enlightened.

These articles include three capital asset pricing models (CAPM) for the cost of equity, $R_E$, after company tax and before personal tax:

1. $R_E = R_{FREE} + \delta[R_{MKT} - R_{FREE}]$ (classical CAPM);
2. $R_E = R_{FREE}(1 - T_c) + \delta[R_{MKT}(1 - T_c) - R_{FREE}(1 - T_c)]$ (BD); and
3. $R_E = R_{FREE}(1 - T_c) + \delta[R_{MKT}(1 - T_c) - R_{FREE}(1 - T_c)]$ (EH)

where $R_{FREE}$ is the risk-free rate, $T_c$ is the Australian corporate tax rate, $\delta$ is the equity beta and $R_{MKT}$ the return on the market.

EH make the point that imputation credits can be taken in the cashflow instead of an adjusted CAPM. It is easy to see how they arrive at their CAPM model (3). A consistent perpetuity valuation can be derived as either grossed-up cashflows (cash plus credits) discounted at the classical CAPM cost of capital or the cashflow without credits discounted.