

UNDERSTANDING IMPUTATION

Tim Brailsford

Senior Lecturer

and

Kevin Davis

Colonial Mutual Professor of Finance

Department of Accounting and Finance

University of Melbourne

Parkville, Vic. 3052

Australia

Phone: (03) 9344 7662

Fax: (03) 9344 6681

Abstract:

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 its relevance for valuation. In this article, they refute assertions made by an article in the September issue that their analysis is flawed, and clarify the confusion created by those assertions.

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:

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

The Areas of Contention

As best we can ascertain, there are five areas in which Easton and Howard disagree with our analysis. They are:

- 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?

We treat each of these issues in turn.

Definitional issues

We suspect that Easton and Howard are playing semantic games (and getting themselves and probably *JASSA* readers confused). 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 upon 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. (We assume no capital gains for simplicity, so that the only returns are in the form of cash dividends).

Table 1
Alternative Cost of Equity Capital Concepts

| | Investor Group | | | | | |
|---|-----------------------|--------------------------|-------|------|-------------------------------|--------------------------|
| | <i>Domestic</i> | | | | <i>Overseas (Classical)**</i> | |
| | Case | Examples | | | Case | Examples |
| | | <i>Investor tax rate</i> | | | | <i>Investor tax rate</i> |
| | | 10* | 12.5% | 47% | | 12.5% |
| Before all tax | 1A | 20 | 20 | 20 | 1B | 20 |
| After that part of company tax not regarded as prepayment of personal tax | 2A | 16.4 | 20 | 20 | 2B | 12.8 |
| After company tax <u>but</u> before personal tax | 3A | 12.8 | 12.8 | 12.8 | 3B | 12.8 |
| After all tax | 4A | 14.4 | 17.5 | 10.6 | 4B | 11.2 |
| *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. | | | | | | |

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

Easton and Howard want to redefine the cost of capital to reflect the argument that company tax can be interpreted as a prepayment of personal taxes, and thus opt for cases 2A and 2B above. 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 marginal 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 cash flows and rates of return are defined consistently, and comparisons pre- and post-imputation are made consistently. Indeed, in our original paper, we gave 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 as discussed in the next section.

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 (ie the before tax case). This applies even in the case where the investor's tax rate is below the company tax rate, provided (as is usually the case) that 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.

It is only in the unusual case where an Australian investor can use only some part of the franking credits (where through poor tax planning their aggregate receipt of franking credits exceeds their tax liability) that category 2A becomes relevant. If for example, 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 a foreign investor, subject to tax in their home country at (say) 12.5%, the return after all taxes under definition 4B would be $[\$0.64(1-0.125)] / \$5.00 = 11.2\%$.

Three important points are illustrated by the preceding 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 point in 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 cash flows 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 cash flows), 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 cash flows provided that the cash flows 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. Instead we simply focused on one definition. Our rationale for adopting a cash flow 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 USA). Second, internal corporate policies typically separate the responsibility for the provision of a discount rate from the identification of relevant cash flows. That is, cash flow identification is often a delegated responsibility whereas the discount rate is typically set at a senior level of responsibility within an organisation. While line management can be asked to add franking credits into cash flows, 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 utilises as parameters, concepts of rates of return comparable with those directly quoted in the market place.

Easton and Howard assert that the correct approach is to add some part (or all) of the imputation credits onto cash flows 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 argument in the Easton and Howard article as to why this is the preferred approach - other than their ill-founded assertions that our approach is incorrect and conducive to inducing error. (While we thought our approach was easy to follow, we perhaps should reconsider 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 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 cash flow is used (as was the case in our original analysis). Consequently we find it very difficult to comprehend the bold claim of Easton-Howard that our analysis contains a “fundamental flaw”.

Substantive impacts of imputation

Easton and Howard seem to accept the non-sequitur 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 beg to differ. In this context, imputation can be regarded as a subsidy to domestic purchasers of Australian equity which is not available to foreign investors.

Easton and Howard are either playing semantic games or are confused. 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 effects 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 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 now also 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 in 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 then arises from recognising possible changes in required rates of return for different investor groups is that of what 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.

Following from the above, at the one extreme, if there are only domestic investors or if their demands solely 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 prevailing 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 given in case 1B of 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 $[\$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 prior to the introduction of imputation.

At the other extreme, if the only investors are foreigners or if their demands solely 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. Of course, in practice, 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

After carefully reading Easton and Howard’s comments, we cannot see that they have identified any logical flaws in our analysis. We carefully ensured that our cash flow concepts and rates of return measures were consistently defined. Conversely, Easton and Howard have clouded the issue by their semantics. Further, their arguments 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 their 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 cash flows 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 above this scenario seems unlikely. Indeed Easton and Howard contradict themselves and confuse the issue by also accepting that imputation will have given a boost to equity prices, and provide a numerical example to illustrate this point! To quote from Easton and Howard: “Under the imputation system, the same share should be more valuable as imputation removes one layer of taxation and results in larger cashflows to shareholders” (p.28).

Hence, we are left with a third possibility. If the required return prior to the introduction of imputation (measured according to definition 3A, ie after company tax), is compared to the required return following the introduction of imputation (measured according to definition 1A, ie 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 upon 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 *caveat emptor* disclaimer that there has also been a change in the definition of cash flows to which that value applies!

Empirical Miscalculations

Finally, we are staggered that Easton and Howard chose to make an issue of a “throw-away” comment that “a brief look ... reveals that ... returns appear to have fallen”. We thought that our explicit caveats that “only when sufficient time has passed ... can this issue be properly addressed” and that “it is difficult to draw general conclusions” would have signalled that we were engaging in some very casual empiricism.

We are equally staggered that they feel it necessary to restate the obvious. Market returns should incorporate dividends and dividend yields certainly have gone up since the introduction of imputation. But, at the risk of political incorrectness, Blind Freddy could infer that the decline in the annual rate of capital gains pre- and post-imputation to date 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.

To assist readers, we would note that Easton and Howard's Table 1 data confirm the very 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 to 31 December 1994 were 10.3% p.a. The risk-free interest rate (proxied by Treasury Notes) over this period averaged in the order of 10% p.a., giving an observed market risk premium of about 0.5% p.a. compared to an historical average typically put 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 [conventional measures of rates of return], some personal tax payments will be capitalised into the risk premium which consequently will be lower” (p.10).

References

Officer, R.R., [1994], “The Cost of Capital Under an Imputation Tax System”,
Accounting and Finance, Vol.34, pp.1-17.