ESTIMATING THE DISTRIBUTION RATE FOR IMPUTATION CREDITS

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Abstract

The Officer version of the CAPM, which is widely used in Australia, embodies a parameter called the distribution rate for imputation credits, being the proportion of company tax payments to the Australian Tax Office that are attached to dividends as imputation credits. The most widely used estimate of this parameter is about 70%, based upon ATO data. This paper has instead estimated this parameter using data from the financial statements of the ten largest ASX companies. The result is 85% for the period 2000-2013 and 87% for the period 1987-2013. A significant implication of these higher figures is that the effective company tax rate is lower than generally accepted and therefore that the price and revenue caps adopted by Australian regulators are too high.

1. Introduction

The cost of equity capital is usually estimated from some version of the Capital Asset Pricing Model, of which the most popular version world-wide is the SLM version (Sharpe, 1964; Lintner, 1965; Mossin, 1966). However, in Australia, the most popular version is Officer (1994), which recognises the existence of imputation credits on dividends and treats these credits as a pre-payment of personal tax on dividends by the company on behalf of its shareholders. Accordingly, dividends are defined to include these credits (to the extent that shareholders can use them) and the corporate tax rate is effectively reduced. This reduction in the corporate tax rate is the product of the distribution rate (the proportion of company taxes that are used as imputation credits) and the utilisation rate (the proportion of imputation credits attached to dividends that can be used by investors to reduce their personal tax obligation). This paper focuses upon the distribution rate. Estimation of this parameter is particularly significant for regulated firms because estimation errors translate directly into the revenue or price caps that are applied to these firms.

Although the distribution rate is a firm-specific parameter in the Officer model, the usual practice is to invoke a market-wide estimate (for example, see the AER, 2013, section K.4). In addition, the usual practice is to draw upon Australian Tax Office (ATO) data for such an estimate. This data includes the net company taxes paid to the ATO over each year, the net imputation credits attached to dividends over each year, and the aggregate franking account balances of companies at each year end (the company taxes paid to the ATO less the imputation credits attached to dividends, since the commencement of the imputation system). This data permits two approaches to be taken to this issue: the "tax" measure, in which the distribution rate is the net company taxes paid to the ATO net of the increase in the Franking Account Balance as a proportion of the net company taxes paid to the ATO, and the "dividend" measure, in which the distribution rate is the net imputation credits attached to dividends as a proportion of the company taxes paid to the ATO. Using both approaches, NERA (2009, Table 2.2) estimates the distribution rate at about 70% for the "tax" measure and 53% for the "dividend" measure, over both the last five years and the entire period since imputation was introduced. Since the two approaches will yield the same results if the correct data are used, the significant variation in results reflects adversely upon the quality of at least some of the data used. Furthermore, NERA identifies a number of specific deficiencies in the ATO data. For example, in respect of their preferred "tax" measure, the

aggregate Franking Account Balance will be understated when firms fail to report their Franking Account Balance or declare bankruptcy and therefore cease to report this data to the ATO (NERA, 2013, page 4).

In view of these difficulties with aggregate data, this paper seeks to estimate the market-wide distribution rate using financial statements for individual firms and then aggregating over these results. This has two advantages over the ATO data: financial statements are audited, and the types of errors identified in the ATO data by NERA are necessarily avoided by possession of the firm-level data.

2. Analysis

The first issue is that of which firms to examine. Since the most valuable companies are likely to make the greatest company tax payments to the ATO, and therefore contribute most to the aggregate distribution rate, I focus upon such companies. In particular, I select the ten largest ASX companies (as at 1 December 2013), which comprise 50% of the ASX200 market capitalisation. These companies are CBA, BHP Billiton, Westpac, ANZ, NBA, Telstra, Woolworths, Wesfarmers, CSL and Woodside Petroleum.

The second issue is that of how much historical data to use, with more data yielding a more precise estimate but raising the risk of bias arising from data that is not recent being unrepresentative of the current situation. Furthermore, the availability of financial statement data tails off from before 2000. I therefore use data since 2000, i.e., 2001-2013 inclusive.

The third issue concerns how the distribution rate is defined. NERA considers two approaches, which will yield the same results if consistent data is used. Since the data source used here ensures that the data are consistent, the choice of approaches is not significant and I therefore use the "dividend" approach, i.e., for a particular company and time period, the distribution rate is the distributions divided by the company tax payments to the ATO:

$$F = \frac{DIST}{TAX} \quad (1)$$

The distributions can be deduced from the fully franked dividends and the corporate tax rate over this period:

$$DIST = DIV\left(\frac{T_c}{1-T_c}\right)$$

(2)

The dividend payments, and the part that is fully franked, can be obtained from the "Dividends" note to the financial statements.[1] The tax payments to the ATO are less obvious because the tax payments shown in the "Cash Flow Statement" will include payments to foreign tax authorities and separate identification of the payments to the ATO is not generally made in financial statements. However, over the period examined (2001-2013), the franking balance of the entity will have changed due to tax payments to the ATO and distributions of credits via dividends:

$$B_{2013} = B_{2000} + TAX - DIST$$

The tax payments to the ATO will then be as follows:

$$TAX = DIST + B_{2013} - B_{2000}$$

(3)

The fourth issue is whether to use data for the parent company or the group. However the franking balance is typically only given for either the parent or the group. So, if the franking balance is given only for the parent, the entire analysis is done using data for the parent. Where choice is available, I conduct the analysis at the group level.

3. Results

The results of this analysis are shown in Table 1 (figures in $m). For example, for CBA, parent data is used. The "Franking Balance" (found in the "Dividends" note to the accounts) grows from $450m in 2000 to $742m in 2013. Aggregating over the results shown for individual years, fully franked dividends of $35,496m were paid over the period. Using

[1] This data is drawn from the "Dividends" note to the Financial Statements for each year rather than the "Statement of Cash Flows", because the latter will not include dividends that are subject to a Dividend Reinvestment Plan.

equation (2) and a corporate tax rate of 30% over this period, this implies distributed credits of $15,212. Using equation (3), the tax payments to the ATO are then $15,504m. Using equation (1), the distribution rate is then $15,212/$15,504m = 0.98.

One complication arises from the fact that some of the financial statement data is in $US. In particular, all of the data shown in BHP's annual reports are in US$, and are converted to AUD using the average exchange rate for the month to which B_{2013} relates (December 2012) and the average rate during the year for the dividend payments. In addition, the data shown in Woodside's financial statements for the years ending 2009-2012 inclusive are also in US$, and are treated in the same way. A second complication arises from the fact that CSL data extends back only to 2004. However, given the small impact of this company on the market-wide estimate, this issue is not significant.

The rates shown in Table 1 range from 53% (Woodside) to 100% (Telstra), but most are at least 90%. The market distribution rate is the aggregate distributions (*DIST*) divided by the aggregate taxes paid to the ATO (*TAX*), and the result is 85%, as shown in the last row of Table 1.

The estimates of *TAX* shown in Table 1 can be tested in a number of ways. Firstly, such values should not materially exceed the tax payments for each firm, as shown in the "Cash Flow Statement". This test is satisfied in all cases. Secondly, wherever data is available on the tax payments to the ATO, the estimate shown in Table 1 should closely correspond to it. The ANZ discloses the tax payments made to the ATO (as well as the total tax payments) in its "Cash Flow Statement" for some years. For these years the proportion is 70%, and application of the same rate to the total tax payments in other years coupled with the ATO payments that are disclosed yields an estimate of the total tax payments to the ATO for 2000-2013 of $13,681; this is close to the estimate of $13,015 shown in Table 1. Lastly, where the "Tax Expense" shown in the financial statements is split between Australia and other countries, application of the ratio (Australia to total) to the tax payments shown in the "Cash Flow Statement" should yield an estimate of the tax paid to the ATO that closely corresponds to the estimate shown in Table 1. Again, this test is satisfied in the two cases in which it can be applied (CBA and Westpac).

The estimate for the market-level distribution rate of 85% is markedly larger than even the higher of the two estimates arising from ATO data. One possible explanation for this is that the sample used in this study is unrepresentative of the wider population. The second, and more likely, possibility is errors in the ATO data (which have already been commented upon). One significant implication of this is that that the effective company tax rate is lower than generally accepted and therefore that the price and revenue caps adopted by Australian regulators are too high.

4. The Use of a Longer Time Period

These results use data for 2001-2013. However, imputation has been in force in Australia since 1987. Accordingly, we estimate the effect of estimating the distribution rate using the entire period 1987-2013. Data limitations preclude use of the same methodology as in the previous section. Consequently, we assume that distributions grew over the period 1987-2001 by the same rate as they did for the later period 2001-2013. For the latter period, the aggregate fully-franked dividends of these ten companies grew from \$9975m to \$33,191m, which implies a growth rate of 10%. The same growth rate characterises the distributions of these companies, and this rate is extrapolated back to the 1987-2001 period. To illustrate the process, consider CBA with fully-franked dividends of \$1350m in 2001, implying distributions of \$579m in accordance with equation (2). With a 10% growth rate, the distributions in 1987 would then have been as follows:

$$DIST(1987) = \frac{DIST(2001)}{(1.1)^{15}} = \frac{\$579m}{(1.1)^{15}} = \$138m$$

The aggregate distributions over the 1987-2000 period would then have been as follows:

$$DIST(1987-2000) = \$138m + \$138m(1.1) + ...\$138m(1.1)^{14} = \$3875m$$

The aggregate company tax payments to the ATO for 1987-2000 would then have been as follows:

$$TAX(1987-2000) = DIST(1987-2000) + B_{2000} - B_{1987} = \$3875m + \$450m - 0 = \$4325m$$

The process is repeated for the other nine companies and the results are shown in Table 2. Across all ten companies the aggregate estimates of *DIST* and *TAX* for the 1987-2000 period are $28,629m and $30,000m respectively, implying an estimated distribution rate of 95%. In addition, using the aggregate values for *DIST* and *TAX* across all companies and the longer period 1987-2013, the resulting estimate of the distribution rate is 87% as shown in Table 2. This is marginally higher than the estimate of 85% obtained in the previous section. The results are not very sensitive to the estimated growth rate in distributions over the 1987-2001 period. For example, if this growth rate is halved to 5%, the resulting estimate of the distribution rate for 1987-2013 rises marginally to 88%.

5. The Use of Historical Data

The empirically-based estimate of the distribution rate derived here is based upon historical data. However the purpose of any such estimate is to value a company or set the price or revenue cap of a regulated business. Consequently the relevant distribution rate is that expected in the future, for which historical experience is merely a guide. Handley (2009, section 2) argues that the progressive build up in undistributed credits will eventually attract the attention of corporate raiders etc, that history has shown that financial markets are innovative when the incentives are large, and he therefore favours a distribution rate of 1. However Handley simply assumes that distribution of the credits (via higher dividends) would be desirable, because the Officer model implies that they are, i.e., within the Officer (1994) model, the only effect of a firm distributing additional imputation credits would be to lower the effective company tax payments and therefore raise the value of the firm. However this result only holds because, within the Officer model, gross dividends are assumed to be taxed at the same rate as capital gains, and this is not true in Australia. If one recognises that capital gains are taxed at a lower rate than gross dividends in Australia, it may not be optimal to pay the higher dividends; for example, Lally (2011) shows in such a case that the valuation effect of paying higher dividends in order to release undistributed imputation credits may be neutral.

The most that can be said here is that there is some probability that undistributed credits will at some future time be distributed (as argued by McKenzie and Partington, 2010, page 8). Thus, the use of historical data that yields a distribution rate less than 100% is likely to

underestimate the future rate. However there is no reasonable basis for estimating this probability. Furthermore, results from Hathaway (2010, page v), Hathaway (2013, page 7), and NERA (2013a, Table 2.2) reveal that the quantity of undistributed credits (at the market-wide level) has been growing progressively over a long period rather than as having arisen only recently. In addition, the results shown in Table 2 reveal that the market distribution rate fell from 95% in 1987-2000 to 85% in 2001-2013, which reveals that the market rate is not converging on 1. Since there is no reasonable basis for estimating what proportion of these undistributed credits will ever be distributed, and it seems unlikely that most of them will ever be, I favour the use of historical data to estimate the distribution rate.

5. Conclusions

The Officer version of the CAPM, which is widely used in Australia embodies a parameter called the distribution rate for imputation credits, being the proportion of company tax payments to the ATO that are attached to dividends as imputation credits. The most widely used estimate of this parameter is about 70%, based upon ATO data. This paper has instead estimated this parameter using data from the financial statements of the ten largest ASX companies, and for the period 2000-2013. Most companies have distribution rates over 90% and the aggregate figure is about 85%, which exceeds the generally employed figure. Extending the time period of analysis back to 1987 slightly raises the estimated distribution rate to 87%. A significant implication of these higher figures is that the effective company tax rate is lower than generally accepted and therefore the price and revenue caps adopted by Australian regulators are too high.

Table 1: Distribution Rates for Companies and the Market 2001-2013

Company	B_{2000}	B_{2013}	*DIV*	*DIST*	*TAX*	*DIST RATE*
CBA (Parent)	450	742	35,496	15,212	15,504	0.98
BHP (Group)	0	11,308	46,794	20,054	31,362	0.64
Westpac (Parent)	257	1247	34,964	14,984	15,974	0.94
ANZ (Group)	0	265	29,750	12,750	13,015	0.98
NAB (Group)	0	1035	31,291	13,410	14,445	0.93
Telstra (Group)	74	0	45,255	19,395	19,321	1.00
Woolworths (Group)	417	1943	11,621	4,980	6,506	0.77
Wesfarmers (Group)	0	243	12,602	5,400	5,643	0.96
CSL (Group)	0	0	377	161	161	1.00
Woodside (Group)	173	3,260	8,034	3,443	6,530	0.53
Total				109,759	128,461	0.85

For each company, this table shows the Franking Balance in 2000 (B_{2000}), the Franking Balance in 2013 (B_{2013}), the fully franked dividends paid over the period 2001-2013 (*DIV*), the franking credits distributed over the period 2001-2013 (*DIST*), the payments of company tax to the ATO for 2001-2013 (*TAX*), and the distribution rate for the period 2001-2013.

Table 2: Distribution Rates for Companies and the Market 1987-2013

Company	$DIST_{2001}$	$DIST_1$	TAX_1	$DIST_2$	TAX_2	*DIST RATE*
CBA (Parent)	578	3,874	4,324	15,212	15,504	0.96
BHP (Group)	323	2,164	2,164	20,054	31,362	0.66
Westpac (Parent)	459	3,079	3,336	14,984	15,974	0.94
ANZ (Group)	455	3,048	3,048	12,750	13,015	0.98
NAB (Group)	891	5,969	5,969	13,410	14,445	0.95
Telstra (Group)	992	6,647	6,721	19,395	19,321	1.00
Woolworths (Group)	214	1,435	1,852	4,980	6,506	0.77
Wesfarmers (Group)	105	703	703	5,400	5,643	0.96
CSL (Group)	15	100	100	161	161	1.00
Woodside (Group)	240	1,607	1,780	3,443	6,530	0.61
Total		28,629	30,000	109,759	128,461	0.87

For each company, this table shows the distribution of franking credits in 2001 ($DIST_{2001}$), the estimated distributions for the period 1987-2000 ($DIST_1$), the estimated payments of company tax to the ATO for 1987-2000 (TAX_1), the distributions for the period 2001-2013 ($DIST_2$), the payments of company tax to the ATO for 2001-2013 (TAX_2), and the distribution rate for the period 1987-2013.

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