UNIVERSITY OF TECHNOLOGY SYDNEY

# Dividend Imputation and Optimal Tax Rates

DRAFT ONLY

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*Abstract*: Under the Australian dividend imputation system, there is wide variation in the proxies for tax aggressiveness amongst firms that pay franked dividends. This paper examines whether this variation is caused by tax-induced clientele and associated signaling by encouraging firms to target an optimal tax rate that will maximize the value of tax credits available to shareholders. Tests provide evidence of the existence of a targeted optimal tax rate that has both economic and statistical significance.

## 1. Introduction

Under the Australian dividend imputation system, the tax paid on corporate profits is passed through to shareholders as tax credits attached to their dividend distributions.[1] Company taxes paid to tax authorities is "not really company tax but rather a collection of personal tax at the company level" (Officer 1994, p.4). Therefore, the dividend imputation system changes a firm's incentives from maximising after-tax earnings to maximising pre-tax earnings (Bellamy 1994). Prior research has shown that the dividend imputation system has reduced the level of tax aggressiveness for Australian dividend paying firms (McClure et al. 2016). However, there appears to be a wide, cross-sectional variation in the level of tax aggressiveness between those firms paying franked dividends[2] (McClure et al. 2016). This research examines whether this variation is induced by firms attempting to optimise their tax payments in response to their planned level of dividend payments.

Within Australian dividend paying firms, there is a significant variation in dividend payout ratios,[3] and this variation influences the incentives for companies to pay tax that are embedded in the dividend imputation system (McClure et al. 2016). For instance, firms with a dividend payout ratio of one hundred per cent may have a strong incentive to pay tax at the statutory tax rate in order to be able to pay fully franked dividends. On the other hand, firms with less than a one hundred per cent dividend payout ratio have less incentive to pay tax at the full statutory rate. In fact, they have an incentive to pay less than the

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[1] The Australian dividend imputation system requires companies to pay income tax on profits calculated at a flat rate (currently 30%) before it is distributed to individual shareholders as dividends. A tax credit, known as a franking credit, is provided with the dividends to reflect the tax already paid on that income at the corporate level.

[2] Franking credits that have had tax paid at the full statutory tax rate (currently 30%) on the underlying profit are known as fully, or 100%, franked dividends. Partially franked dividends refer to dividends that have tax paid at less than the statutory tax rate.

[3] From 2002 to 2013, Australian dividend paying firms had a mean DPR of 0.5911 with a standard deviation of 6.1444.

statutory tax rate, as any tax payments in excess of the franking credits that can be distributed with dividends, may be wasted. Therefore, one reason for the variation in tax aggressiveness of firms paying franked dividends could be an attempt by these firms to optimise their tax payments in respect to a predetermined dividend payout ratio.

A firm's dividend payout ratio is determined by a number of factors which include a firm's capital requirements, the existence of a tax-induced dividend clientele and signalling objectives. However, a firm's dividend payout ratio is also impacted by the dividend imputation system. The introduction of a dividend imputation system changed the capital structure of firms, with less reliance on debt compared to equity finance (Schulman et al. 1996; Twite 2001). It resulted in firms financing new investments through equity issues, rather than through retained earnings or debt (Pattenden and Twite 2008), and it also creates a tax-induced dividend clientele as the system favours domestic investment in Australian firms (Bellamy 1994; Jun. Gallagher and Partington 2011; Heaney 2011). Furthermore, both dividends and the associated franking credits provide incremental information to financial markets through a signalling effect (Anderson, Cahan and Rose 2001; Coulton, Ruddock and Taylor 2014) further reinforcing the clientele effect. The imputation system has changed corporate dividend policies resulting in increased dividend initiations, dividend payouts and dividend re-investment plans (Pattenden and Twite 2008). While these factors have affected corporate dividend policies in Australia, the main interest of this research is the effect of the dividend payout ratio on the tax aggressiveness of Australian firms.

In order to provide sufficient tax credits to fully frank their dividends, the Australian dividend imputation system provides several incentives for firms to optimise their tax payments. Firstly, it encourages firms to create shareholder value through the payment of dividends rather than producing capital gains (Hamson and Ziegler 1990; Twite 2001; Pattenden and Twite 2008). Secondly, it encourages firms to pay a larger portion of their earnings in tax in order to provide shareholders with fully franking dividends (Amiran et al. 2014; McClure et al. 2016). There is also empirical evidence that domestic investors, including institutional investors such as superannuation funds, value both the dividends and the franking credits (Cannavan et al. 2004; Dempsey and Partington; Jun et al. 2011). If firms are induced to provide fully franked dividends, there may be a connection between the firm's dividend payout ratio (DPR) and the level of taxes paid, as any taxes paid in excess of the amount needed to fully frank the planned DPR may be wasted value.

If firms target a particular level of tax payments in order to provide for fully franked dividends, there would be an expected positive association between the dividend payout ratio, adjusted for the applicable statutory tax rate, and the cash effective tax rate. As franking credits are determined by the amount of tax paid, not the tax expense reported in a firm's financial statements the cash effective tax rate is the appropriate measure to use in this instance . To test whether firms target a certain level of taxes, a target effective tax rate is calculated from the dividend payout ratio and the statutory tax rate. If firms do set a target, there should be a high level of correlation between the firm's cash effective tax rate and the target tax rate.

This research contributes to the debate on the efficacy of the Australian dividend imputation system by examining the corporate response to some of the tax incentives it provides. The research also contributes to the literature on corporate tax aggressiveness by analysing the behavior of firms in response to tax-related incentives, as well as delineating the level of flexibility available to firms for manipulating their tax outcomes. Coulton et al. (2014) suggest that firms have greater flexibility around dividend payments than around the distribution of franking credits (Coulton et al. 2014, p.1311). This paper explores that inference adding to the literature on the information content of franking credits.

The remainder of paper is arranged as follows: Section 2 reviews the current theory and develops the hypotheses; Section 3 outlines the research design; Section 4 presents the results of the tests; and Section 5 concludes.

## 2. Theory and Hypotheses Development

*DIS description*

There have been various forms of dividend imputation systems operating in many countries throughout the world, although most have now been abolished.[4] The dividend imputation system was introduced into Australia in 1987 to provide relief from double taxation of company profits when it is paid out as dividends. It is similar to integrated tax systems that were introduced in Italy, Germany and New Zealand, in that it allows for the full amount of taxes paid on company profits to be distributed to shareholders as tax credits attached to their dividends. Under the imputation system the payment of corporate taxes is effectively passed through as a benefit to shareholders in the form of a franking credit. The personal tax liability that the shareholders will incur on the dividend payments is withheld at the company level. The payment of company tax can be seen as comparable to the withholding of taxes on employees' wages (Officer 1994). As the imputation credits cannot be redeemed by non-residents against their personal income tax liabilities in their home country, the imputation system favours Australian resident shareholders,. The level of benefits available to resident shareholders also varies, as it is based on the marginal tax

[4] The Henry Review of Taxation in Australia in 2010 stated that only New Zealand and Australia had operating imputation systems. However, Malta introduced a form of dividend imputation in 2007, and Mexico, Chile and Canada have full imputation systems (as at May 2014). Other countries such as United Kingdom and Korea have partial imputation systems. The U.K. had full imputation until 1997. Full or partial imputation systems have been abolished in Germany (abolished in 2001), France (2004), Finland (2005), Norway (2006), Spain (2006), Turkey (2002), Singapore (2003), and Malaysia (2008). [Source: OECD (2015)].

rate on each shareholders total personal income. Therefore, there will be a variation in the value attributed to the tax credits dependent on the tax status of the individual shareholders.

Despite the variation in value of franking credits, shareholders do appear to value the tax credits as evidenced by the high redemption rates. For the period 2004-2011, 71% of company tax paid was issued as franking credits attached to dividends and an estimated 62.3% of these credits were redeemed by shareholders (Hathaway 2013, p.7). However, that level of redemption may be understated, as Lally (2012), using data from the Australian Tax Office, estimated the redemption rate for the period from 2000 to 2010 to be as high as 81%. Furthermore, as demonstrated by Officer (1994), the process of estimating the value of imputation credits to the marginal investor is important for company valuation purposes, as it would require either an adjustment to the weighted-average cost of capital, or for it to be added back to the value of the firm's cash flows.

Attempts to estimate the value of imputation credits that is capitalized into share prices have produced mixed results with values ranging from zero to over 90% of the face value of the imputation credit (Ainsworth et al. 2015).[5] The majority of that empirical research has estimated the value attributed to imputation credits with reference to specific dividend events, such as the dividend drop-off or the use of comparative pricing. The 2015 Tax Discussion Papers (Treasury 2015) took the extreme position that there is no value from the imputation credits capitalized in share prices due to the cost of capital in Australian being set by international markets as the marginal clearing investor. This reiterates arguments made by Cannavan et al. (2004) who came to a similar conclusion. Ainsworth et al. (2015) reviewed the imputation credit valuation literature, and concluded that, based

[5] See Ainsworth et al. (2015) for a comprehensive review of this literature and a critical analysis of the models used and the varied results they produce.

on the main models employed, a value of around 38% of the face value of the imputation credit is suggested. Estimating a value for the imputation credits is important to both the valuation of companies and their cost of capital, and to understand the effect it has on the behavior of companies, and particularly, the effect it has on financing, dividend and tax policies.

*DIS effect on corporate capital structure*

The introduction of dividend imputation systems in various jurisdictions has altered corporate capital structures. Imputation has encouraged a greater use of equity as compared to debt finance in Australia, Canada and New Zealand (Schulman 1996; Twite 2001). Since the introduction of imputation sytems in these countries, there has been a decline in both the proportion of debt in corporate capital structures and in the proportion of capital sourced from retained earnings (Twite 2001). Twite (2001) also found an increase in the proportion of capital for new investments coming from equity issues rather than debt and attributed this increased attractiveness of equity finance to the tax benefits of dividends viz-a-viz capital gains. This implies that franking credits increase the value of dividends to investors, and also confirms the findings of Officer (1994) who demonstrated that the effects of dividend imputation had lowered the risk premium in the Capital Asset Pricing Model. Officer (1994) concluded that, under the imputation system, debt had become a less effective tax shield.

The effect on capital structures has also instigated changes in corporate dividend policies. After the introduction of an imputation system in Australia, there was an increase in dividend initiations, dividend payout amounts and ratios, and dividend reinvestment plans (Pattenden and Twite 2008) resulting from changes to arbitrage opportunities between the differential tax treatment of dividends compared to capital gains. Similarly, dividend imputation systems appear to encourage increased dividend repatriations to the parent entity of multinational corporations from their overseas subsidiaries (Babcock 2000; Chen and Gupta 2011). For instance, Chinese subsidiaries of Taiwanese-based multinational corporations increased their dividend payouts after the introduction of a dividend imputation system in Taiwan (Chen and Gupta 2001). Chen and Gupta (2011) found that companies with higher effective tax rates, and therefore greater imputation credits,[6] not only paid out more dividends to shareholders, but were more likely to also receive dividends from their foreign subsidiaries. Imputation systems appear to provide strong incentives for firms to not only pay increased dividends to shareholders but also to pay the full rate of taxes *in the parent firm's tax jurisdiction* in order to provide imputation credits to their domestic shareholders.

*DIS effect on corporate tax behaviour*

While there has been considerable research into the effects of dividend imputation on corporate finance and dividend policies, only recently has there been an examination of the effects of dividend imputation on corporate tax policy. Babcock (2000) argued that imputation systems induce imputation-based multinational corporations to restrict foreign investment and instead, to expand home-country investment because tax paid on foreign income to overseas tax authorities does not qualify for imputation credits. However, in order to convert foreign income into domestic income, Babcock (2000) suggests that the restriction on foreign income is circumvented through the use of debt instead of equity financing for their foreign operations, by engaging in cross-jurisdictional income shifting through such means as transfer pricing, royalty payments and debt loading, and through

[6] The Taiwanese equivalent of a franking credit is based on the company's effective tax rate for the period in which the profit was generated.

mergers and acquisitions in order to acquire firms with large balances of franking credits.[7] The incentive to shift income appears to be greater when the foreign operations are in a mature stage producing larger and more stable cash flows, and therefore, are able to pay increased dividends (Babcock 2000). The presumption behind this argument is that is sufficient flexibility for corporations to vary the tax paid in their home tax jurisdiction, in order to maximise the imputation credits that can accompany their planned dividend payments.

*Impact of Imputation on Corporate Tax Aggressiveness*

The main benefits to corporations engaging in tax aggressiveness are increased cash and higher liquidity (Saveedra 2014), increased after-tax profits, represented in a firm's performance metrics, such as earnings per share (Hanlon and Slemrod 2009), and reduced tax liabilities (Hanlon and Slemrod 2009). However, it also sends signals to other stakeholders. The reduction in a firm's effective tax rate provided by tax aggressiveness can be seen as a positive signal to investors, thereby reducing the cost of equity capital (Chi et al. 2014; McGuire et al. 2014; Inger, 2014). The benefits that may be attained through corporate tax aggressiveness provide high level incentives for managers to engage in these transactions and strategies. However, the costs[8] involved with engaging in corporate tax aggressiveness can reduce after-tax cash flows to shareholders making them worse off (Amiran et al. 2013).

Tax aggressiveness has often been portrayed as managers extracting net benefits from governments on behalf of shareholders (eg. Rego and Wilson 2012). However, tax

[7] Legislation was introduced in Australia in 1997 to prevent the practice of non-resident owned firms "selling" their franking account balances to resident-owned firms through mergers and acquisitions.

[8] Costs of tax avoidance include, but are not limited to, transaction costs, advisors fees, the incorporation and maintenance of offshore subsidiaries, operational changes and the risk of reputation loss, plus the diversion of focus and effort away from other wealth increasing opportunities.

aggressiveness does not always advance shareholder interests (Desai and Dharmapala 2009; Amiran et al. 2013; Slemrod 2004). It is associated with higher levels of debt in capital structures (Harrington and Smith 2012, Graham and Tucker 2006), lower earnings persistence (Hanlon 2005) and higher stock volatility (Kim et al. 2011). Shareholder value may also be eroded by high levels of tax aggressiveness as it involves a reduction in corporate transparency in order to avoid detection by tax authorities. This weakens internal control systems (Chen and Chu 2005) and allows managers the opportunity to divert rents for their own private benefit (Desai and Dharmapala 2006). However, dividend imputation systems change the incentives for corporate tax aggressiveness and may also increase the costs.

The dividend imputation system contains mechanisms that lessen the incentive for firms to be as tax aggressive. Under a dividend imputation system, company taxes flow through as a tax benefit to shareholders, changing a firm's incentive from maximising after-tax earnings to maximising pre-tax earnings (Bellamy 1994). Any reduction in cash taxes paid will reduce the benefit to shareholders, thereby providing an incentive for companies to pay taxes on profitss at, or close to, the statutory tax rate as this is the maximum benefit that can be passed on to shareholders. The incentive to pay tax has a very broad effect and encompasses all activities that reduce cash taxes paid. This includes activities that are actively encouraged by the tax system, such as research and development expenditures, capital allowances and accelerated depreciation. The incentive to provide fully franked dividends to shareholders should therefore reduce the incentives to partake in corporate tax aggressiveness.

Despite the strong incentives involved, there has been little empirical research on the effects of dividend imputation on corporate tax aggressiveness. Chen and Gupta (2011) found evidence that Taiwanese multinational firms preferred their subsidiaries to pay dividends in order to increase the parent company's effective tax rate, and therefore maximise the tax benefit to their shareholders. There is also evidence suggesting that the abolition of imputation systems in a number of countries has led to increased levels of corporate tax aggressiveness (Amiran et al. 2013). In a difference-in-differences analysis of cross-country tax aggressiveness, Amiran et al. (2013) found that in the years after a country eliminates an imputation system, firms from these countries increase their tax aggressiveness relative to firms from countries where there was no change to their shareholder dividend tax policy. Based on an analysis of dividend payouts and multinational operations, they attributed the increased tax aggressiveness to managers providing increased shareholder benefits, mainly in the form of increased cash flows for distribution. They also found that, compared to firms operating under a classical dividend taxation system, firms with more closely-held shares exhibited lower levels of tax aggressiveness, confirming their view that the main driver of tax aggressiveness is shareholder benefits.

Recent research by McClure et al. (2016) indicates that dividend imputation has reduced the level of tax aggressiveness for Australian dividend paying firms, with a strong negative association between tax aggressiveness and the payment of franked dividends. A comparison of the level of tax aggressiveness between firms that pay franked dividends to those that pay unfranked dividends indicates that those firms paying franked dividends paid approximately 13.3% additional tax on the same level of earnings, *ceteris paribus*. McClure et al. (2016) also found evidence of lower franking credits on dividends form firms with higher levels of foreign ownership, indicating a lower value of franking credits to non-resident shareholders. Despite this, there still appears to be a wide, cross-sectional variation in the level of tax aggressiveness between franked dividend paying firms

(McClure et al. 2016). Twite (2001), Chen and Gupta (2001) and Pattenden and Twite (2008) have argued that imputation systems provide an incentive for firms to pay dividends in order to distribute the value contained in the imputation credits. Therefore, there should be an expected association between the level of tax aggressiveness and dividends payouts.

*Dividend Payout Ratio*

The dividend payout ratio represents the proportion of accounting income that is distributed to shareholders. It is an important metric as it represents a major portion of the value of the company and its ability to provide a return to investors. In fact, it is the estimate of discounted future cash flows to investors, ultimately to be received through dividends, that determines the current value of a company. Therefore, dividend policies and payout ratios contain information that is important to investors and capital markets.

*Clientele effect and signaling*

Miller and Modigliani (1961) maintain that, under perfect capital market conditions, dividend policy is irrelevant to firm value. However, when allowing for market imperfections, they assert that the tax status of investors, with regards to dividend and capital gains taxes, could create a tax-induced dividend clientele. Jun et al. (2011) found evidence that the Australian dividend imputation system provides an opportunity for arbitrage between shareholder taxation for dividends and capital gains, thereby creating the circumstances for tax-induced dividend clientele. The existence of such clientele can affect the financial decisions of firms, such as changes to payout policy in response to the tax preferences of their institutional investors (Desai and Jin 2010; Jun et al. 2011). Therefore, it appears that firms alter financial policies, such as dividend policy, to either attract certain classes of investors or to maintain their current shareholders, depending on the investor’s tax status.

It has been posited that dividend payout ratios possess a signalling effect related to the existence of tax-induced dividend clientele (DeAngelo et al. 2000), with dividend policies aligned with the life-cycle stages of a firm (DeAngelo and DeAngelo 2006). Mature firms are more likely to have operations and cash flows that are both stable and sustainable, with dividend payout ratios that reflect this stability. Firms structure their dividend payout ratios with reference to this signalling effect (DeAngelo and DeAngelo 2006).

Under the Australian dividend imputation system there is also an additional and incremental signalling effect from the percentage of the franking credits attached to dividends (Coulton et al. 2014). Coulton et al. (2014) conclude that, while dividend payments, and particularly share dividends, have a large degree of flexibility around the amount and the timing to the payment, they argue that the same level of flexibility does not exist for the franking credits. The franking percentage provides assurance as to the accuracy of the signal from the dividend payout ratio and therefore, to the future prospects of the firm. This indicates that signalling can influence both the dividend payout ratio and the franking percentage providing firms with an incentive to target the level of tax payments required to provide their preferred franking percentage that appears to be 100%.[9] If firms paid tax in excess of the franking credits that they can distribute, any value from those franking credits would be wasted.

Evidence of the influence of signalling on corporate payout policies is provided by some of Australia's largest companies. After more than two decades of constant and incremental growth in dividends per share, Australia's largest company, BHP Billiton and the second largest miner, Rio Tinto, were both forced to reduce their dividend payout ratios, in the face of threatened downgrades by credit-ratings agencies (Hoyle 2016). The policy of

[9] Over 95% of franked dividends are franked at 100% (McClure et al. 2016).

stable dividend payouts existed through considerable volatility in these firms' revenues and earnings.

*Definition and measurement of tax aggressiveness*

Tax aggressiveness has often been portrayed as managers extracting benefits (in excess of associated costs) from governments on behalf of shareholders (eg. Rego and Wilson 2012). However, tax aggressiveness does not always advance shareholder interests (Slemrod 2004; Desai and Dharmapala 2009; Amiran et al. 2013). It is associated with higher levels of debt in capital structures (Harrington and Smith 2012, Graham and Tucker 2006), lower earnings persistence (Hanlon 2005) and higher stock volatility (Kim et al. 2011). It can also be used to obscure rent extraction by managers in poorly governed firms (Desai and Dharmapala 2006) and to mask the hoarding of bad news by managers, leading to an increased stock price crash risk (Kim et al. 2011). However, recent evidence from stock price responses suggests that investors reward a certain level of tax aggressiveness but disapprove of higher levels (Cook et al. 2014).

Within tax research in accounting, there is a lack of a generally accepted definition of "tax aggressiveness" (Hanlon and Heitzman 2010; Dunbar et al. 2010; Lisowsky et al. 2013). More recently, a consensus has formed around the concept of a "continuum" of tax minimising activities that ranges from benign behaviours that were envisioned by tax policies at one end, to outright tax evasion and fraud at the other (Hanlon and Heitzman 2010). Tax aggressiveness, therefore, covers a broad spectrum of tax planning activities with outcomes that range from certain to uncertain tax positions (Frischmann et al. 2008).

When it comes to measuring tax aggressiveness, all measures reflect tax aggressiveness with error, and each measure has its limitations (Hanlon and Heitzman 2010; Lisowsky et al. 2013). Effective tax rates are most useful measures for capturing and comparing the tax burden of firms and industries (Fullerton 1984). Within prior research there have been various measures of both the tax liability in the numerator and the income or cash-flow in the denominator, each associated with different research questions. ETR's have now become the most widely used proxies for tax aggressiveness in the academic literature as they capture a broad range of tax avoidance activities, they confirm potential levels of tax aggressiveness, and they provide a ranking of firms along the tax minimisation continuum (Hanlon and Heitzman 2010). As opposed to ETR's that use the tax expense, cash ETR's use tax paid from the Statement of Cash Flows and thereby have the advantage of not being confounded by tax deferrals, tax losses carried forwards and tax refunds. Apart from these advantages, the cash ETR's are also the most relevant measures to this research as franking credits are only created by the amount of taxes actually paid.

*Optimal Effective Tax Rate*

It has been suggested by Graham et al (2014) that U.S. firms target a particular GAAP effective tax rate, and this is considered an important metric when comparing and valuing firms. The target effective tax rate is determined by a combination of the level of retained profits required for growth and working capital, and the firm's dividend policy (Graham et al. 2014). Under the Australian dividend imputation system, it is not the GAAP effective tax rate that would be targeted, but rather the level of cash tax paid in order to provide for fully franked dividends. Any taxes that are paid in excess of the amount that can be paid as franking credits would be lost value. Therefore, the optimal tax rate to be paid on earnings would be the dividend payout ratio multiplied by the statutory tax rate for that period. If the payout ratio was 100% and the statutory tax rate was 30%, then the optimal tax rate for the firm would be 30% of earnings, whereas a dividend payout ratio of 50% would result in an optimal effective tax rate of 15%. However, the existence of an optimal tax rate would suggest a degree of flexibility around the level of taxes paid by corporations.

There is conjecture as to whether the dividend imputation system encourages firms to be less tax aggressive in order to provide fully franked dividends (McClure et al. 2016), or whether firms are still tax aggressive in targeting their tax payments to suit their dividend policy. Coulton et al. (2014) argue that there is greater flexibility around dividend payments than around the distribution of franking credits. This would suggest that the dividend policy is determined by the level of franking credits available and that the dividend policy is subordinated to a firm's tax policy. However, with dividend payments providing a signaling effect, and therefore incentives to provide smooth, stable and sustainable dividends, it is feasible that the dividend payout ratio determines the level of franking credits that are required and firms will still be tax aggressive in pursuit of this target as taxes paid in excess of the amount that can be distributed with dividends will be wasted. If firms do target a level of tax payments in order to provide for fully franked dividends, there would be an expected positive association between the dividend payout ratio and the cash effective tax rate. In that case, firms would set an optimal tax rate target and there should be a high level of correlation between the firm's cash effective tax rate and the optimal tax rate. Therefore, the following hypothesis is tested.

**H1:** The firm's optimal tax rate is positively associated with its cash effective tax rate.

## 3. Research Design

*Sample Selection*

The hypothesis will be tested using panel data from Morningstar's Aspect Huntley database of Australian listed companies that paid franked dividends between 1996 and 2013. This period was selected due to data for the franked dividends not being available before 1996. The incentives that are contained in the imputation system were not significantly affected by the legislative changes that have been introduced since 1996 so that earlier periods are able to be compared to the later periods. There were a total of 17,048 firm-year observations during this period. Data required to calculate all variables were not available for 7,224 observations, and firms in 5,960 firm-years, or 60.7% of the available observation, did not pay dividends. Another 983, or 25.4% of dividend paying firms, did not pay franked dividends. This leaves a sample of 2,881 firm-year observations that did pay franked dividends. A summary of the sample selection process is displayed in Table 1.

*Measuring Tax Aggressiveness*

The ETR measure used in this research is the cash effective tax rate developed by Chen et al. (2010). This Cash ETR captures a broad range of tax planning activities that have both certain and uncertain outcomes (Baderstcher et al. 2013) including those that are not associated with tax aggressiveness, such as large depreciation deductions (Khurana and Moser 2012), investments in municipal bonds (Kim et al. 2011; Khurana and Moser 2012) and research and development tax credits (Treasury 2015). Measuring the effective tax rate using cash taxes paid rather than the tax expense has the advantage that it is not affected by changes in accounting estimates such as the valuation allowance or tax contingency reserve (Dyreng et al. 2008). The use of Cash Taxes Paid identifies tax aggressiveness associated with permanent differences that can cause estimates of ETR's based on the Current Tax Expense to be overstated. This measure has been widely used in the tax aggressiveness literature and is suitable for this research question. The cash effective tax rate proposed by Chen et al. (2010) is calculated as:

$$CashETR_{it} = Cash\ Tax\ Paid_{it} \ / \ Pre\text{-}tax\ Income_{it} \qquad (1)$$

Dyreng et al. (2008) examined the levels of tax aggressiveness over longer periods than the single year observations used in most research, in order to evaluate the ability of single-year ETR's to predict the long-term capacity of firms to reduce their tax liabilities. While this has many advantages for much research in to corporate tax aggressiveness, this research is interested in the single period behavior of firms as it is examining the alignment between two decisions within a single period.

*Optimal Tax Rate*

The Optimal Tax Rate is the rate at which firms would need to pay tax on their earnings in order to pay fully franked dividends, but not to exceed the amount required. It is calculated as:

$$Optimal\ Tax\ Rate_{it} = Dividend\ Payout\ Ratio_{it} * Statutory\ Tax\ Rate_{it} \qquad (3)$$

As with the Cash ETR, the Optimal Tax Rate is calculated for each firm for each period.

*Association between the Cash Effective Tax Rate and the Optimal Tax Rate*

The test of the association between the Cash ETR and the Optimal Tax Rate will use an OLS regression with the dependent variable being the Cash ETR and the independent variable of interest being the Optimal Tax Rate. A series of control variables that have been used in prior research into corporate taxation and dividend policy are included.

$$CashETR_{it} = \beta_1 + \beta_2 Optimal\ Tax\ Rate_{it} + \beta_{3\text{-}11} Controls_{it} + \varepsilon_{it} \qquad (4)$$

Where:

*Controls* = SIZE, LEV, PPE, INV, R&D, INTAN, ROA, MTB, and DA.

The hypothesis predicts that there will be a positive coefficient for $\beta_2$.

The control variables have been used in previous research to control for known determinants of variation in tax aggressiveness. SIZE is represented by the natural log of total assets as the size of a corporation has been associated with different levels of tax aggressiveness (Zimmerman 1983, Omer et al. 1993). However, there is conflicting evidence as to the direction of the effect (e.g. Stickney and McGee 1982; Zimmerman 1983). Early tax research also found that the lowest ETR's were associated with high leverage (LEV) and high levels of capital intensity (PPE) (Stickney and McGee, 1982; Omer et al., 1993). LEV refers to a firm's leverage defined by the ratio of long term debt to total assets. Capital intensity is defined separately as net property, plant and equipment divided by total assets (PPE), and inventory divided by total assets (INV). It is expected that there will be a negative association between these three variables and the Cash ETR.

Return on assets (ROA), measured as pre-tax income divided by total assets, is included to control for different levels of profitability, and the market-to-book ratio (MTB), measured as the market capitalization divided by total shareholder equity, to control for the different growth stages of companies. There are inconsistent results regarding the effect both these variables have on tax aggressiveness (eg. Gupta and Newberry, 1997; Adhikari et al., 2006) so it is difficult to predict direction.

Research and development costs (R&D) are a tax preferred expenditure allowing up to 150% deduction for approved expenditure in Australia, and therefore is positively associated with tax aggressiveness. R&D is defined as research and development expense divided by total assets. Intangible assets (INTAN) have become a major source of abusive transfer pricing due to the lack of a transparent market for these items and the ability to locate them in any jurisdiction. INTAN is defined as intangible assets as a proportion of total assets and is expected to have a positive association with tax aggressiveness. As the

Cash ETR decreases in tax aggressiveness, the expected association with these variables will be negative.

A measure of discretionary accruals (DA) is included to control for the effect of earnings management, through the manipulation of accruals, on the denominator of the CETR (Frank et al. 2009; Lennox et al. 2010). It is measured using the performance adjusted, modified Jones (1991) model as defined by Kothari et al. (2005). There is conflicting evidence on the association between discretionary accruals and tax aggressiveness (Manzon & Plesko 2002; Erickson et al. 2004; Frank et al. 2009; Lennox et al. 2013). Therefore, there is no predicted direction.

The Cash ETR, the Optimal Tax Rate, LEV, PPE, INV, R&D and INTAN have been winsorised between zero and one. While ratios outside this range can be legitimate values, they are well outside the expected and normal range. The inclusion of values outside this range makes the interpretation of the results of the regression analysis difficult. The unwinsorised values for the Cash ETR's range from a minimum of -361.75 (or -36,175%) to a maximum of 125.22 (12,522%). These values severely distort the variation in the variables, with large outliers determining the results. In robustness checks, the elimination of the largest outliers produced similar results as winsorising.

## 4. Results

The descriptive statistics are presented in Table 2. The Cash ETR indicate that, on average, franked dividend paying firms are paying around 25% tax on their earnings. The mean Optimal Tax Rate is lower at 22%, indicating that all firms might not manage the level of tax payments in line with their dividend payout ratio. The median values for both the Cash ETR and the Optimal Tax rate are slightly lower than the averages indicating the sample is slightly skewed towards the higher values for both these variables. The average leverage is only 13% (median 9.4%) which accords with the findings of Twite (2001) and the effect of the imputation system on capital structures (Babcock 2000; Twite 2001). The level of Research and Development expenditure is also very low, which can be expected for this sample of firms, due to the effect of the imputation system in lessening the effectiveness of the tax incentives for this expenditure[10].

The correlations between the variables used in the regression model are set out in Table 3. Both the Spearman correlation at the top and the Pearson correlations at the bottom indicate a moderate correlation between the Cash ETR and the Optimal Tax Rate and it is statistically significant at the 5% level[11]. There is also a weak positive correlation between the Cash ETR and PPE, inventory and intangibles. These variables are the most likely to cause timing differences between accounting and tax income.

The results from the main regression model are presented in Table 4. The model uses an ordinary least squares regression with fixed effects[12]. The F-statistic (43.23) indicates that the model is statistically significant. The coefficient on the Optimal Tax Rate is strongly positive ($\beta_2$ = 0.500) and statistically significant at the 0.001 level (t-stat = 19.750). This indicates that a 1% increase in the Optimal Tax Rate would result in 0.5% increase in the Cash ETR. There are two components to the Optimal Tax Rate; the dividend payout ratio and the statutory tax rate. As the statutory tax rate is constant between firms, and the regression uses firm fixed effects to control for time invariant factors, the main variation is within the dividend payout ratios between firms. Therefore, a firm that has a dividend payout ratio 1% higher than another firm will, on average, pay approximately 0.5% more

[10] During this period, R&D expenditure could be deducted at a rate of 150% against income for tax purposes.

[11] In untabulated results, p-values of 0.0000 were returned for this correlation using both Spearman and Pearson correlations.

[12] The Hausman (1978) Test specifies a probability > $chi^2$ = 0.0063 (significant at 0.01 level) indicating the difference between fixed effects and random effects is not systematic (ie. use fixed effects).

tax on the same level of earnings, *ceteris paribus*. This suggests that the dividend payout ratio is a significant determinant of the level of tax aggressiveness for Australian firms paying franked dividends and that a proportion of these firms appear to manage their tax payments to match the level of franking credits required under their anticipated dividend payout ratio.

The model also indicates a statistically significant and positive association between the Cash ETR and the amount of leverage, and with the value of inventory and intangible assets. These results are in the opposite direction to what is expected from the prior literature. As these are control variables, the source of this variation has not been examined. However, this may be a result of the effect of dividend imputation on tax aggressiveness (Amiran et al. 2014; McClure et al. 2016). There is also a negative and statistically significant association with discretionary accruals. This provides some Australian support to the findings of Frank et al. (2009), that firms undertake both tax aggressive tax reporting and aggressive financial reporting in the same period.

*Sensitivity and Robustness Tests*

A series of further tests were undertaken to ensure the robustness of the main results. Results from these tests have not been tabulated. The first test involved the use of three year averages for both the Cash ETR and the Optimal Tax Rate. This is based on research by Dyreng et al. (2008) who argued that measuring cash effective tax rates over long horizons achieves better matching between taxes paid and the related income, can capture the reversal of temporary differences, and are not distorted by permanent differences. The use of a single year period estimates increases the number of observations for statistical purposes but leads to higher levels of volatility in the ETR's, especially for ETR's based on cash taxes paid. However, the targeting of a level of tax payments to match the proposed dividend payout ratio is a more closely aligned to a single period activity. The coefficient on the Optimal Tax Rate averaged over three years is still positive and statistically significant ($p<0.01$) but the magnitude of the coefficient has been reduced to less than 5%. This appears to confirm the argument that any management of the taxes paid is undertaken separately for each period.

The second robustness test uses a different specification for the Cash Effective Tax Rate. The Cash ETR specified by Dyreng et al. (2008) is the same as Chen et al. (2010) except it removes Special Items from pre-tax income. While the coefficient on the Optimal Tax Rate remains positive and statistically significant ($p<0.001$, t-stat = 8.860) the magnitude of the coefficient is reduced by over half to 0.228. It also reduces the significance and the coefficients on leverage, inventory and intangibles, while increasing both on discretionary accruals. This test could indicate that special items, and their relationship to discretionary accruals, may be the vehicle through which much of the suspected management of tax payments is occurring.

Although the baseline regression model controls for the known factors that affect the level of taxes paid by Australian corporations and their dividend payout choices, it is possible that there are other underlying factors affecting the decision to pay franked dividends. If these other factors drive the decision, this could provide an alternative interpretation of the association between the payment of franked dividends and the level of tax aggressiveness. To alleviate statistical concerns from the serial dependence of regression errors, the main baseline regression model is re-estimated using the Fama and MacBeth (1973) method. Specifically, year fixed effects are dropped from the specification and the revised models are estimated for each year. The average coefficients are then tested for statistical significance using a t-test. Overall, the Fama-MacBeth regression results are consistent with the baseline regression results. This test provides some assurance that the inferences from the baseline analysis are informative.

## 5. Conclusions

This research sets out to explore the notion that Australian dividend-paying companies that distribute franking credits also target the level of taxes they pay to provide sufficient franking credits to fully frank their proposed dividend payments. With dividend payout ratios providing important signals to a tax-induced dividend clientele who value the franking credits, the companies' dividend policies can be fixed, or smoothed, for reasonably long periods of time, whereas their underlying earnings and their cash payment of taxes in particular, can be much more volatile from year to year. Along with the dividend payout ratio, the franking credits themselves contain incremental information as to the future prospects of the company. Mature, stable companies with sustainable future cash flows pay fully franked dividends on a dividend payout ratio that remains relatively stable or grows but does not decline from one year to the next. Therefore, there is an incentive to manage the amount of taxes paid in order to provide the fully franked dividends but not to pay more, as any taxes paid in excess of the amount that can be distributed will be wasted.

In setting a target for the amount of tax required to fully frank the proposed dividends, an optimal tax rate can be calculated using the proposed dividend payout ratio multiplied by the statutory tax rate in force during the period. If companies do set a target for the amount of taxes paid, there will be a significant association between a firm's cash effective tax rate and their optimal tax rate. Testing this proposition has produced evidence that such management of the tax affairs of a significant number of companies does occur. The effects are both statistically and economically significant, with a one per cent increase in the optimal tax rate producing half a percentage point increase in the cash effective tax rate.

The Australian dividend imputation system has been found to encourage firms to increase both dividend initiations and the payout ratios (Pattenden and Twite 2008), as well as to increase the amount of taxes they pay (McClure et al. 2016). The argument put forward to explain those results is that incentives within the imputation system encourage firms to pay dividends in order to distribute franking credits which are valued by their shareholders. This explanation overlooks the significant effect that the existence of a tax-induced dividend clientele has on dividend policy. Evidence of such an effect is provided by some of Australia's largest firms, such as BHP Billiton, Rio Tinto and Telstra. Therefore, this research provides a compelling argument that it is the desire to provide fully franked dividends as part of a firm's dividend policy that drives tax aggressiveness under a dividend imputation system.

The results from this research have raised other issues that are outside the scope of this enquiry and require further investigation. The positive association that a number of the control variables displayed with the Cash ETR are opposite to the direction found by prior studies. The majority of those previous studies were undertaken in the U.S. which has a classical dividend taxation system. The contradictory results may be a result of the dividend imputation system. Furthermore, the metrics used in this literature have only been applied to a cross-section of Australian franked dividend paying firms. These metrics can be calculated under a classical dividend taxation system which could provide a useful control group for these findings. A further line of enquiry arises from the reduction in the significance and the magnitude of the coefficient for the Optimal Tax Rate when the three year averages was used to test for the sensitivity of the base model. This would imply that, on a year to year basis, earnings are more volatile than the dividend payout ratio as the tax payments have to be managed each year, not over a period of years, in order to produce the required franking credits.

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**Table 1: Sample Selection**

| | *n* |
|---|---|
| Total Observations | 17,048 |
| *Less* Missing data | -7,224 |
| Available observations | 9,824 |
| *Less* Non-dividend paying firm-years | -5,960 |
| Dividend paying firm-years | 3,864 |
| *Less* Non-franked dividend payers | -983 |
| Franked dividend paying firm-years | 2,881 |

**Table 2: Descriptive Statistics**

| | n | mean | sd | min | p25 | p50 | p75 | max |
|---|---|---|---|---|---|---|---|---|
| Cash ETR | 2881 | 0.249 | 0.215 | 0.000 | 0.082 | 0.237 | 0.337 | 1.000 |
| Optimal Effective Tax Rate | 2881 | 0.219 | 0.161 | 0.000 | 0.139 | 0.200 | 0.265 | 1.000 |
| Size | 2881 | 19.578 | 1.916 | 14.276 | 18.133 | 19.331 | 20.712 | 25.879 |
| Leverage | 2881 | 0.130 | 0.135 | 0.000 | 0.000 | 0.094 | 0.224 | 0.917 |
| ROA | 2881 | 0.146 | 0.724 | -1.071 | 0.058 | 0.103 | 0.168 | 37.700 |
| MTB | 2881 | 2.197 | 2.019 | 0.000 | 1.003 | 1.583 | 2.598 | 25.014 |
| Capital Intensity | 2881 | 0.309 | 0.311 | 0.000 | 0.042 | 0.207 | 0.481 | 1.000 |
| Inventory Intensity | 2881 | 0.094 | 0.128 | 0.000 | 0.000 | 0.025 | 0.157 | 0.736 |
| R&D | 2881 | 0.002 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.382 |
| Intangibles | 2881 | 0.176 | 0.217 | 0.000 | 0.000 | 0.077 | 0.303 | 0.903 |
| Discretionary Accruals | 2881 | 0.002 | 0.582 | -10.354 | -0.089 | 0.008 | 0.107 | 9.065 |

All franked dividend-paying firms listed on the ASX with data available between 1996 and 2013

**Table 3: Correlation Matrix - Spearman above & Pearson below**

| | **cash_etr** | ***opt_tr*** | ***size*** | ***lev*** | ***roa*** | ***mtb*** | ***ppe*** | ***invent*** | ***rd*** | ***intan*** | ***pada*** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **cash_etr** | | 0.3510 * | 0.0077 | 0.0370 * | -0.0160 | 0.0759 * | 0.1130 * | 0.0959 * | -0.0052 | 0.1300 * | -0.0582 * |
| **opt_tr** | 0.3505 * | | 0.0135 | -0.0120 | -0.0057 | 0.0251 | -0.0145 | -0.0043 | -0.0105 | 0.0484 * | -0.0108 |
| **size** | 0.0077 | 0.0135 | | 0.3320 * | -0.0545 * | 0.0096 | 0.0892 * | -0.1030 * | -0.0588 * | 0.0679 * | -0.0725 * |
| **lev** | 0.0370 * | -0.0120 | 0.3323 * | | -0.0636 * | -0.0318 | 0.1860 * | -0.0040 | -0.0664 * | 0.2240 * | -0.0376 * |
| **roa** | -0.0160 | -0.0057 | -0.0545 * | -0.0636 * | | 0.0942 * | -0.0270 | -0.0153 | 0.0172 | -0.0243 | 0.0232 |
| **mtb** | 0.0759 * | 0.0251 | 0.0096 | -0.0318 | 0.0942 * | | 0.0602 * | -0.0176 | 0.1020 * | 0.0167 | 0.0189 |
| **ppe** | 0.1133 * | -0.0145 | 0.0892 * | 0.1859 * | -0.0270 | 0.0602 * | | 0.1990 * | 0.0111 | -0.0632 * | -0.1010 * |
| **invent** | 0.0959 * | -0.0043 | -0.1028 * | -0.0040 | -0.0153 | -0.0176 | 0.1985 * | | 0.0474 * | -0.1820 * | 0.0124 |
| **rd** | -0.0051 | -0.0105 | -0.0588 * | -0.0664 * | 0.0172 | 0.1021 * | 0.0111 | 0.0474 * | | -0.0063 | 0.0125 |
| **intan** | 0.1304 * | 0.0484 * | 0.0679 * | 0.2236 * | -0.0243 | 0.0167 | -0.0632 * | -0.1819 * | -0.0063 | | -0.0616 * |
| **pada** | -0.0582 * | -0.0108 | -0.0725 * | -0.0376 * | 0.0232 | 0.0189 | -0.1012 * | 0.0124 | 0.0125 | -0.0616 * | |

** p<0.05*

**Table 4: Cash ETR & Optimal Tax Rate**

$CashETR_{it} = \beta_1 + \beta_2 Optimal\ Tax\ Rate_{it} + \beta_{3\text{-}11} Controls_{it} + \varepsilon_{it}$

| | | ***CashETR*** | | |
|---|---|---|---|---|
| | *Pred.* | *Coef.* | *t-stat.* | |
| Optimal Tax Rate | + | 0.500 | 19.750 | *** |
| Size | +/- | -0.004 | -0.501 | |
| Leverage | - | 0.142 | 2.801 | ** |
| ROA | +/- | 0.003 | 0.646 | |
| MTB | +/- | 0.003 | 0.915 | |
| PPE | - | 0.024 | 0.776 | |
| Inventory | - | 0.212 | 2.631 | ** |
| R&D | - | 0.579 | 1.380 | |
| Intangibles | - | 0.179 | 3.224 | ** |
| Discretionary Accruals | +/- | -0.060 | -2.562 | * |
| Constant | | 0.127 | 0.886 | |
| *Observations* | | *2881* | | |
| *R-squared* | | *0.156* | | |
| *Adjusted R-squared* | | *-0.041* | | |
| *F-Stat.* | | *43.23* | | |
| *FixedEffects* | | *Yes* | | |

** p<0.05, ** p<0.01, *** p<0.001*