

The impact of full franking credit refundability on corporate tax avoidance

Rodney Brown,* Youngdeok Lim** and Chris Evans***

Abstract

The debate about the efficacy of Australia's full dividend imputation system and especially the potential abolition of the full refundability of franking credits has intensified in recent times. This article contributes to the debate by empirically examining the impact of the introduction of section 67-25(1) of the *Income Tax Assessment Act 1997* effective from 1 July 2000 that allows shareholders to claim all franking credits attached to dividends, even if it propels them into a tax refund position. Consistent with expectations, evidence is found of an economically significant increase in cash effective tax rates (decrease in tax avoidance) for domestic firms relative to foreign firms and for dividend-paying domestic firms relative to non-dividend-paying firms. This finding is even more pronounced for firms paying fully franked dividends. The results are consistent with the notion that firms undertake less tax avoidance in the post 1 July 2000 period given the presence of stronger incentives for them to pay corporate tax and suggest that an unintended consequence of a removal of full refundability of franking credits may be an increase in corporate tax avoidance.

Key words: corporate tax avoidance, dividend imputation

* Lecturer, School of Taxation and Business Law, UNSW Business School. Corresponding author, email: rodney.brown@unsw.edu.au.

** Senior Lecturer, School of Accounting, UNSW Business School.

*** Professor, School of Taxation and Business Law, UNSW Business School and Extraordinary Professor, Department of Taxation, University of Pretoria.

1. INTRODUCTION

This article examines whether the level of tax avoidance undertaken by firms operating in a full dividend imputation system decreases when changes made to the system enhance shareholders' after-tax returns.¹ The focus is on Australian publicly listed firms because Australia is one of a few countries which continues to operate a full dividend imputation system.² More importantly though, heated debate has recently emerged regarding the sustainability of full franking credit refundability to government revenue. On 13 March 2018, the Labor Party announced its intent to deny cash refunds for excess franking credits from 1 July 2019, if elected to power in the May 2019 federal election. In response, on 19 September 2018, the Treasurer asked the Standing Committee on Economics to inquire into the implications of removing refundable franking credits. In its April 2019 report, the Committee revealed it had formed the view that Labor's policy is 'inequitable and deeply flawed'.³ However, ultimately the question of the sustainability of the current arrangements is an empirical one. This article contributes to this debate by empirically examining the benefits of full franking credit refundability in terms of its impact on corporate tax avoidance.

Our approach is to exploit the plausibly exogenous shock that occurred in late 1999 whereby legislation ('refund provision') was passed allowing Australian resident shareholders to claim all franking credits attached to dividends they receive. That is, contrary to the prior rules which only allowed credits to be utilised up to the point where they offset a shareholder's tax liability, the new rules allow taxpayers to claim *all* franking credits, even if it puts them into a tax refund position. Specifically, under section 67-25(1) of the *Income Tax Assessment Act 1997*, if the tax offset allowed for franking credits exceeds the tax payable by the shareholder, the excess franking credit is fully refundable to the taxpayer. Effective 1 July 2000, this rule increased the value and demand for franking credits by shareholders. The hypotheses are tested by examining tax avoidance, measured using cash effective tax rates (ETRs), before and after this change. Exploiting a modification in tax rules that does not affect financial reporting helps us to isolate the impact of the change on tax avoidance.

Accusations of tax avoidance have thrust many publicly listed companies into the spotlight in recent years. Downwards management of tax liabilities by multinational corporations (MNCs) such as Apple, Starbucks and Google, has met with condemnation from the press, public interest groups, politicians and global organisations such as the G20 and OECD, who express concern that these firms do not pay their 'fair share' of tax. The Tax Justice Network and United Voice (2014) accuse Australian listed companies of tax avoidance on an industrial scale claiming that the federal government is short-changed by AUD 8.4 billion annually in corporate tax revenue. The heightened interest from policy-makers in recent years is due to the perceived inequities surrounding questionable tax practices coupled with governments' desire to preserve tax system integrity and safeguard revenue.

¹ Tax avoidance, sometimes referred to as 'aggressive tax planning', involves activities that are within the 'letter of the law' but contrary to the 'spirit of the law' and usually involves the aggressive exploitation of tax law loopholes. However, to avoid the complexity of determining the legality of strategies used to reduce taxes, prior literature is followed to define tax avoidance as all activities undertaken that have the effect of reducing a firm's overall cash taxes (Hanlon & Heitzman, 2010).

² Chile, Malta, Mexico, and New Zealand operate full dividend imputation systems (Ainsworth, 2016).

³ See Australian Parliament (2019, p. 32).

A rapidly evolving academic literature on corporate tax avoidance has emerged. Studies document a variety of determinants of corporate tax avoidance and an assortment of financial reporting, capital market, and contracting outcomes associated with such activities.⁴ Although considered by many as morally questionable, tax avoidance practices can lead to increases in both accounting earnings and cash flows. Furthermore, some managers believe their fiduciary duty to shareholders compels them to act aggressively with respect to tax strategy if it leads to significant cost savings and increased firm value. However, tax planning costs, management rent extraction, reputational effects, and post-audit penalties, may provide a counterweight to such incentives.⁵ Indeed, Chen et al. (2010) and Chyz et al. (2013) provide evidence that company stakeholders view tax avoidance negatively and seek to limit these activities. Thus, managers face a delicate risk-reward trade-off between personal incentives, prospective shareholder benefits, stakeholder expectations, and risk.⁶

Our argument is that in Australia the full dividend imputation system provides a strong countervailing influence on the incentives managers of certain firms may have to engage in tax avoidance. This system eliminates the double taxation on profits distributed by companies to shareholders by allowing the tax paid by the company to be credited, or imputed, to the shareholders by way of a franking credit attached to dividends to reduce the final income tax payable by the shareholder.⁷ Consequently, the imputation system likely leads to heterogeneity in tax avoidance incentives across Australian publicly listed firms due to differences in dividend pay-out policy. Australian firms that pay dividends with attached franking credits are more likely to face stronger incentives to pay corporate tax relative to foreign firms publicly listed in Australia, Australian firms that do not pay dividends, or Australian firms that pay unfranked dividends.⁸ Importantly, this heterogeneity facilitates comparisons between these different groups operating within the same system.

Prior studies suggest that dividend imputation is associated with lower tax avoidance (Ikin & Tran, 2013; McClure et al., 2018; Li & Tran, 2019). However, tax avoidance and dividend policy decisions are jointly determined in equilibrium. Therefore, to mitigate concerns regarding endogeneity, these findings are extended by exploiting the quasi-experimental setting offered by the *change* in Australia's full dividend imputation system to provide cleaner identification of the relation between dividend imputation and tax avoidance. Specifically, an exogenous shock is exploited where a new rule allows shareholders to claim *all* franking credits attached to dividends. Arguably, this enhancement to shareholders' after-tax positions provides *stronger* incentives for some firms to pay corporate taxes (minimise tax avoidance) to generate additional valuable

⁴ See Graham, Raedy and Shackelford (2012) and Hanlon and Heitzman (2010) for reviews of the extant tax research.

⁵ Corporate tax avoidance may increase information risk (Balakrishnan, Blouin & Guay, 2019), agency risk (Desai & Dharmapala, 2006), the risk of tax authority audit (Mills, 1998), and total firm risk (Guenther, Matsunaga & Williams, 2017).

⁶ Blouin (2014) and Armstrong et al. (2015) consider tax avoidance to be a form of investment similar to other investment opportunities available to the firm. Accordingly, before the firm chooses to invest, it evaluates the net present value of the 'project' which is a function of both the expected cash flows and the inherent risk (i.e., the dispersion of the potential cash flows). They argue that tax aggressiveness and tax risk are not separable concepts.

⁷ The terms 'franking credit' and 'imputation credit' are equivalent and used interchangeably throughout the article to describe the tax credit attached to dividends.

⁸ Details of the mechanics of the dividend imputation system are discussed in more detail in section 2 below.

imputation credits for distribution to shareholders. Employing a difference-in-differences research design, the hypotheses are tested by examining the impact of the change on firms after the new legislation became effective on 1 July 2000.

Consistent with our hypotheses, we find that over the sample period (1997-2004), cash ETRs are significantly *higher* for: (i) Australian (domestic) dividend-paying firms relative to foreign firms publicly listed in Australia; (ii) domestic dividend-paying firms relative to domestic non-dividend-paying firms, and (iii) domestic firms paying fully franked dividends relative to domestic dividend-paying firms that do not pay fully franked dividends. Next, evidence is found of a reduction in tax avoidance after the introduction of the refund provision on 1 July 2000. Specifically, univariate tests reveal that cash ETRs for domestic dividend-paying firms are significantly *higher* in the period after the rule change. Then, utilising a difference-in-differences research design, we find that domestic firms and domestic dividend-paying firms report significantly *higher* cash ETRs following the change relative to foreign firms listed in Australia, indicating a *decrease* in tax avoidance. A similar result is found when comparing (i) dividend paying domestic firms to non-dividend-paying domestic firms and (ii) fully franked dividend-paying domestic firms to non-fully franked dividend-paying domestic firms. Estimates suggest the decreases in tax avoidance are economically significant with additional cash taxes paid ranging from approximately AUD 8.6 million to AUD 16.6 million.

The findings in this article have academic contribution and policy implications. From an academic standpoint, this study contributes to the extant literature in significant ways. First, an important exogenous shock to Australia's full dividend imputation system and a difference-in-difference research design with control groups (e.g., foreign firms) is used to better identify the relation between this system and the level of tax avoidance undertaken by Australian publicly listed firms. Second, the findings will add to the emerging literature on corporate tax avoidance in Australia (e.g., Taylor & Richardson, 2012; 2014), especially the incentives Australian managers face to engage in tax avoidance and the role dividend imputation plays in curtailing such activities.

The findings advance the understanding of the incentives for corporate tax avoidance in Australia and may assist in designing future policy. Australia's budget is more dependent on corporate tax than all other Organisation for Economic Co-operation and Development (OECD) countries except Norway (OECD, 2014a);⁹ and after personal income tax, corporate tax is the second largest source of federal government revenue (Australian Treasury, 2014, p. 274, Table D10). Hence, understanding the underlying motives for tax avoidance can help legislators design a more efficient and equitable corporate tax system. Finally, this study has particular relevance given the current discourse surrounding the efficacy of Australia's full dividend imputation system.¹⁰ The

⁹ In 2013, Australia's company tax revenue as a proportion of GDP was 4.9% compared to the OECD average of 2.9% (OECD, 2014a).

¹⁰ A move away from the current system was deliberated in the Commonwealth Government Tax Discussion Paper released in March 2015, which formally started the process for developing the White Paper on the 'Reform of Australia's Tax System'. However, in February 2016, then Prime Minister Malcolm Turnbull stated that the 2016-2017 Federal Budget released in May 2016 was 'for all practical purposes, the White Paper' (reported in Henderson, 2016). The Tax Discussion Paper provides a broad overview of the need to respond to challenges such as globalisation, declining productivity, and an ageing population. It mentions several tax-related challenges that may need to be addressed including drawbacks of the full dividend imputation system (Australian Treasury, 2015). Unlike the 2009 Henry Review (Australia's

findings contribute to this debate by providing empirical evidence of the extent to which one mechanism of the current system, full franking credit refundability, helps mitigate corporate tax avoidance.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Upon receipt, shareholders pay tax on a dividend at their marginal tax rate with any final liability dependent on whether the dividend payer's resident country employs a 'dividend imputation' or 'classical' system. In a dividend imputation system, the tax paid by a company may be imputed to the shareholders by way of a tax credit (franking credit) to reduce the subsequent tax payable on the dividend received. A full dividend imputation system allows shareholders a credit for the *entire* tax paid by the company whereas a partial imputation system does not.¹¹ In contrast, a 'classical' system effectively results in double taxation of corporate income (i.e., income is taxed first at the company level and again at the shareholder level). Panel A of the Appendix provides an illustrative example of the after-tax cash flows available to shareholders under both regimes.

Essentially, under an imputation system, corporate tax paid by a company is a prepayment of shareholders' personal tax and is not a real cost as in a classical system. Managers therefore have reduced incentives to undertake aggressive tax planning.¹² Indeed, Ikin and Tran (2013) investigate large publicly listed Australian firms in the 1999-2003 period and find that firms distributing franked dividends adopt a more conservative tax strategy (measured using book ETRs) compared to firms that do not pay franked dividends. However, the authors do not attempt to exploit any of the changes to the imputation system that occurred during this period. More recently, McClure et al. (2018) find that Australian publicly listed firms paying partly franked or fully franked dividends, are less likely to engage in tax avoidance compared to firms that pay unfranked dividends or firms that pay no dividends at all. The authors deliberately chose the sample period as 2004-2015 for stability thereby avoiding changes to the dividend imputation system made before 2004. Li and Tran (2019) focus on profitable Australian listed companies across 2009-2012 and find that firms distributing a higher proportion of their after-tax profits as franked dividends and companies with less foreign ownership, engage in less tax avoidance.

Most importantly, from 1 July 2000, franking credits in Australia became *fully refundable* meaning that not only can they reduce a shareholder's tax liability to zero, but any excess is refunded to the shareholder. The illustrative example in Panel B of the

Future Tax System Review Panel, 2009) which provided detailed recommendations, the Tax Discussion Paper provides few pointers as to the extensiveness of any future reform package.

¹¹ Australia replaced its classical system with a full dividend imputation system from 1 July 1987. Finland, France, Germany, Italy and Norway eliminated their full imputation systems between 1999 and 2007 in response to European Court of Justice rulings that the imputation systems of several European countries were discriminatory and in violation of EU law. The US operates a 'modified classical' system (dividend income taxed at preferential rates (e.g., compared to interest income) at the shareholder level) (OECD, 2014b; Ainsworth, 2016).

¹² This most likely relates to domestic tax avoidance because Australia, like most countries, with the major exception of the US, adopts a 'territorial approach' to the taxation of MNC income where it only taxes the profits earned within its borders (i.e., source basis). Profits earned overseas are taxed by foreign tax authorities which reduces the amount of Australian corporate tax paid and thus the amount of franking credits available. The US adopts a 'worldwide' taxation system in which it taxes the worldwide income of its MNCs (i.e., residency basis).

Appendix demonstrates the impact of this change on shareholder-level tax liabilities for different types of resident shareholders with varying marginal tax rates.¹³ Clearly, the change is especially attractive to resident taxpayers whose marginal tax rate is less than the statutory company tax rate of 30% (Investors 1 and 2 in Panel B of the Appendix). Therefore, key beneficiaries of the change include Australian superannuation funds in pension mode (post-retirement phase) whose earnings are taxed at 0%, and superannuation funds in accumulation mode (pre-retirement phase) who are taxed at 15%. Indeed, Mackenzie and McKerchar (2014) interviewed Chief Investment Officers of 22 Australian superannuation funds and found that 71% claim to actively manage franking credits as part of their overall investment strategy. Notably, superannuation funds are major investors in Australian listed companies representing approximately 21% of total market capitalisation.¹⁴

Several additional changes were made to the Australian dividend imputation system in the years surrounding the introduction of the refund provision potentially creating confounding effects. For example, from 1 July 1997, the 45-day holding rule requires resident taxpayers to continuously hold shares at risk for at least 45 days to be eligible to receive franking credits. Other enhancements effective 1 July 2002 provided greater flexibility in the availability of franking credits and simplified the interaction of the imputation system with tax loss regulations. However, the refund provision effective 1 July 2000 arguably had a much *greater* impact for shareholders. Supporting this contention is the finding of Beggs and Skeels (2006) who show that franking credits had no value until 1 July 2000, after which franking credits were estimated to be worth 57% of their face value. Similarly, Cummings and Frino (2008) find that franking credits are worth at least 50% of their face value during the period 2002-2005. Jun, Gallagher and Partington (2011) propose that in combination the results of these two studies suggest that the year 2000 tax change significantly *increased* the value of franking credits to the marginal investor in the Australian market. Accordingly, this change is employed as the treatment effect in the empirical analysis.

In their review of the financial implications of dividend imputation, Ainsworth, Partington and Warren (2015) acknowledge that, at the margin, the imputation system creates a bias to Australian equities amongst domestic investors.¹⁵ Therefore, from a shareholder perspective, we argue that because many investors are further tax-advantaged by franking credits post July 2000, demand for fully franked dividends likely increased. Using Australian Taxation Office (ATO) data, Handley and Maheswaran (2008) find that, on average, 67% of distributed imputation credits were used to reduce personal taxes during 1990-2000. However, this increased to 81% over

¹³ Only Australian resident shareholders can utilise franking credits.

¹⁴ As at 30 June 2013, public superannuation funds have direct holdings in Australian listed companies worth AUD 123,462 million (APRA, 2015), while self-managed (private) superannuation funds own AUD 156,363 million (ATO, 2015). The total of AUD 279,825 million equates to 20.8% of the total market capitalisation of the Australian Stock Exchange (ASX) of AUD 1,347,186 million at that date (ASX, 2015).

¹⁵ Figure 11 in Ainsworth et al. (2015) reveals a stark divergence in dividend pay-out ratios of Australian firms (60-75%) compared to the world equity markets (35-40%) since the introduction of dividend imputation, providing evidence that imputation has encouraged higher pay-out ratios in Australia. Pattenden and Twite (2008) find that dividend initiations, pay-outs, and reinvestment plans increased following the introduction of dividend imputation in Australia and the increases were greater for firms with more franking credits. Recently, Balachandran et al. (2019) exploit the Australian setting and find that firms are more likely to pay dividends with higher pay-out ratios in an imputation environment compared to a traditional tax system.

2001-2004 following the 2001 change consistent with an increase in demand from domestic investors. Jun et al.'s (2011) study of institutional tax clienteles shows that Australian institutional funds have a higher ownership of stocks which carry full franking credits compared to stocks which have partial, or zero franking credits.¹⁶

We contend that post-July 2000, shareholder-friendly managers of Australian firms have enhanced incentives to pay company tax (reduce tax avoidance) to generate valuable franking credits to satisfy shareholders' increased demand for fully franked dividends. Underlying this argument are the findings of several studies regarding pay-out responses of management. First, Desai and Jin (2011) find that managers alter pay-out policies in response to the tax preferences of their institutional investors. Second, Hanlon and Hoopes (2014) present evidence suggesting that management is conscious of, and forms pay-out policy based on, shareholder-level taxes, and that they act in a manner that maximises shareholder value. Third, Amiram, Bauer and Frank (2019) show that tax avoidance significantly *decreases* after an exogenous enhancement of an imputation system consistent with managers acting for the benefit of shareholders, not themselves. The authors reason that tax avoidance within an imputation system merely shifts the burden of tax payments from the company to its shareholders and thus does not increase the shareholders' after-tax cash flows and conclude that a country that eliminates its imputation system in favour of a classical system creates the incentive for managers to engage in tax avoidance to meet shareholders' compensating demand for higher after-tax cash flows.

Only Australian resident shareholders can utilise franking credits. Consequently, low marginal rate resident shareholders (e.g., superannuation funds) will prefer franked dividends whilst foreign resident shareholders will prefer capital gains or unfranked dividends. Balachandran et al. (2019) demonstrate that Australian publicly listed firms with higher foreign institutional ownership are less likely to pay dividends and have lower pay-out ratios. Unfortunately, ownership data is not available for the sample firms during the sample period. Nevertheless, several foreign firms are publicly listed in Australia and a reasonable assumption can be made that a higher fraction of their shareholders are non-tax residents. Generally, foreign firms are excluded from samples because most of their profits will likely be subject to tax laws that diverge substantially from Australian tax laws.¹⁷ However, given that foreign firms are likely less impacted by the enhancement to the imputation system, these firms are used as the first control group in the difference-in-differences research design.

Based on the intuition that incentives to pay corporate tax intensified after the introduction of the refund provision, the following hypothesis is tested:

H1: Corporate tax avoidance decreased after 1 July 2000 for domestic firms relative to foreign firms.

¹⁶ Bellamy (1994) finds support for the existence of dividend clienteles and increased franked dividend pay-outs relative to unfranked dividend pay-outs for the 1985-1992 period. In contrast, Grinstein and Michaely (2005) do not find tax-based preferences by institutional investors.

¹⁷ Australia's territorial approach to the taxation of MNC profits means that only the Australian sourced profits of foreign firms will be taxed in Australia. Withholding tax on franked dividends paid to a non-resident shareholder of a treaty country is 0%, i.e., franking (company tax paid) represents a final tax to non-resident shareholders.

The enhancement to the dividend imputation system is likely to have a greater impact on those firms that pay dividends compared to non-dividend paying firms who cannot pass on franking credits to shareholders. Therefore, non-dividend paying firms are excluded from the treatment group to test the following hypothesis:

H2: Corporate tax avoidance decreased after 1 July 2000 for dividend-paying domestic firms relative to foreign firms.

Dividend-paying domestic firms comprise three different groups depending on dividend type. First, firms without franking credits may still pay dividends provided they have sufficient accumulated profits (absence of franking credits might result from the firm incurring tax losses in prior years). In this case, the dividend will be an ‘unfranked dividend’. Second, firms with some level of franking credits available from prior company tax paid, but not enough to fully-frank the dividend, may still impute these credits through a ‘partly franked dividend’. Third, firms that have paid sufficient corporate tax to generate enough franking credits to fully-frank their dividend may distribute these credits to shareholders via a ‘fully franked dividend’. It follows that the refund provision differentially impacts these three groups with fully franked dividend-paying firms (unfranked dividend-paying firms) likely facing the largest increase (smallest or no increase) in incentives to increase corporate tax paid (reduce tax avoidance). We take advantage of the heterogeneity of tax avoidance incentives across these three groups to develop alternative treatment and control groups to test the following hypotheses:¹⁸

H3: Corporate tax avoidance decreased more after 1 July 2000 for dividend-paying domestic firms relative to non-dividend-paying domestic firms.

H4: Corporate tax avoidance decreased more after 1 July 2000 for domestic firms paying fully franked dividends relative to dividend-paying domestic firms that do not pay fully franked dividends.

3. RESEARCH DESIGN

3.1 Sample selection and data sources

The sample initially consists of all companies publicly listed on the ASX during 1997-2004. To implement the identification strategy, the sample period is restricted to this relatively narrow period (4 years either side of the legislative change) to help mitigate the influence of any confounding factors (Allen et al., 2016). The choice of this time window is a reasonable compromise to the trade-off between relevance and precision. The window must be long enough to detect meaningful changes in tax avoidance given corporate tax strategies are usually long-term strategies that may take time to alter. In addition, it allows for the retention of a large enough sample size. However, the time window must be short enough so as not to incorporate too much noise into the analysis.

Panel A of Table 1 summarises the sample selection procedure. First, property partnership or trust entities are excluded due to their unique capital structures and the fact that trusts are not taxpayers.¹⁹ Second, firms with missing data (e.g., ticker, GICS

¹⁸ McClure et al. (2018) use dummy variables to distinguish between two groups of dividend-paying firms; firms paying franked dividends (partly- or fully franked) and firms paying unfranked dividends.

¹⁹ Trust income is taxed in the hands of trust beneficiaries or unit holders.

codes) are excluded and only those firms that report in at least one year in both the pre and post periods are included. Firm-year observations for which data are available to calculate the model variables are retained. Finally, we follow recent tax avoidance studies (e.g., Ikin & Tran, 2013; McClure et al., 2018; Li & Tran, 2019) and exclude firm-year observations with negative pre-tax income on the basis that ETRs are difficult to interpret when the denominator is negative, and these firms may be in a different tax planning position relative to profitable firms. After imposing these requirements, the final sample is a panel of 2,237 firm-year observations for 482 firms. The panel comprises the main sample of 440 domestic firms (2,041 firm-year observations) and the control sample of 42 foreign firms (196 firm-year observations). Finally, to minimise the undue influence of outliers, all continuous variables are winsorized at the 1st and 99th percentiles of their respective distributions.

Table 1: Sample Details

This Table reports an overview of the sample. Panel A outlines the sample selection procedure. Panel B presents the industry distribution of the sample according to 2-digit GICS classification codes.

Panel A: Sample selection procedure

Criteria	Firms	Firm-years
All firms on the ASX from 1997-2004	1,839	8,359
Less: real estate investment trusts and property firms	(116)	(528)
Less: missing identifiers (e.g., ticker, GICS code)	(76)	(269)
Less: do not report in at least one year in both the pre and post periods	(784)	(2,212)
Less: missing data to calculate variables	(288)	(2,257)
Less: observations with non-positive pre-tax income	(93)	(856)
	482	2,237
1997-2000	344	958
2001-2004	447	1,279
		2,237
Treatment group (domestic firms)	440	2,041
Control group (foreign firms)	42	196
	482	2,237

Panel B: Industry distribution

GICS	Industry description	Firms	Firm-years	Frequency (% of total)
10	Energy	25	140	6.2%
15	Materials	101	411	18.4%
20	Industrials	82	439	19.6%
25	Consumer discretionary	79	437	19.6%
30	Consumer staples	50	254	11.4%
35	Health care	29	117	5.2%
40	Financials	48	231	10.3%
45	Information technology	48	136	6.1%
50	Telecommunications services	8	25	1.1%
55	Utilities	11	45	2.0%
60	Real estate	1	2	0.1%
	Total	482	2,237	100.0%

To construct the variables in the empirical models, financial statement information is collected from *Datastream*. Data relating to dividends and share prices are obtained from *SIRCA*. Panel B of Table 1 presents the industry distribution of the sample according to 2-digit GICS classification codes. The sample includes a greater proportion of firms in the industrials (19.6%), consumer discretionary (19.6%) and materials (18.4%) sectors, though there appears to be no significant industry bias.

3.2 Dependent variable

Tax avoidance is usually veiled in a cloak of secrecy and hence unobservable to the researcher. This makes such activities difficult to measure leading to claims that the degree of tax aggressiveness is ‘in the eye of the beholder’ (Hanlon & Heitzman, 2010). Following prior research, (e.g., Chen et al., 2010; Lennox, Lisowsky & Pittman, 2013; McClure et al., 2018), the annual cash ETR (*CETR*) is employed as the proxy for tax avoidance. *CETR* is computed as income tax paid from the cash flow statement in year t divided by pre-tax income in the same period, and it captures a firm’s ability to pay a low amount of cash taxes relative to earnings. Like book ETRs, this measure only reflects non-conforming tax avoidance, that is, tax-related transactions accounted for differently for book and tax purposes (Hanlon & Heitzman, 2010). *CETR* reflects both temporary and permanent book-tax differences (BTDs) and a very low level of *CETR* likely captures extreme cases of tax avoidance. However, unlike book ETRs, *CETR* is unaffected by opaque income tax accruals and represents a more accurate estimate of the cash taxes paid (Dhaliwal, Gleason & Mills, 2004).²⁰ Given payment of cash corporate taxes underpins the franking credit generation process, *CETR* is the most appropriate ETR measure to use in the analysis.

Consistent with prior literature (e.g., Dyreng, Hanlon & Maydew, 2008; McClure et al., 2018) *CETR* is constrained to fall within the $[0, 1]$ interval to ensure a valid interpretation of tax avoidance. Finally, firms generally have stronger incentives for tax avoidance when the statutory corporate tax rate is higher, so tax avoidance likely varies with statutory tax rate changes. During the sample period, the statutory corporate tax rate changed several times. For fiscal years ending 30 June 1997 through 30 June 2000 it was 36%, then decreased to 34% for the 2001 financial year, and decreased again to 30% for the 2002 and subsequent financial years. These changes are taken into account by dividing *CETR* by the statutory corporate tax rate prevailing at the time (Ikin & Tran, 2013).²¹ Tax avoidance activities are minimal when the ratios are close to unity and the smaller the ratios, the more aggressive is the tax strategy.

3.3 Regression model

A difference-in-differences specification is employed to analyse the effect of the change in the dividend imputation system on tax avoidance (Dyreng, Hoopes & Wilde, 2016). Several treatment and control groups are constructed to test the four hypotheses. This

²⁰ A firm’s book ETR is total income tax expense divided by pre-tax accounting income and measures the taxes on the current period’s pre-tax income reported in the financial statements. However, the concern with this proxy is that both the numerator and denominator are recorded on an accruals basis, thus differences between the timing of income and expenses for financial reporting and tax reporting are reflected in the measure. It reflects aggressive tax planning through permanent BTDs, that is, a tax strategy that defers tax (e.g., accelerated depreciation for tax purposes) will not alter the book ETR.

²¹ *CETR* for foreign firms is divided by the statutory corporate tax rate prevailing at the time in the country where the firm is headquartered.

research design allows us to control for time invariant differences between treatment and control groups in addition to general economic trends common to both groups. Different variations of the following specification are estimated:

$$CETR_{i,t} = \alpha_0 + \alpha_1 TREATED_{i,t} + \alpha_2 TREATED * POST_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 ROA_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 INTANG_{i,t} + \alpha_7 CAPINT_{i,t} + \alpha_8 MKTBK_{i,t} + \alpha_9 RND_{i,t} + \varepsilon_{i,t} \quad (1)$$

TREATED is a dummy variable equal to 1 for each treatment group, and 0 otherwise. Treatment groups include domestic firms, domestic dividend-paying firms, domestic firms where all dividends paid are fully franked, and domestic firms where at least one dividend paid is fully franked. The legislative change became effective 1 July 2000, so an indicator variable denoted *POST* is included which takes the value of 1 for financial years ending 30 June 2001 onward, and 0 otherwise. The variable of interest is the interaction between *TREATED* and *POST*. To test all hypotheses, α_2 , the coefficient on *TREATED*POST*, is examined, which is the difference-in-differences estimate of the effect of the change in the dividend imputation system on tax avoidance in the post-refund period. A positive (negative) coefficient on this interaction variable indicates an increase (decrease) in *CETR* corresponding to a decrease (increase) in tax avoidance of treatment firms relative to control firms. In all four hypotheses, a positive coefficient for α_2 is predicted.

An array of controls is included which have been identified in prior research as influencing tax avoidance to help alleviate concerns that correlated omitted variables are confounding inferences (Gupta & Newberry, 1997; Mills, Erickson & Maydew, 1998; Armstrong, Blouin & Larcker, 2012; Dyreng et al., 2017; McClure et al., 2018). Firm size (*SIZE*) is controlled for because larger firms may have higher political costs, or greater tax planning opportunities via economies of scale and greater sophistication. We control for firm performance (*ROA*) because some studies document an association between firm profitability and tax avoidance. Leverage (*LEV*) is controlled for because firms may reduce tax liabilities through the tax-deductibility of interest expenses, although interest payments reduce taxable profits and pre-tax earnings, thus attenuating the effect of leverage on ETRs.²² Firms may use intangible assets (e.g., patents, trademarks) to shift income to low-tax jurisdictions so the proportion of intangible assets to total assets (*INTANG*) is included. Higher levels of property, plant and equipment usually result in higher tax-deductible depreciation expenses leading to a positive association between capital intensity (*CAPINT*) and tax avoidance. Firms with more growth or investment opportunities likely face different tax planning incentives than mature firms, so the market-to-book ratio (*MKTBK*) is included to proxy for such opportunities. Lastly, research and development (R&D) intensity (*RND*) is controlled for because Australian firms receive generous R&D incentives which may lower taxable income (McClure et al., 2018).²³

Finally, two different sets of fixed effects are included in the models. First, year fixed effects and industry fixed effects are included to control for general changes in tax

²² Interest expenses are fully tax-deductible in Australia (subject to thin capitalisation rules).

²³ *SIZE* is calculated as the natural logarithm of total assets; *ROA* is calculated as pre-tax net income divided by common equity; *LEV* is calculated as total liabilities divided by total assets; *INTANG* is calculated as net intangible assets divided by total assets; *CAPINT* is calculated as net property, plant and equipment divided by total assets; *MKTBK* is calculated as the market value of equity divided by common equity; and *RND* is calculated as research and development expenditure divided by total revenues. Following prior literature (e.g., Dyreng et al., 2016), missing values of *RND* are replaced with zero.

planning over time and the industry-affiliation effect, respectively. The inclusion of year fixed effects precludes the use of *POST* as a stand-alone variable in the models. The second set includes year fixed effects along with firm fixed effects to capture unobservable time-invariant firm characteristics. The inclusion of firm fixed effects prevents the inclusion of *TREATED*, a time-invariant firm variable, in the models.

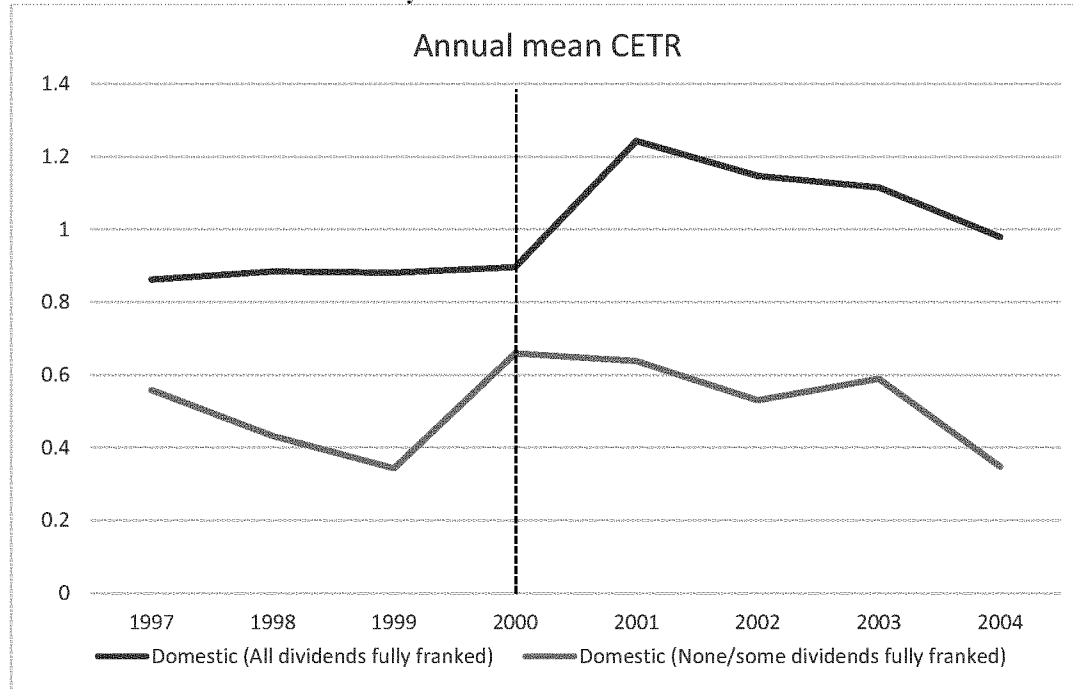
4. EMPIRICAL RESULTS

4.1 Descriptive statistics

Analysis begins with the scrutiny of the time trend of *CETR* for each of the treatment and control group pairings used in the empirical analysis. Figure 1 illustrates that for H4 the trend in *CETR* before the change in the dividend imputation system is similar. In Panels A and B, despite level differences, the pre-change trend in *CETR* between both pairings is similar but noticeable increases exist for both treatment groups after the year 2000. Overall, the similar pre-change trends in *CETR* provides comfort that the treatment and control group combinations selected for analysis satisfy the parallel trends assumption underlying the difference-in-differences methodology (Roberts & Whited, 2013).

Figure 1

Panel A: Domestic dividend-paying firms where *all* dividends paid are fully-franked and domestic dividend-paying firms where *none/some* dividends are fully-franked



Panel B: Domestic dividend-paying firms where *at least one* dividend paid is fully-franked and domestic dividend-paying firms where *no* franked dividends paid

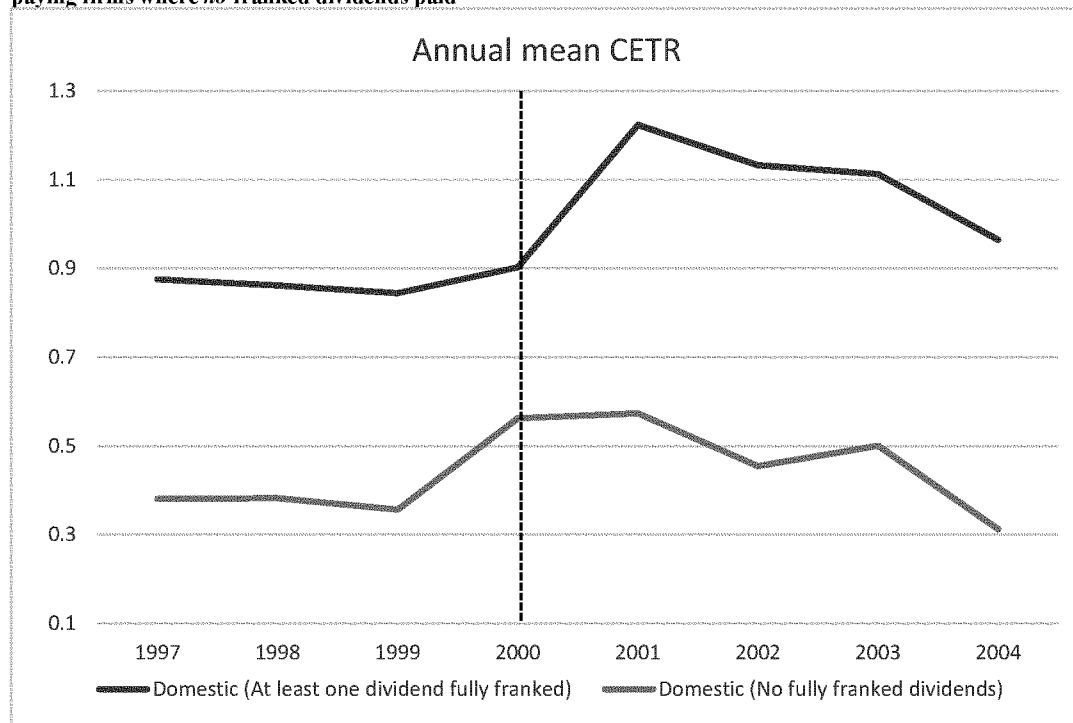


Table 2 presents statistics for the full sample (Panel A) and sub-samples (Panel B).²⁴ In both panels, the results for *CETR* are shown along with their values prior to dividing by the statutory corporate tax rate (denoted with *_A*). In Panel A, the mean (median) of *CETR_A* is 0.264 (0.242) and significant differences in ETRs between domestic and foreign firms are not present. However, cash ETRs are substantially lower than the mean (median) statutory corporate tax rate of 0.328 (0.340), similar to findings in prior studies (e.g., Dyreng et al., 2008). The mean *CETR* of 0.805 for domestic firms is significantly lower than 0.948 for foreign firms. In Panel B, the means and medians are presented for each sub-sample group along with differences for each treatment/control group combination. Noticeably, relative to all domestic firms and foreign firms, the mean *CETR_A* is higher for domestic dividend-paying firms (0.294) and higher still for domestic dividend-paying firms that fully frank *all* their dividends (0.335) or pay *at least one* fully franked dividend (0.331). Domestic dividend-paying firms have a significantly higher *CETR* (0.893) than domestic non-dividend-paying firms (0.447). Domestic firms who fully frank *all* dividends have a significantly higher *CETR* (1.021) than domestic dividend-paying firms who fully frank *none or some* of their dividends (0.515). Similarly, domestic firms who pay *at least one* fully franked dividend have significantly higher cash ETRs than domestic dividend-paying firms who do not pay any fully franked dividends. The difference in cash taxes paid ranges from approximately AUD 23 million to AUD 35 million.²⁵ Overall, these results are in line with our expectations that tax avoidance incentives differ across these groups depending upon firm pay-out policy.

4.2 Correlation results

The Pearson and Spearman correlations are presented in Table 3. In both cases, there is a positive and significant correlation between *CETR* and *POST*. While only suggestive of the underlying relation between these variables, these correlations provide preliminary support for the assertion that tax avoidance decreases after the change in the imputation system. Correlations among the control variables appear reasonable. The highest correlation coefficient, 0.420, is observed between *SIZE* and *LEV*, suggesting that multicollinearity is not a concern.

4.3 Univariate tests of changes in tax avoidance

Table 4 reports the means and the difference in means for *CETR* for all sample groups before and after 1 July 2000. Except for foreign firms (c), domestic dividends paying firms where none/some dividends are fully franked (g), and domestic dividend-paying firms where no dividends are fully franked (i), the mean of *CETR* in the post-refund period is significantly *higher* than the pre-refund period. For example, the difference in the mean *CETR* for domestic dividend paying firms (d) is 0.216 (0.987 – 0.771)

²⁴ The sub-samples include: (1) domestic dividend-paying firms; (2) domestic non-dividend-paying firms; (3) domestic dividend-paying firms where *all* dividends paid are fully franked; (4) domestic dividend-paying firms where *none/some* dividends paid are fully franked; (5) domestic dividend-paying firms where at least one dividend paid is fully franked; and (6) domestic dividend-paying firms where *no* dividends paid are fully franked.

²⁵ Mean pre-tax income for domestic firms is AUD 159.6 million, giving a difference of AUD 23.9 million (AUD 159.6 million x (0.294 - 0.144)) for firms in columns (1) and (2). Mean pre-tax income for domestic dividend-paying firms is AUD 193.5 million, giving a difference of AUD 31.3 million (AUD 193.5 million x (0.335 - 0.173)) for firms in columns (3) and (4), and AUD 35.2 million (AUD 193.5 million x (0.331 - 0.149)) for firms in columns (5) and (6).

significant at the 1% level (t -stat = 6.34). Using mean pre-tax income of AUD 193.5 million for these firms over the sample period, this 28.0% difference represents about AUD 13.7 million more in cash taxes paid in the post-refund period relative to the pre-refund period.²⁶ This preliminary evidence is consistent with the argument that the enhancement to the dividend imputation system *increased* the incentives for certain firms to take a less aggressive approach to tax avoidance.

We note the surprising result in row (e) and offer two possible explanations. First, it may be that these profitable firms are reducing their tax avoidance (paying more cash taxes) in the post 1 July 2000 period to start generating franking credits for possible *future* distribution with planned dividends. Second, it may be that they are increasing their tax payments so as not to stand out from their competitors to minimise any ATO scrutiny (i.e. mimicking behaviour).

²⁶ The mean statutory corporate tax rate over the sample period is 0.328. Therefore, the difference of AUD 13.7 million = ((AUD 193.5 million x (0.987 – 0.771)) x 0.328).

Table 2: Descriptive Statistics

This Table presents summary statistics for the variables used in the empirical analysis. Panel A (Panel B) presents summary statistics for the full sample (sub-samples). The sample period is 1997-2004. Effective tax rates are constrained to lie on the [0,1] interval and are presented prior to (CETR_A) and after (CETR) dividing by the statutory corporate tax rate. All continuous variables are winsorized at the 1% and 99% level. Significant differences in the means and medians are based on two-sided *t*-tests and Wilcoxon median tests, respectively. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Full sample (treatment group = domestic firms; control group = foreign firms)

Variable	Full sample (<i>n</i> =2,237)						Treatment group (<i>n</i> =2,041)		Control group (<i>n</i> =196)	
	<i>n</i>	Mean	SD	P25	P50	P75	Mean	Median	Mean	Median
CETR_A	2,237	0.264	0.240	0.067	0.242	0.364	0.265	0.245	0.253	0.229
CETR	2,237	0.818	0.779	0.204	0.735	1.106	0.805	0.735	0.948**	0.747
SIZE	2,237	19.637	2.152	18.073	19.394	21.006	19.460	19.281	21.478***	21.580***
ROA	2,237	0.101	0.092	0.043	0.078	0.128	0.103	0.079	0.081***	0.063***
LEV	2,237	0.481	0.226	0.352	0.480	0.604	0.480	0.480	0.492	0.493
INTANG	2,237	0.123	0.185	0.000	0.030	0.178	0.126	0.031	0.097**	0.021*
CAPINT	2,237	0.329	0.254	0.106	0.285	0.512	0.321	0.284	0.410***	0.351***
MKTBK	2,237	3.372	5.720	1.004	1.784	3.114	3.091	1.765	6.307***	2.264**
RND	2,237	0.006	0.051	0.000	0.000	0.000	0.006	0.000	0.003	0.000*

Table 2: Descriptive Statistics (continued)**Panel B: Sub-samples**

	(1)		(2)		(3)		(4)		(5)		(6)	
	Domestic dividend-paying (n=1,640)		Domestic non-dividend-paying (n=401)		Domestic (all dividends fully franked) (n=1,224)		Domestic (none/some dividends fully franked) (n=416)		Domestic (≥ 1 dividend fully franked) (n=1,307)		Domestic (no dividends fully franked) (n=333)	
Variable	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CETR_A	0.294**	0.275***	0.144***	0.011***	0.335	0.301	0.173***	0.091***	0.331	0.297	0.149***	0.061***
CETR	0.893	0.829**	0.447***	0.031***	1.021	0.923	0.515***	0.283***	1.007	0.915	0.444***	0.176***
SIZE	19.819***	19.629***	17.995***	17.921***	19.687	19.438	20.206***	20.146***	19.728	19.485	20.174***	20.079***
ROA	0.102***	0.081***	0.107	0.071***	0.108	0.088	0.086***	0.061***	0.107	0.087	0.084***	0.059***
LEV	0.496	0.495	0.413***	0.386***	0.500	0.492	0.485	0.500	0.502	0.496	0.476**	0.488
INTANG	0.135***	0.046***	0.089***	0.003***	0.150	0.056	0.091***	0.023***	0.147	0.055	0.087***	0.020***
CAPINT	0.324***	0.286***	0.309	0.246*	0.308	0.273	0.371***	0.363***	0.310	0.276	0.377***	0.373***
MKTBK	3.398***	1.915	1.833***	1.128***	3.650	2.090	2.657***	1.462***	3.638	2.076	2.455***	1.360***
RND	0.004	0.000	0.016***	0.000	0.004	0.000	0.004	0.000***	0.004	0.000	0.003	0.000**

Sub-sample reconciliation: Column 1 (n=1,640) + Column 2 (n=401) = domestic firms (n=2,041) (see Panel A); Column 3 (n=1,224) + Column 4 (n=416) = Column (1): Domestic dividend-paying firms (n=1,640); and Column 5 (n=1,307) + Column 6 (n=333) = Column (1): Domestic dividend-paying firms (n=1,640).

Tests of differences in means and medians are as follows: Column (1) = domestic dividend paying firms versus foreign firms (Panel A); Column (2) = domestic non-dividend-paying firms versus domestic dividend-paying firms (Column 1); Column (4) = domestic firms where *none/some* dividends are fully franked versus domestic firms where *all* dividends are fully franked (Column 3); and Column (6) = domestic firms where *no* dividends are fully franked versus domestic firms where *at least one* dividend is fully franked (Column 5).

Table 3: Correlations Matrix

This Table presents the correlations between the variables for the full sample. Pearson correlation coefficients are shown below the diagonal while Spearman correlation coefficients are shown above the diagonal. Significant (p -value < 0.05) coefficients are reported in bold.

Full sample ($n=2,237$): treatment group = domestic firms; control group = foreign firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) CETR	-	-0.009	0.139	0.123	-0.037	0.135	0.205	0.018	0.177	0.024
(2) TREATED	-0.052	-	0.000	-0.256	0.075	-0.027	0.035	-0.083	-0.050	-0.036
(3) POST	0.129	0.000	-	-0.045	0.044	-0.056	0.095	-0.064	-0.031	-0.027
(4) SIZE	0.090	-0.265	-0.045	-	-0.328	0.401	0.111	0.135	0.101	0.135
(5) ROA	-0.134	0.068	0.060	-0.333	-	-0.241	0.057	0.062	0.354	0.053
(6) LEV	0.077	-0.015	-0.051	0.420	-0.201	-	0.065	-0.020	0.147	0.003
(7) INTANG	0.130	0.044	0.104	0.039	-0.030	-0.083	-	-0.196	0.095	0.102
(8) CAPINT	-0.001	-0.099	-0.061	0.106	-0.055	-0.044	-0.292	-	-0.029	0.080
(9) MKTBK	-0.010	-0.159	-0.082	-0.022	0.233	0.015	0.011	-0.077	-	0.101
(10) RND	-0.017	0.020	0.019	-0.086	0.103	-0.099	-0.008	-0.071	0.078	-

Table 4: Effective Tax Rates for Sample Groups Before and After 1 July 2000

This Table reports the means and the difference in means for CETR. The sample period is 1997-2004. The pre-refund period is defined as the years prior to the new rule being implemented effective 1 July 2000 (1997, 1998, 1999, 2000) while the post-refund period is defined as the years after the new rule was implemented (2001, 2002, 2003, 2004). ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, using two-tailed tests.

Tax avoidance proxy Group	CETR		
	Mean (Pre-refund)	Mean (Post-refund)	Difference
(a) Full sample <i>n</i> =2,237	0.702 <i>n</i> =958	0.905 <i>n</i> =1,279	0.203*** <i>t</i> =6.13
(b) Domestic firms <i>n</i> =2,041	0.674 <i>n</i> =874	0.904 <i>n</i> =1,167	0.230*** <i>t</i> =7.07
(c) Foreign firms <i>n</i> =196	1.002 <i>n</i> =84	0.907 <i>n</i> =112	-0.095 <i>t</i> =0.59
(d) Domestic dividend-paying firms <i>n</i> =1,640	0.771 <i>n</i> =713	0.987 <i>n</i> =927	0.216*** <i>t</i> =6.34
(e) Domestic non-dividend-paying firms <i>n</i> =401	0.244 <i>n</i> =161	0.584 <i>n</i> =240	0.339*** <i>t</i> =4.25
(f) Domestic dividend-paying firms - <i>all</i> dividends are fully franked <i>n</i> =1,224	0.883 <i>n</i> =504	1.119 <i>n</i> =720	0.236*** <i>t</i> =6.30
(g) Domestic dividend-paying firms - <i>none/some</i> dividends are fully <i>n</i> =416	0.500 <i>n</i> =209	0.531 <i>n</i> =207	0.031 <i>t</i> =0.46
(h) Domestic dividend-paying firms - <i>at least one</i> dividend is fully <i>n</i> =1,307	0.872 <i>n</i> =551	1.106 <i>n</i> =756	0.234*** <i>t</i> =6.42
(i) Domestic dividend-paying firms - <i>no</i> dividends are fully franked <i>n</i> =333	0.425 <i>n</i> =162	0.462 <i>n</i> =171	0.037 <i>t</i> =0.53

Key for sample groupings: (a) = (b) + (c); (b) = (d) + (e); and (d) = (f) + (g) or (h) + (i)

4.4 Multivariate tests of changes in tax avoidance

Table 5 presents the results from estimating Equation (1) for domestic firms relative to foreign firms (Models 1 and 2) and for domestic dividend-paying firms relative to foreign firms (Models 3 and 4). The *t*-statistics provided in parentheses are based on heteroscedasticity-robust standard errors (White, 1980) and the standard errors are clustered at the firm level (Petersen, 2009). In Models (1) and (2), the estimated coefficient on *TREATED*POST* is 0.306 and 0.391, respectively. The direction of these coefficients is in line with our prediction and the coefficients are significant at the 5% level using one-tailed tests of statistical significance. These results provide support for H1. Then, following the logic outlined in section 2, the treatment group is modified by only including domestic dividend-paying firms more likely impacted by the change to the full dividend imputation system. In Models (3) and (4), the coefficient on the variable of interest increases relative to the results found in Models (1) and (2). The coefficient on *TREATED*POST* is 0.311 and 0.395, respectively, significant at the 5% and 1% level. Therefore, support for H2 is also found.

Next, foreign firms in the control sample are replaced with domestic non-dividend-paying firms. Domestic dividend-paying firms are expected to decrease tax avoidance (increase *CETR*) more in response to the enhanced imputation system relative to domestic non-dividend-paying firms. Table 6 presents the results from re-estimating Equation (1). The coefficient on *TREATED*POST* in Model (1) is statistically insignificant (coefficient = -0.114, *t*-stat = -1.22), yet the coefficient in Model (2) is 0.164 and significant at the 5% level (*t*-stat = 1.85). The results in Model (1) are consistent with the significant increase in *CETR* documented in Table 4, row (e). However, the results in Model (2), which controls for firm fixed effects, support H3.²⁷ The estimated coefficient in Model (2) suggests the change to the dividend imputation system is associated with an increase in *CETR* of 16.4% (AUD 8.6 million in cash taxes paid) for domestic dividend-paying firms relative to domestic non-dividend-paying firms.²⁸

Finally, H4 is tested by adjusting the treatment and control groups again. It is expected that tax avoidance decreased more after 1 July 2000 for domestic firms paying fully franked dividends relative to domestic firms that do not pay fully franked dividends. However, many domestic dividend-paying firms pay multiple dividends during the year and depending upon their franking credit account balance, may pay a mix of fully franked, partially franked and unfranked dividends. Therefore, Equation (1) is re-estimated using two different sub-groups and the results are presented in Table 7. In Models (1) and (2), the treatment group comprises domestic firms that pay *at least one* fully franked dividend while the control group comprises domestic dividend-paying firms that *do not pay any* fully franked dividends (i.e., pay either unfranked dividends, partially franked dividends, or a combination of the two). In Models (3) and (4), the

²⁷ The coefficients on the variable of interest when controlling for firm fixed effects instead of industry fixed effects are larger in value and statistical significance in all models in all Tables suggesting that unobserved firm-level characteristics that are relatively constant over time (e.g., corporate governance) play an important role.

²⁸ Mean pre-tax income for domestic firms over the sample period is AUD 159.6 million and the mean statutory corporate tax rate is 0.328. Therefore, additional cash taxes paid = (AUD 159.6 million x 0.164) x 0.328 = AUD 8.6 million.

treatment group (control group) comprises domestic dividend-paying firms that fully frank *all* dividends (fully frank *none or some* dividends).

The results in Table 7 strongly support H4. The coefficient on *TREATED*POST* in Model (1) is 0.147 and significant at the 5% level (t -stat = 1.84) and is 0.269 and significant at the 1% level (t -stat = 3.40) in Model (2). In Models (3) and (4), the coefficient on *TREATED*POST* is 0.171 (t -stat = 2.21) and in Model (4) is 0.261 (t -stat = 3.88). These coefficients are significant at the 5% and 1% levels, respectively. The results in Models (3) and (4) suggest that the introduction of the refund provision is associated with an increase in *CETR* of around 17-26% (AUD 10.9 million to AUD 16.6 million in cash taxes paid) for domestic dividend-paying firms that fully frank all dividends compared to those that do not fully frank all dividends.²⁹

Overall, the results are consistent with the intuition that the change to the dividend imputation system effective 1 July 2000 provided *stronger* incentives for firms paying franked-dividends to minimise tax avoidance to generate further imputation credits demanded by tax-advantaged shareholders.³⁰ In particular, the incentives appear to have increased more for those firms paying fully franked dividends. This finding suggests that managers of domestic dividend-paying firms are acting in the best interests of their resident shareholders who can utilise these tax credits to reduce their own tax liabilities.

²⁹ Mean pre-tax income for the domestic dividend-paying firms over the sample period is AUD 193.5 million and the mean corporate tax rate is 0.328. Therefore, additional cash taxes paid is approximately AUD 10.9 million ((AUD 193.5 million \times 0.171) \times 0.328) to AUD 16.6 million ((AUD 193.5 million \times 0.261) \times 0.328).

³⁰ We note that in some of the multivariate regressions results in Tables 5-8, the coefficients on *LEV* and *INTANG* are significantly positive. The significantly positive coefficients found for *LEV* and *INTANG* in some models are consistent with those found in Graham and Tucker (2006) and McClure et al. (2018). These results only obtain in the models where industry and year fixed effects are included. When industry fixed effects are replaced with firm fixed effects, the coefficients are insignificant.

Table 5: Corporate Tax Avoidance Following Changes to the Imputation System

This Table reports the results from estimating Equation (1) using OLS. In Models (1) and (2), the sample consists of domestic firms (treatment group) and foreign firms (control group). In Models (3) and (4), the sample consists of domestic dividend-paying firms (treatment group) and foreign firms (control group). Coefficient estimates are presented with *t*-statistics reported in parentheses. The *t*-statistics are based on heteroscedasticity robust standard errors and standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, using one-tailed tests for directional hypotheses, and two-tailed tests otherwise.

Domestic firms (treated) and foreign firms (control) – Models (1) - (2)

Domestic dividend-paying firms (treated) and foreign firms (control) – Models (3) - (4)

Dep. Var.		CETR _{<i>t</i>}			
Variables	Pred.	(1)	(2)	(3)	(4)
TREATED _{<i>t</i>}		-0.255 (-1.38)	-	-0.275 (-1.51)	-
TREATED _{<i>t</i>} *POST _{<i>t</i>}	+	0.306** (1.79)	0.391** (2.27)	0.311** (1.85)	0.395*** (2.36)
SIZE _{<i>t</i>}		0.011 (0.78)	0.041 (0.93)	-0.035** (-2.19)	-0.050 (-0.94)
ROA _{<i>t</i>}		-0.959*** (-3.61)	-2.971*** (-6.78)	-1.256*** (-3.81)	-4.670*** (-8.72)
LEV _{<i>t</i>}		0.200* (1.64)	-0.054 (-0.30)	0.315** (2.02)	-0.206 (-0.76)
INTANG _{<i>t</i>}		0.417*** (2.79)	-0.059 (-0.22)	0.361** (2.26)	-0.410 (-1.50)
CAPINT _{<i>t</i>}		0.205* (1.77)	0.146 (0.72)	0.215 (1.60)	0.220 (0.90)
MKTBK _{<i>t</i>}		0.001 (0.30)	0.006 (0.88)	-0.004 (-0.88)	0.010 (1.34)
RND _{<i>t</i>}		0.101 (0.31)	-0.060 (-0.26)	1.225 (1.14)	4.399* (1.76)
Intercept		0.288 (0.89)	0.211 (0.26)	1.181*** (3.01)	2.237** (2.24)
Industry FE		Y	N	Y	N
Firm FE		N	Y	N	Y
Year FE		Y	Y	Y	Y
Observations		2,237	2,237	1,836	1,836
R ²		0.084	0.100	0.081	0.146
Adj. R ²		0.074	0.094	0.068	0.139

Table 6: Corporate Tax Avoidance Following Changes to the Imputation System

This Table reports the results from estimating Equation (1) using OLS. The sample consists of domestic dividend-paying firms (treatment group) and domestic non-dividend-paying firms (control group). Coefficient estimates are presented with *t*-statistics reported in parentheses. The *t*-statistics are based on heteroscedasticity robust standard errors and standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, using one-tailed tests for directional hypotheses, and two-tailed tests otherwise.

Dep. Var.		CETR _{<i>t</i>}	
Variables	Pred.	(1)	(2)
TREATED _{<i>t</i>}		0.514*** (7.17)	-
TREATED _{<i>t</i>} *POST _{<i>t</i>}	+	-0.114 (-1.22)	0.164** (1.85)
SIZE _{<i>t</i>}		-0.030** (-2.24)	0.008 (0.19)
ROA _{<i>t</i>}		-1.213*** (-4.96)	-2.681*** (-6.47)
LEV _{<i>t</i>}		0.251** (2.20)	0.033 (0.19)
INTANG _{<i>t</i>}		0.487*** (3.70)	-0.017 (-0.06)
CAPINT _{<i>t</i>}		0.120 (1.04)	0.257 (1.19)
MKTBK _{<i>t</i>}		0.007 (1.62)	0.005 (0.64)
RND _{<i>t</i>}		0.298 (0.89)	-0.031 (-0.13)
Intercept		0.892*** (3.31)	0.718 (0.88)
Industry FE		Y	N
Firm FE		N	Y
Year FE		Y	Y
Observations		2,041	2,041
R ²		0.142	0.106
Adj. R ²		0.131	0.099

Table 7: Corporate Tax Avoidance Following Changes to the Imputation System

This Table reports the results from estimating Equation (1) using OLS. In Models (1) and (2), the sample consists of domestic firms where *at least one* dividend paid is fully franked (treatment group) and domestic firms where *no* dividends paid are fully franked (control group). In Models (3) and (4), the sample consists of domestic firms where *all* dividends paid are fully franked (treatment group) and domestic firms where *none/some* dividends are fully franked (control group). Coefficient estimates are presented with *t*-statistics reported in parentheses. The *t*-statistics are based on heteroscedasticity robust standard errors and standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, using one-tailed tests for directional hypotheses, and two-tailed tests otherwise.

Dep. Var.		CETR _{<i>t</i>}			
Variables	Pred.	(1)	(2)	(3)	(4)
TREATED _{<i>t</i>}		0.453*** (6.48)	-	0.382*** (5.89)	-
TREATED _{<i>t</i>} *POST _{<i>t</i>}	+	0.147** (1.84)	0.269*** (3.40)	0.171** (2.21)	0.261*** (3.88)
SIZE _{<i>t</i>}		-0.037** (-2.52)	-0.073 (-1.45)	-0.033** (-2.25)	-0.072 (-1.42)
ROA _{<i>t</i>}		-1.473*** (-5.00)	-4.113*** (-8.18)	-1.453*** (-4.85)	-4.098*** (-8.12)
LEV _{<i>t</i>}		0.231 (1.57)	-0.004 (-0.01)	0.238 (1.59)	-0.009 (-0.03)
INTANG _{<i>t</i>}		0.355** (2.57)	-0.338 (-1.24)	0.359*** (2.58)	-0.354 (-1.31)
CAPINT _{<i>t</i>}		0.128 (1.04)	0.341 (1.24)	0.132 (1.06)	0.337 (1.21)
MKTBK _{<i>t</i>}		0.003 (0.60)	0.010 (1.20)	0.003 (0.63)	0.010 (1.21)
RND _{<i>t</i>}		1.001 (0.93)	4.979* (1.95)	1.387 (1.17)	4.995* (1.93)
Intercept		1.038*** (3.07)	2.457*** (2.61)	1.024*** (2.99)	2.439** (2.57)
Industry FE		Y	N	Y	N
Firm FE		N	Y	N	Y
Year FE		Y	Y	Y	Y
Observations		1,640	1,640	1,640	1,640
R ²		0.183	0.165	0.178	0.166
Adj. R ²		0.171	0.157	0.165	0.158

5. ROBUSTNESS TESTS

5.1 Control for dividend payout ratio

In the primary analysis of Hypothesis 4, we follow McClure et al. (2018) and do not control for the dividend payout ratio because any impact on tax avoidance associated with a pre-determined commitment by the Board of Directors to pay a certain level of dividends would be more appropriately described as a dividend effect rather than an imputation effect.³¹ Nevertheless, to alleviate any concerns, we follow Amiram et al. (2019) and include an additional control variable (*DIVPR*) to control for the dividend payout ratio and re-estimate the models in Table 7.³² The results are presented in Table 8 and the direction of the coefficients on *TREATED*POST* remain in line with our prediction and are significant in three of the four models. Overall, the results do not alter our inferences from the main findings.

5.2 Inclusion of firm-years with negative pre-tax income

In the main analysis, firm-year observations with negative pre-tax income are excluded. However, because accounting losses do not necessarily translate to tax losses,³³ these firm-year observations are included and all models re-estimated.³⁴ Untabulated results are similar to those in the main findings although the magnitude and statistical significance increases for the coefficients on the variable of interest in Tables 6 and 7. For example, the coefficient on *TREATED*POST* corresponding to Model (1) in Table 6 increases to 0.065, which is mildly significant at the 10% level (t -stat = 1.27). The coefficient on *TREATED*POST* relating to Models (1) and (2) in Table 7, increases to 0.168 (t -stat = 2.34) and 0.309 (t -stat = 3.55), respectively. The results do not alter our inferences but do suggest the impact of dividend imputation may be magnified when analysing all firms, be they profitable or loss making.

³¹ Furthermore, in many cases, firms set their dividend payout ratio in *advance* as part of their capital management policy and in many cases the payout ratio is stable over time.

³² *DIVPR* is calculated as dividends provided for or paid divided by pre-tax income.

³³ Numerous adjustments for permanent and temporary differences are made to accounting net income to arrive at taxable income.

³⁴ *CETR* is constrained to the [0,1] interval so any negative values of cash taxes paid or pre-tax income result in the value of *CETR* being 0.

Table 8: Replication of Table 7 Results While Controlling for the Dividend Payout Ratio

This Table reports the results from replicating the results presented in Table 7 while including an additional control for the dividend payout ratio (*DIVPR*). Coefficient estimates are presented with *t*-statistics reported in parentheses. The *t*-statistics are based on heteroscedasticity robust standard errors and standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively, using one-tailed tests for directional hypotheses, and two-tailed tests otherwise.

Dep. Var.		CETR _{<i>t</i>}			
Variables	Pred.	(1)	(2)	(3)	(4)
TREATED _{<i>t</i>}		0.437*** (6.34)	-	0.387*** (6.13)	-
TREATED _{<i>t</i>} *POST _{<i>t</i>}	+	0.097 (1.23)	0.176*** (2.42)	0.098* (1.32)	0.164*** (2.73)
DIVPR _{<i>t</i>}		0.582*** (7.83)	0.687*** (11.44)	0.589*** (7.77)	0.688*** (11.35)
SIZE _{<i>t</i>}		-0.042*** (-2.83)	-0.034 (-0.72)	-0.039*** (-2.58)	-0.034 (-0.71)
ROA _{<i>t</i>}		-0.892*** (-3.33)	-1.906*** (-4.52)	-0.865*** (-3.19)	-1.902*** (-4.49)
LEV _{<i>t</i>}		0.365** (2.46)	0.049 (0.17)	0.372** (2.48)	0.046 (0.16)
INTANG _{<i>t</i>}		0.344** (2.43)	0.060 (0.20)	0.351** (2.46)	0.052 (0.17)
CAPINT _{<i>t</i>}		0.154 (1.17)	0.386* (1.72)	0.161 (1.20)	0.384* (1.69)
MKTBK _{<i>t</i>}		-0.001 (-0.19)	-0.000 (-0.02)	-0.001 (-0.17)	-0.000 (-0.01)
RND _{<i>t</i>}		0.630 (0.67)	1.581 (0.72)	1.013 (0.97)	1.642 (0.73)
Intercept		0.558* (1.77)	1.112 (1.23)	0.508 (1.58)	1.111 (1.22)
Industry FE		Y	N	Y	N
Firm FE		N	Y	N	Y
Year FE		Y	Y	Y	Y
Observations		1,617	1,617	1,617	1,617
R ²		0.281	0.279	0.277	0.279
Adj. R ²		0.269	0.271	0.265	0.271

5.3 Alternative proxy for tax avoidance

Given the challenge in measuring tax avoidance precisely and because each measure has its own limitations (Blouin, 2014), an additional proxy is employed. Since the denominator in *CETR* is pre-tax net income, low *CETRs* may be driven by upwards earnings management. Moreover, if tax-avoiding firms simultaneously report lower accounting earnings and lower taxable income (i.e., conforming tax avoidance), then any change in *CETR* may be mechanical and inadvertently capturing a denominator effect only (Hanlon & Heitzman, 2010). Consequently, the second measure (*CETR_M*) modifies *CETR* by substituting net cash flows from operating activities for pre-tax net income in the denominator (Dyreg et al., 2008). The results are qualitatively similar to those in the primary analysis. For example, the coefficient on *TREATED*POST* corresponding to Models (1) and (3) in Table 5 are 0.173 (*t*-stat = 1.68) and 0.174 (*t*-stat = 1.76), respectively, and corresponding to Models (2) and (4) in Table 7 are 0.131 (*t*-stat = 2.24) and 0.112 (*t*-stat = 2.11), respectively.

5.4 Reduced sample period (1998-2003)

There may be concerns regarding the length of the time window used in the analysis, i.e., 8-year time period of 1997-2004. Therefore, the sample period is restricted to three years either side of the change i.e., 1998-2003 to allay concerns that the results are driven by confounding factors. Similar coefficients are found on the variable of interest relative to those in the primary analysis demonstrating that the results are not being unduly influenced by noise around the date of change (untabulated).

5.5 Exclusion of financial and insurance firms

Some studies of tax avoidance exclude financial and insurance firms from their samples (e.g., Richardson & Taylor, 2015; McClure et al., 2018).³⁵ These firms are excluded because of special regulatory constraints imposed on them that potentially affect their tax avoidance activities coupled with differences in their application of accounting policies and derivation of accounting estimates compared to firms in other industries. In this setting, financial and insurance firms constitute less than 10% of the sample. Therefore, firms with GICS sector code 40 are dropped and all analyses re-run. The results (untabulated) mirror those in the primary analysis alleviating any concerns.

5.6 Alternative proxy for *POST*

While the majority of the sample (340 firms or 70.5%) have a 30 June fiscal year-end, some do not, meaning their 2000 financial year will include a mix of pre-1 July 2000 and post-1 July 2000 data.³⁶ To account for this timing issue and the possibility that some firms alter tax avoidance behaviour in anticipation of the impending change in legislation, the *POST* variable is modified to take the value of 1 for financial years ending after the 1999 financial year, and 0 otherwise (denoted *POST_1999*). Notably, the *possibility* of tax reform was announced by the Commonwealth Treasurer in August 1998, while the implementation of the reform was announced in a media release dated

³⁵ Other studies retain financial and insurance firms (e.g., Ikin & Tran, 2013; Dyreg et al., 2016).

³⁶ The year to which *Datastream* assigns financial data is the year in which the company's fiscal year ended, e.g., fiscal years ending 31 January 2000 (1 firm), 28 February 2000 (3 firms), 31 March 2000 (10 firms), 30 April 2000 (3 firms), 31 May 2000 (1 firm), 31 July 2000 (12 firms), 31 August 2000 (3 firms) 30 September 2000 (17 firms), and 31 December 2000 (92 firms), are all treated as 2000 in *Datastream*.

21 September 1999 (Australian Treasury, 1998, p. 17; Costello, 1999). In untabulated results, the coefficients on *TREATED*POST* corresponding to Tables 5 and 6 are similar to the main results but the statistical significance of the coefficients reduces. In relation to Table 7, the coefficient on *TREATED*POST* relating to Models (1) and (3) are statistically insignificant though the same coefficients corresponding to Models (2) and (4) are significant; however the magnitude of the coefficient decreases from 0.269 to 0.220 (Model 2) and from 0.261 to 0.197 (Model 4). These results suggest there may have been a change in tax avoidance behaviour prior to 1 July 2000 but the main effect takes place post 1 July 2000.

6. CONCLUSION

Corporate tax avoidance is a major concern for governments, exacerbated in recent years by the global financial crisis and its aftermath. This article exploits an exogenous shock to Australia's full dividend imputation system which enhanced the value of franking credits for tax-advantaged resident shareholders. This identification strategy arguably allows for cleaner identification of the relation between dividend imputation and tax avoidance. Overall, evidence is found to suggest that the rule change altered the incentives of management to engage in tax avoidance. Specifically, using a difference-in-differences research design and several treatment and control group combinations, an increase in cash ETRs is found for domestic dividend-paying firms relative to both foreign firms and non-dividend-paying domestic firms. In line with expectations, this finding is even more pronounced for firms paying fully franked dividends and the decreases in tax avoidance are economically significant. The findings are consistent with the notion that tax avoidance decreased for domestic firms who can take advantage of the rule change for the benefits of shareholders.

This study can inform ongoing policy debates in Australia. Recent tax reform reports have recommended the abolition of dividend imputation and the introduction of an Allowance for Corporate Equity and/or cash flow tax. Furthermore, the current debate centres on the potential removal of full franking credit refundability based on revenue unsustainability. However, the evidence provided in this study highlights the benefits of maintaining full franking credit refundability due to the incentives it provides to Australian dividend-paying firms to minimise tax avoidance activity. Hence, the results speak to the potential of the current full dividend imputation system to help protect corporate tax system integrity.

7. REFERENCES

- Ainsworth, A 2016, 'Dividend imputation: The international experience', *JASSA: The Finsia Journal of Applied Finance*, vol. 2016, no. 1, pp. 58-63.
- Ainsworth, A, Partington, G & Warren, G 2015, 'Do franking credits matter? Exploring the financial implications of dividend imputation', working paper no. 058/2015, Centre for International Finance and Regulation.
- Allen, A, Francis, B B, Wu, Q & Zhao, Y 2016, 'Analyst coverage and corporate tax aggressiveness', *Journal of Banking and Finance*, vol. 73, pp. 84-98.
- Amiram, D, Bauer, A M & Frank, M M 2019, 'Tax avoidance at public corporations driven by shareholder taxes: Evidence from changes in dividend tax policy', *The Accounting Review*, vol. 94, no. 5, pp. 27-55.

- Armstrong, C S, Blouin, J L, Jagolinzer, A D & Larcker, D F 2015, 'Corporate governance, incentives, and tax avoidance', *Journal of Accounting and Economics*, vol. 60, no. 1, pp. 1-17.
- Armstrong, C S, Blouin, J L & Larcker, D F 2012, 'The incentives for tax planning', *Journal of Accounting and Economics*, vol. 53, nos. 1-2, pp. 391-411.
- Australian Parliament, House of Representatives Standing Committee on Economics 2019, *Report on the inquiry into the implications of removing refundable franking credits*, Canberra, April. Available at: https://www.aph.gov.au/Parliamentary_Business/Committees/House/Economics/FrinkingCredits/Report.
- Australian Prudential Regulation Authority (APRA) 2015, *Statistics: Annual superannuation bulletin* (June 2013). Available at: <http://www.apra.gov.au/Super/Publications/Documents/Revised%202013%20Annual%20Superannuation%20Bulletin%2005-02-14.pdf>.
- Australian Stock Exchange (ASX) 2015, 'Historical market statistics'. Available at: http://www.asx.com.au/about/historical-market-statistics.htm#End_of_month_values.
- Australian Taxation Office (ATO) 2015, 'Self-managed super fund statistical report – June 2013'. Available at: <https://www.ato.gov.au/about-ato/research-and-statistics/in-detail/super-statistics/smsf/self-managed-super-fund-statistical-report---June-2013/> (accessed 7 February 2020).
- Australian Treasury (circulated by Hon P Costello, Treasurer) 1998, *Tax reform: not a new tax, a new tax system, the Howard government's plan for a new tax system*, August.
- Australian Treasury 2014, *Mid-Year Economic and Fiscal Outlook (MYEFO) 2013-14*, December. Available at: https://archive.budget.gov.au/2013-14/myefo/2013_14_MYEFO.pdf (accessed 7 February 2020).
- Australian Treasury 2015, *Re:think: Better tax system, better Australia, discussion paper*.
- Australia's Future Tax System Review Panel (Dr K Henry, chair) 2009, *Australia's future tax system: Report to the Treasurer*, December (Henry Review).
- Balachandran, B, Khan, A, Mather, P & Theobald, M 2019, 'Insider ownership and dividend policy in an imputation tax environment', *Journal of Corporate Finance*, vol. 54, pp. 153-167.
- Balakrishnan, K, Blouin, J L & Guay, W R 2019, 'Tax aggressiveness and corporate transparency', *The Accounting Review*, vol. 94, no. 1, pp. 45-69.
- Beggs, D J & Skeels, C L 2006, 'Market arbitrage of cash dividends and franking credits', *Economic Record*, vol. 82, no. 258, pp. 239-252.
- Bellamy, D E 1994, 'Evidence of imputation clienteles in the Australian equity market', *Asia Pacific Journal of Management*, vol. 11, no. 2, pp. 275-287.
- Blouin, J 2014, 'Defining and measuring tax planning aggressiveness', *National Tax Journal*, vol. 67, no. 4, pp. 875-900.
- Chen, S, Chen, X, Cheng, Q & Shevlin, T 2010, 'Are family firms more aggressive than non-family firms?', *Journal of Financial Economics*, vol. 95, no. 1, pp. 41-61.

- Chyz, J, Leung, W, Li, O & Rui, O 2013, 'Labor unions and tax aggressiveness', *Journal of Financial Economics*, vol. 108, no. 3, pp. 675-698.
- Costello, Hon P (Treasurer) 1999, 'The new business tax system', press release 58, 21 September. Available at: <https://www.petercostello.com.au/press/1999/2176-the-new-business-tax-system> (accessed 8 February 2020).
- Cummings, J & Frino, A 2008, 'Tax effects on the pricing of Australian stock index futures', *Australian Journal of Management*, vol. 33, no. 2, pp. 391-406.
- Desai, M A & Dharmapala, D 2006, 'Corporate tax avoidance and high-powered incentives', *Journal of Financial Economics*, vol. 79, no. 1, pp. 145-179.
- Desai, M & Jin, L 2011, 'Institutional tax clienteles and pay-out policy', *Journal of Financial Economics*, vol. 100, no. 1, pp. 68-84.
- Dhaliwal, D, Gleason, C & Mills, L 2004, 'Last-chance earnings management: Using the tax expense to meet analysts' forecasts', *Contemporary Accounting Research*, vol. 21, no. 2, pp. 431-459.
- Dyreng, S D, Hanlon, M & Maydew, E L 2008, 'Long-run corporate tax avoidance', *The Accounting Review*, vol. 83, no. 1, pp. 61-82.
- Dyreng, S D, Hanlon, M, Maydew, E L & Thornock, J R 2017, 'Changes in corporate effective tax rates over the past 25 years', *Journal of Financial Economics*, vol. 124, no. 3, pp. 441-463.
- Dyreng, S D, Hoopes, J L & Wilde, J H 2016, 'Public pressure and corporate tax behavior', *Journal of Accounting Research*, vol. 54, no. 1, pp. 147-186.
- Graham, J R, Raedy, J S & Shackelford, D A 2012, 'Research in accounting for income taxes', *Journal of Accounting and Economics*, vol. 53, nos. 1-2, pp. 412-434.
- Graham, J R & Tucker, A 2006, 'Tax shelters and corporate debt policy', *Journal of Financial Economics*, vol. 81, no. 3, pp. 563-594.
- Grinstein, G & Michaely, R 2005, 'Institutional holdings and payout policy', *Journal of Finance*, vol. 60, no. 3, pp. 1389-1426.
- Guenther, D, Matsunaga, S & Williams, B 2017, 'Is tax avoidance related to firm risk?', *The Accounting Review*, vol. 92, no. 1, pp. 115-136.
- Gupta, S & Newberry, K 1997, 'Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data', *Journal of Accounting and Public Policy*, vol. 16, no. 1, pp. 1-34.
- Handley, J C & Maheswaran, K 2008, 'A measure of the efficacy of the Australian imputation tax system', *The Economic Record*, vol. 84, no. 264, pp. 82-94.
- Hanlon, M & Heitzman, S 2010, 'A review of tax research', *Journal of Accounting and Economics*, vol. 50, nos. 2-3, pp. 127-178.
- Hanlon, M & Hoopes, J L 2014, 'What do firms do when dividend tax rates change? An examination of alternative payout responses', *Journal of Financial Economics*, vol. 114, no. 1, pp. 105-124.
- Henderson, A 2016, 'Malcolm Turnbull says tax announcements "likely" before May budget', *ABC News online*, 5 February. Available at: <https://www.abc.net.au/news/2016-02-05/malcolm-turnbull-lays-out-tax-timetable/7142736> (accessed 8 February 2020).

- Ikin, C & Tran, A 2013, 'Corporate tax strategy in the Australian dividend imputation system', *Australian Tax Forum*, vol. 28, no. 3, pp. 523-553.
- Jun, A, Gallagher, D R & Partington, G H 2011, 'Institutional dividend clienteles under an imputation tax system', *Journal of Business Finance and Accounting*, vol. 38, nos. 1-2, pp. 198-224.
- Lennox, C, Lisowsky, P & Pittman, J 2013, 'Tax aggressiveness and accounting fraud', *Journal of Accounting Research*, vol. 51, no. 4, pp. 739-778.
- Li, X & Tran, A 2019, 'The Australian dividend imputation system and corporate tax avoidance', *Australian Tax Forum*, vol. 34, no. 2, pp. 357-399.
- Mackenzie, G & McKerchar, M 2014, 'Tax-aware investment management by public offer superannuation funds in Australia: Attitudes, practices and expectations', *Australian Tax Forum*, vol. 29, no. 2, pp. 249-279.
- McClure, R, Lanis, R, Wells, P & Govendir, B 2018, 'The impact of dividend imputation on corporate tax avoidance: The case of shareholder value', *Journal of Corporate Finance*, vol. 48, pp. 492-514.
- Mills, L F 1998, 'Book-tax differences and Internal Revenue Service adjustments', *Journal of Accounting Research*, vol. 36, no. 2, pp. 343-356.
- Mills, L F, Erickson, M & Maydew, E 1998, 'Investments in tax planning', *Journal of the American Taxation Association*, vol. 20, no. 1, pp. 1-20.
- Organisation for Economic Co-operation and Development (OECD) 2014a, 'Revenue Statistics – Comparative Tables'. Available at: <http://stats.oecd.org/index.aspx?DataSetCode=REV>.
- Organisation for Economic Co-operation and Development (OECD) 2014b, 'Table II.4 - Overall statutory tax rates on dividend income'. Available at: www.oecd.org/ctp/tax-policy/tax-database.htm#C_CorporateCapital.
- Pattenden, K & Twite, G 2008, 'Taxes and dividend policy under alternative tax regimes', *Journal of Corporate Finance*, vol. 14, no. 1, pp. 1-16.
- Petersen, M A 2009, 'Estimating standard errors in finance panel data sets: Comparing approaches', *Review of Financial Studies*, vol. 22, no. 1, pp. 435-480.
- Plesko, G A 2003, 'An evaluation of alternative measures of corporate tax rates', *Journal of Accounting and Economics*, vol. 35, no. 2, pp. 201-226.
- Richardson, G & Taylor, G 2015, 'Income shifting incentives and tax haven utilization: Evidence from multinational US firms', *The International Journal of Accounting*, vol. 50, no. 4, pp. 458-485.
- Roberts, M R & Whited, T M 2013, 'Chapter 7 – Endogeneity in empirical corporate finance', *Handbook of the Economics of Finance*, vol. 2, pt. A, pp. 493-572.
- Taylor, G & Richardson, G 2012, 'International corporate tax avoidance practices: Evidence from Australian firms', *The International Journal of Accounting*, vol. 47, no. 4, pp. 469-496.
- Taylor, G & Richardson, G 2014, 'Incentives for corporate tax planning and reporting: Empirical evidence from Australia', *Journal of Contemporary Accounting and Economics*, vol. 10, no. 1, pp. 1-15.

Tax Justice Network and United Voice 2014, *Who pays for our common wealth? Tax practices of the ASX 200*. Available at: <http://taxjustice.org.au/reports>.

White, A 1980, 'A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity', *Econometrica*, vol. 48, no. 4, pp. 817-838.

APPENDIX: ILLUSTRATIVE EXAMPLE

Two identical debt-free firms exist in two countries that differ only in their shareholder dividend tax policies. Taxable income is assumed to equal book income. The company tax rate is 30%. All profits after tax are paid out as dividends. Panel A compares the after-tax outcomes for shareholders (shareholder level tax rate = 40%) and the total tax paid on the income of each company operating under an imputation versus classical dividend system. Panel B reports the effect that a dividend imputation system has on different types of resident shareholders with different marginal tax rates (0% - 47%). The effect is shown before and after the change effective 1 July 2000.

Panel A: Comparison of imputation and classical systems

	Imputation	Classical
Corporate financial reporting level		
Net profit before tax	\$100	\$100
Less: company tax (30%)	(\$30)	(\$30)
<i>Net profit after tax (available to shareholders)</i>	<i>\$70</i>	<i>\$70</i>
Corporate tax return level		
Taxable income	\$100	\$100
<i>Company tax (30%)</i>	<i>\$30</i>	<i>\$30</i>
Shareholder level		
Dividend received by shareholder	\$70	\$70
Gross-up for franking credit (*)	\$30	\$0
Taxable income	\$100	\$70
Tax on taxable income (40%)	\$40	\$28
Less: franking credit (*)	(\$30)	(\$0)
<i>Net shareholder level tax payable</i>	<i>\$10</i>	<i>\$28</i>
<i>Shareholder after-tax income</i>	<i>\$60</i>	<i>\$42</i>
Total tax paid		
Tax paid by company	\$30	\$30
Tax paid by shareholder	\$10	\$28
<i>Total</i>	<i>\$40</i>	<i>\$58</i>

(*) Under Section 207-20 of the *ITAA 1997*, the assessable income of a shareholder includes the amount of the franking credit and then the shareholder is entitled to a tax offset equal to the franking credit.

Panel B: Impact on shareholder-level tax liabilities under an imputation system

<i>Pre-1 July 2000</i>	Investor 1	Investor 2	Investor 3	Investor 4
Shareholder level				
Cash dividend received	\$70	\$70	\$70	\$70
Gross-up for franking credit	\$30	\$30	\$30	\$30
<i>Taxable income</i>	<i>\$100</i>	<i>\$100</i>	<i>\$100</i>	<i>\$100</i>
Tax rate	0%	15%	30%	47%
Tax payable	\$0	\$15	\$30	\$47
Less: franking credit	(\$0)	(\$15)	(\$30)	(\$30)
<i>Net tax payable/(receivable)</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$17</i>
<i>Post-tax dividend income</i>	<i>\$70</i>	<i>\$70</i>	<i>\$70</i>	<i>\$53</i>
Post-1 July 2000				
Shareholder level				
Cash dividend received	\$70	\$70	\$70	\$70
Gross-up for franking credit	\$30	\$30	\$30	\$30
<i>Taxable income</i>	<i>\$100</i>	<i>\$100</i>	<i>\$100</i>	<i>\$100</i>
Tax rate	0%	15%	30%	47%
Tax payable	\$0	\$15	\$30	\$47
Less: franking credit	\$30	\$30	\$30	\$30
<i>Net tax payable/(receivable)</i>	<i>(\$30)</i>	<i>(\$15)</i>	<i>\$0</i>	<i>\$17</i>
<i>Post-tax dividend income</i>	<i>\$100</i>	<i>\$85</i>	<i>\$70</i>	<i>\$53</i>