A Measure of the Efficacy of the Australian Imputation Tax System*

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We examine the efficacy of the Australian imputation tax system in eliminating the double taxation of dividends. Using Australian Taxation Office data, we find that, on average, 67 per cent of distributed imputation credits were used to reduce personal taxes during 1990–2000, but this has increased to 81 per cent over 2001–2004. Overall, the policy shift to an imputation tax system has resulted in a significant elimination of double taxation. Our results are relevant not only to the ongoing policy debate concerning the efficacy of integration tax systems, but also to equilibrium asset pricing models that require an estimate of the value of imputation credits.

I Introduction

It is widely acknowledged that the double taxation of corporate income under a classical tax system leads to economic distortions in the choice of organisational structure, financial structure and the retention of earnings.[1] In response, a number of countries, including Australia, have implemented partial integration tax systems that seek to ensure that distributed corporate income is taxed only once. In 1987, then treasurer Paul John Keating introduced the proposed imputation tax legislation into parliament by stating: 'This Bill will give effect to the most significant business taxation reform in this country in the post war years – the elimination of the double taxation of company dividends'. However, the concept of double taxation is potentially misleading because it creates 'the impression that over-taxation has occurred merely because two lots of tax happen to have been collected from a single income source. In the final analysis what is important is the total amount of tax a particular income directly and indirectly

[1] See Fullerton *et al*. (1981), Swan (1981), US Department of the Treasury (1992, 2003) and Hubbard (1993, 2005).

bears'.[2] In other words, it is the overall or effective rate of tax that ultimately matters.

The purpose of this paper is to examine whether the elimination of the double taxation of dividends has in fact occurred. In particular, we measure the efficacy of the Australian imputation tax system by the extent to which imputation credits have reduced the personal tax liabilities of equity investors in Australian firms. Although our objective is a modest one, it nonetheless represents a necessary first step in assessing the overall efficacy of the imputation tax system in Australia. We acknowledge upfront that our measure is incomplete, for a full assessment of the imputation tax system would be based on considerations of neutrality, equity and administrative simplicity from both domestic and international perspectives.[3] Particularly important issues in this regard include the treatment of resident tax exempt investors, the treatment of non-resident investors, the treatment of corporate tax preferred income, the interaction with foreign tax credit systems, and the extent to which existing biases are removed and any new biases are created.[4]

Our research contributes to the policy debate concerning the efficacy of integration tax systems in general. In addition, our results are relevant to the estimation of the cost of capital of firms under the Australian imputation tax system. Our main results are set out in Tables 4 and 5. On average, 67 per cent of distributed credits were used to reduce personal taxes during the period 1990–

2000. Since 2001, the first year that a large class of resident investors became entitled to a cash refund of excess imputation credits, 81 per cent of distributed credits have been used to reduce personal taxes. Overall, the policy shift to an imputation tax system has resulted in a significant elimination of double taxation. We also present preliminary evidence of the impact of the imputation tax system on the historic rate of return to equity investors. This paper is organised as follows: in Section II, we outline the key elements of the taxation framework. We discuss our data and methodology in Section III and our results are presented in Section IV. In Section V, we consider the impact on the rate of return to equity investors and we conclude in the final section.

II The Taxation Framework

Details of the Australian imputation tax system and the taxation of equity investors in Australian resident companies from 1988 to 2004 are available in publications such as the *Australian Master Tax Guide* (CCH Australia). There are five main classes of resident taxpayer. Resident individuals pay tax based on a progressive scale of tax rates. Resident companies are generally subject to a flat rate of tax but certain types are subject to special rules. From 1989, resident complying funds that meet certain regulatory conditions are subject to concessional tax treatment; however, non-complying funds are taxed at the highest marginal rate of tax. Prior to 1989, complying funds were tax exempt. Resident trusts and partnerships are taxed on a pass-through basis rather than as separate entities. Non-resident dividend withholding tax (DWT) is imposed on dividends paid by a resident company to non-residents. The complete treatment of the dividend in the hands of the non-resident will be determined by the tax laws of the recipient's home country. If the home country also taxes the dividend, then the recipient might be entitled to a credit against home country tax for the DWT levied by Australia. The availability of credits is determined, on a country-by-country basis, by a combination of legislative provisions and double tax agreements (DTA), which are designed to avoid international double taxation and to prevent fiscal evasion.[5] Of particular importance,

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[2] Australian Financial System Inquiry (1981, p. 210). The undertaxation or overtaxation of income earned through a company will depend primarily on the rate differential between companies and individuals and the length of time earnings are retained at the company level. As Hubbard (2005, p. 99) states, in relation to the USA, 'At various times and in certain industries, the combination of the corporate tax rate and the effective tax rate on capital gains has been greater than, equal to, and less than the individual income tax rate on business income. In this way, differences among tax rates may reduce, eliminate or even reverse the bias against investment by corporations. In other cases, sophisticated tax planning or "tax shelters" can reduce or eliminate double taxation (and even a portion of single taxation)'.

[3] See Australian Financial System Inquiry (1981), Cheok (1981), Review of Business Taxation (1999a,b) and Department of the Treasury, Australian Government (2002).

[4] For a discussion of various tax-induced biases that exist under the Australian imputation tax system, see, for example, Officer (1981), Finn (1981), Howard and Brown (1992), Benge (1997, 1998, 2001) and Review of Business Taxation (1999a).

[5] In considering the effect of Australian taxes, including DWT, on the final after-tax return to non-resident investors, the Review of Business Taxation (1998, p. 176) suggests 'it is notoriously difficult to determine the true value to non-residents of credits which may be available to them in their home jurisdictions for taxes ... paid in Australia'.

certain dividends are exempt from DWT, including franked dividends and dividends paid to foreign super/pension funds provided the fund is exempt from tax in its home country.

The imputation tax system seeks to eliminate the double taxation of dividends by imputing to resident shareholders a credit for tax paid by a resident company on the underlying profits from which the dividend is paid. A resident company may pay two kinds of dividends: unfranked dividends, which represent distributions of income not subject to Australian tax at the corporate level; and franked dividends, which represent distributions of income that have been subject to Australian corporate tax. Imputation credits are preserved through interposed companies until they can be distributed, as part of a franked dividend, to non-corporate shareholders. The effect of the receipt of a franked dividend depends on the tax status of the recipient. Resident individuals and funds are taxed on a gross up and credit basis where the grossed up value of the dividend is included in assessable income and the imputation credit gives rise to a tax rebate. Prior to 1 July 2000, the franking rebate allowed to a taxpayer could not exceed its tax liability and any unused rebate was lost. Since then, resident individuals, resident complying funds, life assurance companies and certain tax-exempt charities are entitled to a refund of any excess imputation credits. The share of net income of a resident trust or partnership that is attributable to franked dividends is generally taxed in the hands of the beneficiaries or partners in the same way as if it had been received directly. Non-residents are not entitled to the franking rebate. Explicit trading in imputation credits is prohibited and anti-avoidance provisions apply to prohibit differential franking arrangements, implicit trading schemes such as those around ex-dividend dates, and dividend streaming schemes.

To measure the efficacy of the imputation tax system, we compute a utilisation value of imputation credits. We define this utilisation value as the incremental reduction in personal tax, if any, which arises from the receipt of a franked dividend compared to the receipt of an otherwise equivalent unfranked dividend. This value will vary according to the tax status and domicile of the investor.

For resident individuals and funds, imputation credits are taxable to the investor and, hence, the value of imputation credits, expressed on an after-company-before-personal-tax value basis, is equal to the franking rebate allowed by the Australian Taxation Office (ATO). Prior to 1 July 2000, the

rebate is non-refundable so the amount allowed will not necessarily equal the amount of imputation credits received by the investor. The incremental reduction in Australian personal taxes represents the after-company-after-personal-tax value of imputation credits, which will by definition vary with the investor's personal tax rate. This is illustrated in Table 1, which sets out the final after-tax return arising from the receipt of a franked dividend compared to the receipt of an otherwise equivalent unfranked dividend, for several classes of resident investor. In addition, in the absence of trading opportunities, imputation credits have no value to resident tax-exempt entities.

For non-resident investors, the situation is more complex as we need to consider the effect of imputation credits on the investor's Australian withholding tax liabilities, its home country personal tax liabilities and whether these two items interact. Non-residents come from a variety of countries and take a variety of forms including individuals, companies, funds, trusts and partnerships. It is not feasible to consider all possible combinations in detail. Therefore, we assume that all non-resident investors may be classified according to one of three broad types: (i) the investor is tax exempt in its home country, for example, US and UK pension funds (referred to here as a Type I non-resident); (ii) the investor is domiciled in a country with which Australia has a DTA and Australian DWT is fully creditable against any home country personal tax liabilities (Type II non-resident); and (iii) the investor is domiciled in a country with which Australia does not have a DTA and Australian DWT is not creditable against any home country personal tax liabilities (Type III non-resident). Type III non-residents include investors operating out of tax-haven countries.[6] In Table 2 we set out a comparison of the final after-tax returns to each class of non-resident investor, from the receipt of a franked dividend and an otherwise equivalent unfranked dividend. The reduction in worldwide personal taxes represents the after-company-after-personal-tax value of imputation credits and the

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[6] In considering whether a jurisdiction is a tax haven, the ATO uses the following criteria adopted by the OECD: (i) imposition of nil or nominal taxes; (ii) lack of effective exchange of information; and (iii) lack of transparency. As at December 2003, there were 38 tax havens identified by the OECD, including the Bahamas, Bermuda, Cayman Islands, Cyprus, Jersey, Monaco, Seychelles and Vanuatu. For further details, see Australian Tax Office (2004).

TABLE 1
Indicative Utilisation Value of Imputation Credits to Resident Investors

Investor type	LPTR1		LPTR2		HPTR	
Dividend type	Unfranked	Franked	Unfranked	Franked	Unfranked	Franked
Dividend received	64.00	64.00	64.00	64.00	64.00	64.00
+ imputation credit	0.00	36.00	0.00	36.00	0.00	36.00
Taxable income	64.00	100.00	64.00	100.00	64.00	100.00
Tax on taxable income	9.60	15.00	9.60	15.00	30.08	47.00
– Franking rebate	0.00	36.00	0.00	15.00	0.00	36.00
Tax payable	9.60	–21.00	9.60	0.00	30.08	11.00
After-tax return	54.40	85.00	54.40	64.00	33.92	53.00
Incremental after-tax return		30.60		9.60		19.08
Incremental franking rebate		36.00		15.00		36.00
Utilisation rate		1.00		0.42		1.00

Note: This table sets out the final after-tax return arising from the receipt of a franked dividend compared to the receipt of an otherwise equivalent unfranked dividend for three classes of resident investor, assuming the credits are not refundable. LPTR1 is an investor with a low personal tax rate of 15 per cent and sufficient other income to absorb any excess franking rebate. LPTR2 is also an investor with a low personal tax rate of 15 per cent but with insufficient other income to absorb any excess franking rebate. HPTR is an investor with a high personal tax rate of 47 per cent. Calculations are based on a $A64-unfranked dividend, a $A64-fully franked dividend and a corporate tax rate of 36 per cent. The incremental after-tax return (reduction in personal tax) represents the after-company-after-personal-tax value of imputation credits to the investor. The incremental franking rebate represents the after-company-before-personal-tax value of imputation credits. The after-company-before-personal-tax utilisation rate of imputation credits, equals the after-company-before-personal-tax utilisation value of imputation credits expressed as a proportion of the amount of credits received by the investor (and included in its taxable income). For LPTR2, unused imputation credits effectively increase its personal tax rate, with respect to the franked dividend, to the underlying corporate tax rate.

incremental saving in DWT (net of foreign tax credits in the investor's home country) represents the after-company-before-personal-tax value of imputation credits. The analysis shows that, in the absence of trading opportunities, imputation credits have no value to Types I and II non-residents. However, for Type III non-residents, the value of an imputation credit is equal to the exemption from Australian DWT.

III Data and Methodology

The primary data for the income years 1988–2004 are drawn from the annual ATO publication, *Taxation Statistics*. The publication contains aggregated income and taxation statistics for different classes of taxpayers compiled from annual tax returns submitted to the ATO. The particular items disclosed each year is not uniform across the 17-year period.

We estimate the aggregate amount of imputation credits received by investors (Credits Received), the aggregate amount of imputation credits used by investors to reduce their worldwide personal tax liabilities (Credits Used) and the aggregate amount of imputation credits not used by investors to reduce their personal tax liabilities (Excess Credits).

Credits Used represents the after-company-before-personal-tax utilisation value of imputation credits, which when expressed as a proportion of credits received, gives our measure of the *ex post* after-company-before-personal-tax utilisation rate of imputation credits. A 100 per cent utilisation rate represents a full elimination of double taxation.

(i) Resident Individuals

For each year from 1988 to 2000, we extract semi-aggregated data (by grade of taxable income) on franked and unfranked dividends received, primary imputation credits received (direct by the investor), subsidiary imputation credits received (the share of imputation credits received as part of a distribution from a trust or partnership), gross tax payable, net tax payable, Medicare levy and individual rebate items claimed. If a taxpayer is entitled to multiple rebates, then a key sequencing issues arises from the fact that the total rebate allowed to a taxpayer cannot exceed the amount of tax otherwise payable (excluding Medicare) and any excess non-refundable rebate is lost. Because we wish to examine the incremental effect of the receipt of a franked dividend compared to the receipt of an otherwise equivalent unfranked dividend,

Table 2
Indicative Utilisation Value of Imputation Credits to Non-resident Investors

Investor type	Type I		Type II		Type III	
Dividend type	Unfranked	Franked	Unfranked	Franked	Unfranked	Franked
Australian resident company						
Gross dividend paid	64.00	64.00	64.00	64.00	64.00	64.00
– Australian DWT	0.00	0.00	9.60	0.00	19.20	0.00
Net dividend paid	64.00	64.00	54.40	64.00	44.80	64.00
Non-resident investor						
Dividend Received	64.00	64.00	54.40	64.00	44.80	64.00
– Home country tax payable	0.00	0.00	9.60	9.60	6.72	9.60
+ Credit for Australian DWT	0.00	0.00	9.60	0.00	0.00	0.00
After-tax return	64.00	64.00	54.40	54.40	38.08	54.40
Worldwide personal taxes						
Australia	0.00	0.00	9.60	0.00	19.20	0.00
Home country	0.00	0.00	0.00	9.60	6.72	9.60
Total	0.00	0.00	9.60	9.60	25.92	9.60
Incremental after-tax return		0.00		0.00		16.32
Incremental saving in net DWT		0.00		0.00		19.20
Underlying imputation credit		36.00		36.00		36.00
Utilisation rate		0.00		0.00		0.53

Note: This table sets out the final after-tax return arising from the receipt of a franked dividend compared to the receipt of an otherwise equivalent unfranked dividend for three classes of non-resident investor. A Type I non-resident investor is tax exempt in its home country. A Type II non-resident investor is (tax) domiciled in a country with which Australia has a double tax agreement (DTA) and Australian dividend withholding tax (DWT) is fully creditable against any home country personal tax liabilities. A Type III non-resident investor is domiciled in a country with which Australia does not have a DTA and Australian DWT is not creditable against any home country personal tax liabilities. Calculations are based on: a $A64-unfranked dividend, a $A64-fully franked dividend and an Australian corporate tax rate of 36 per cent; a DWT rate of 15 per cent for Type II investors and 30 per cent for Type III investors; a home country personal tax rate of 15 per cent (of the dividend grossed up for DWT) for Type II investors and 15 per cent (of the dividend) for Type III investors. The incremental after-tax return (reduction in worldwide personal taxes) represents the after-company-after-personal-tax value of imputation credits. The incremental saving in DWT (net of foreign tax credits in the investor's home country) represents the after-company-before-personal-tax value of imputation credits. The after-company-before-personal-tax utilisation rate of imputation credits, equals the after-company-before-personal-tax value of imputation credits expressed as a proportion of the amount of underlying imputation credits. For Type II investors: (i) the exemption from DWT on franked dividends is of no benefit to the investor (other than timing) as it simply transfers taxation revenue from Australia to the other country; and (ii) the incremental after-tax return is independent of the home country personal tax rate (because the credit for Australian DWT would normally be limited to the amount of home country tax payable). For Type III investors, the incremental after-tax return is equal to the incremental saving in net DWT multiplied by one minus the home country personal tax rate.

we assume that if a taxpayer is entitled to multiple rebates, then the franking rebate is allowed last. On this basis, our estimates for each grade of taxable income are: (i) the total rebates allowed by the ATO is equal to gross tax payable plus Medicare levy less net tax payable; (ii) the franking rebate allowed (Credits Used) is equal to the greater of, total rebates allowed less the sum of all other rebates claimed, and zero; (iii) Credits Received is equal to the sum of primary and subsidiary imputation credits received by the taxpayer and included in its taxable income; and (iv) Excess Credits is equal to Credits Received less Credits Used. Summing across all grades of taxable income gives the aggregate estimates for the tax year. In the absence of data

on individual taxpayers, using semi-aggregated rather than aggregate data will produce a more accurate estimate. From 1 July 2000, resident individuals are entitled to a cash refund of excess imputation credits. Therefore, we assume, consistent with investor rationality, that Excess Credits is zero for the 2001–2004 income years.

(ii) Resident Funds

Starting with the 1989 tax year, we extract semi-aggregated data on franked and unfranked dividends received, primary imputation credits received, gross tax payable, net tax payable and net foreign income. Subsidiary imputation credits received is not disclosed and, hence, based on data

for 2001–2004, we assume that primary imputation credits represent 70 per cent of the total credits received each year (Credits Received). The two principal rebates available to funds are the franking rebate and foreign tax credits.[7] Data on foreign tax credits are only available from 1998; hence, estimates prior to that time are based on the level of net foreign income. Our estimates, for each grade of taxable income, are: (i) total rebates allowed by the ATO is equal to gross tax payable less net tax payable; (ii) franking rebate allowed (Credits Used) is equal to the greater of, total rebates allowed less foreign tax credits claimed, and zero; and (iii) Excess Credits is equal to Credits Received less Credits Used. Summing across all grades of taxable income gives the aggregate estimates for the tax year.

For each year from 1990 to 2000, we proceed as above except data on franked dividends, unfranked dividends and primary imputation credits received are not separately disclosed. Instead, data are available on 'gross dividends received', which we split into its three components using the following simple model. Let G, D^F, D^U, I represent gross dividends (fully) franked dividends, unfranked dividends and primary imputation credits where D^F, D^U, I are unknown. Let t represent the underlying corporate tax rate and k the ratio of franked dividends to total dividends. Then, it follows that:

$$D^F = \frac{Gk(1-t)}{1-t+kt} \quad I = \frac{tD^F}{1-t} \quad D^U = G - D^F - I. \tag{1}$$

In using Equation (1), we assume the underlying corporate tax rate each year is equal to the rate implied from the actual amount of primary imputation credits and franked dividends received by resident individuals during that year and, based on data for 2001–2004, the ratio of franked to total dividends received each year is 85 per cent. From 1 July 2000, resident complying funds are entitled to a cash refund of excess imputation credits. For each year from 2001 to 2004, Credits Received is equal to the sum of the franking rebate allowed and refundable credits (disclosed separately) and consistent with investor rationality, we assume Excess Credits is zero.

(iii) Non-residents

Desired data on unfranked dividends, franked dividends and imputation credits paid to non-residents are not available from the ATO. The only

relevant data that might be sourced from *Taxation Statistics* is the aggregate collection of DWT during the 1988–2001 financial years. In the absence of detailed statistics on the distribution of non-resident investors by tax domicile and type of entity, we follow the approach in Section II and assume that all non-resident investors are either Type I, II or III non-residents. For 1988–2000, we estimate the amount of unfranked dividends, franked dividends and imputation credits paid to each class of non-resident each year using the following simple model. Let DWT, D_I^F, D_{II}^F, D_{III}^F, D_I^U, D_{II}^U, D_{III}^U, I_I, I_{II}, I_{III} represent the aggregate amount of DWT arising in relation to dividends paid to non-residents, the amounts of (fully) franked dividends paid to Types I, II and III, unfranked dividends paid to Types I, II and III, and underlying imputation credits on franked dividends paid to Types I, II and III, where only DWT is known. Assume d_{II} (d_{III}) is the rate of DWT imposed on dividends paid to Type II (Type III) non-residents, t is the underlying corporate tax rate, r_1 is the ratio of Type II to Type III non-residents, r_2 is the ratio of Type I to Type II non-residents and n is the ratio of franked dividends to total dividends (paid to all non-residents). Then, it follows that:

$$D_{II}^U = \frac{DWT}{d_{II} + d_{III}/r_1} \quad D_{III}^U = \frac{D_{II}^U}{r_1} \quad D_I^U = r_2 D_{II}^U, \tag{2}$$

and for $i =$ I, II, III:

$$D_i^F = \frac{nD_i^U}{1-n} \quad I_i = \frac{tD_i^F}{1-t}. \tag{3}$$

In using Equations (2) and (3), we assume that DWT is imposed at a rate of 15 per cent (30 per cent) on unfranked dividends paid to Type II (Type III) non-residents, the underlying corporate tax rate each year is equal to the rate implied from the actual amount of primary imputation credits and franked dividends received by resident individuals during that year, the ratio of franked to total dividends paid to non-residents each year is 63 per cent for 1991–2001 and 50 per cent for 1988–1990[8] and, based on Australian Bureau of

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[7] For example, in 2001, resident funds claimed $A1.4bn in imputation credits but only $A70m in foreign tax credits.

[8] For each year from 1991 to 2001, we extract data from *Taxation Statistics* on the aggregate amount of franked dividends paid by Australian resident companies. From this we deduct the amount of franked dividends received by resident individuals, funds, partnerships and trusts combined. The balance then represents the aggregate amount of franked dividends paid to all other investor classes combined including non-residents, life assurance companies, other companies and any tax exempt entities not otherwise included in one of the previously mentioned

Statistics data, 30 per cent of non-residents are Type I, 60 per cent are Type II and 10 per cent are Type III.[9] From 2002, DWT is no longer separately disclosed and, therefore, based on data for 1992–2001, we assume that non-residents receive 25 per cent of the total dividends paid to individuals, funds, trusts, partnerships and non-residents each year of which 63 per cent are franked. In accordance with Table 2, Credits Received is equal to the amount of imputation credits underlying the franked dividends paid to Types I,

classes. It is not possible to break this balance down further into separate amounts attributable to each of these other investor classes. We repeat the procedure in relation to unfranked dividends and then use the resultant ratio of franked to total dividends as the basis of our estimate of the ratio of franked to total dividends paid to non-resident investors over this period. Specifically, the ratio of franked to total dividends paid to all other investor classes, including non-residents, averaged 63 per cent from 1991 to 2001 and, therefore, we take this as our estimate of the ratio of franked to total dividends paid to non-resident investors over this period. We assume a lower rate for the 3-year period from 1988 to 1990 prior to the introduction of the antidividend streaming rules in 1990.

[9] Australian Bureau of Statistics (2003) presents data on Australia's international investment position by selected countries, including the total level of portfolio and direct (non-portfolio) equity investment in Australia by foreign entities. For this purpose, direct investment is an investment undertaken by one entity with the objectives of obtaining or sustaining a lasting interest in and exercising a significance degree of influence in the management of another entity, while portfolio investment is more passive or speculative in nature. Over the 10-year period from 1992 to 2001, 89 per cent on average of the total level of foreign equity investment in Australia was attributable to investors from OECD countries, whereas 29 per cent on average was attributable to portfolio investors from the UK and USA. We use these data as the basis of our estimate of the split of non-residents into Types I, II and III. Specifically, we assume that the whole of the US/UK portfolio investment is undertaken by US and UK pension funds, who are tax exempt in their home countries, and, thus, we assume that Type I non-residents account for 30 per cent of all foreign equity investors in Australia. We also assume that Type III non-residents largely come from non-OECD countries and, thus, Type III non-residents account for 10 per cent of all foreign equity investors in Australia. The balance of 60 per cent is then attributable to (portfolio and non-portfolio) Type II non-residents. We note the limitation expressed by the Australian Bureau of Statistics, that it is inherently difficult to estimate the precise nature of non-resident equity investment in Australia because 'where nominees are involved, the issuer generally does not know who holds the share'.

II and III non-residents and Credits Used is equal to the corresponding amount of Australian DWT saved by Type III non-residents.

We note that, due to a lack of data, our estimates do not include superannuation funds operated by life assurance companies (to whom imputation credits are valuable) but also our estimates do not include tax-exempt entities, such as State government and educational, religious and community service organisations (to whom imputation credits are of no value). In addition, except as discussed in footnote 8, we have not used the aggregated data for resident companies contained in *Taxation Statistics* due to the unknown extent to which double counting is present.

IV Results

Table 3 sets out estimates of the aggregate amounts of franked dividends and total dividends received by various classes of equity investors in Australian resident companies over the 17 income years from 1988 to 2004 inclusive. From 1990 to 2000, $A10.7bn in dividends was received by resident individuals, partnerships, trusts, funds and non-residents each year on average, including $A8.8bn in franked dividends. Resident individuals account for 37 per cent (42 per cent) of the total (franked) dividends received with another 21 per cent (22 per cent) attributable to resident trusts. On average, 81 per cent of total dividends received by resident individuals, partnerships, trusts, funds and non-residents each year have been franked, with resident individuals receiving 91 per cent of their dividends, on average, in the form of franked dividends. For 2001–2004, a period during which resident individuals, resident complying funds, life assurance companies and certain tax-exempt charities may claim a refund for excess imputation credits, $A27.7bn in dividends were received by resident individuals, partnerships, trusts, funds and non-residents each year on average of which $A23.4bn or 84 per cent was franked. Of this amount, 39 per cent was received by resident individuals and 29 per cent by resident trusts.

Table 4 reports our estimates of the aggregate utilisation rate of imputation credits, by various classes of equity investors in Australian resident companies over the 17 income years from 1988 to 2004 inclusive. Referring to the first panel, from 1990 to 2000, the amount of imputation credits received by resident individuals and funds (either directly or as part of a distribution from a resident trust or partnership) and non-residents in aggregate, has averaged $A4.9bn each year of which 57 per cent

TABLE 3
Aggregate Dividends Received by Resident and Non-resident Investors

Franked dividends	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	1.1	3.0	1.8	1.9	1.8	2.1	2.5	3.8	4.4	4.6	5.2	5.6	6.7	8.8	7.7	9.4	11.0	3.7	9.2	5.2
Funds	ND	0.4	0.7	0.6	0.7	0.7	0.9	1.0	1.7	1.8	2.0	2.1	2.2	2.8	2.5	2.7	3.7	1.3	2.9	1.7
Trusts	ND	ND	0.4	0.3	0.6	0.8	1.0	1.9	2.4	2.5	2.8	3.5	5.0	5.6	5.6	7.1	9.2	1.9	6.9	3.2
Partnerships	ND	ND	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1
Non-residents	1.0	0.8	1.0	1.5	0.7	1.2	1.2	1.6	2.2	2.3	2.5	2.2	3.2	3.2	3.7	4.4	5.4	1.8	4.2	2.4
Total	ND	ND	3.9	4.4	3.8	5.0	5.6	8.3	10.8	11.3	12.7	13.5	17.1	20.6	19.5	23.8	29.5	8.8	23.4	12.7

Total dividends	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	1.5	3.3	2.0	2.1	2.0	2.3	2.8	4.1	4.8	4.9	5.6	6.0	7.6	9.5	8.1	9.9	11.5	4.0	9.8	5.6
Funds	ND	0.5	0.8	0.7	0.8	0.9	1.1	1.1	2.0	2.1	2.3	2.5	2.5	3.6	2.9	3.1	4.0	1.5	3.4	2.0
Trusts	ND	ND	0.5	0.3	0.6	1.0	1.1	2.1	2.7	2.9	3.2	3.9	5.8	6.3	6.2	7.9	10.0	2.2	7.6	3.6
Partnerships	ND	ND	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1
Non-residents	2.1	1.6	2.0	2.5	1.1	2.0	1.9	2.5	3.4	3.7	4.0	3.4	5.1	5.1	5.8	7.1	8.6	2.9	6.6	3.9
Total	ND	ND	5.3	5.7	4.6	6.2	7.0	10.0	13.0	13.8	15.3	16.0	21.1	24.8	23.3	28.3	34.3	10.7	27.7	15.2
DWT	125	97	117	109	50	88	84	110	153	165	177	152	226	226	ND	ND	ND	–	–	–

Proportion franked	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	0.73	0.91	0.89	0.91	0.91	0.91	0.90	0.91	0.93	0.94	0.94	0.94	0.88	0.92	0.94	0.95	0.96	0.91	0.94	0.92
Funds	ND	0.77	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.80	0.86	0.85	0.90	0.85	0.85	0.85
Trusts	ND	ND	0.77	0.89	0.92	0.87	0.87	0.88	0.90	0.84	0.87	0.88	0.87	0.89	0.89	0.90	0.92	0.87	0.90	0.88
Partnerships	ND	ND	0.69	0.74	0.73	0.74	0.64	0.78	0.80	0.83	0.83	0.80	0.76	0.82	0.83	0.87	0.91	0.76	0.86	0.78
Non-residents	0.50	0.50	0.50	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.62	0.63	0.62
Total	ND	ND	0.73	0.78	0.83	0.80	0.81	0.83	0.83	0.82	0.83	0.84	0.81	0.83	0.84	0.84	0.86	0.81	0.84	0.82

Note: This table sets out estimates of the aggregate amounts of franked dividends and total dividends received by various classes of resident and non-resident equity investors in Australian companies over the 17 years from 1988 to 2004 inclusive. Proportion Franked represents the ratio of franked dividends to total dividends. DWT represents the aggregate amount of Australian dividend withholding tax imposed on dividends paid to non-resident investors. Data sourced from the Australian Taxation Office (ATO) indicate a material spike in DWT in 2000 that might be due to timing differences in the reporting of dividends paid and the collection of DWT by the ATO. In preparing the above table we have smoothed the reported amounts for 2000 and 2001 by taking a simple average over the 2-year period. Amounts (except the proportion franked) are shown in $Abn. ND indicates data are not available.

TABLE 4

Aggregate Utilisation Rate of Imputation Credits by Resident and Non-resident Investors

Credits received	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	1.3	3.8	1.4	1.6	1.5	1.7	2.0	2.8	3.2	3.3	3.8	4.1	4.9	5.9	4.3	5.2	6.2	2.8	5.4	3.5
Funds	ND	0.5	0.6	0.5	0.6	0.7	0.8	0.8	1.3	1.4	1.6	1.7	1.7	1.8	1.4	1.7	2.4	1.1	1.8	1.3
Non-residents	1.0	0.8	0.6	1.0	0.5	0.8	0.8	0.9	1.2	1.3	1.4	1.2	1.8	1.6	1.6	1.9	2.3	1.0	1.9	1.3
Total	2.3	5.1	2.7	3.1	2.5	3.2	3.6	4.6	5.8	6.0	6.8	7.0	8.4	9.4	7.3	8.8	10.9	4.9	9.1	6.0

Credits used	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	1.3	3.7	1.4	1.5	1.4	1.5	1.9	2.7	3.0	3.1	3.6	3.7	4.4	5.9	4.3	5.2	6.2	2.6	5.4	3.3
Funds	ND	0.3	0.4	0.4	0.4	0.5	0.6	0.4	0.8	0.9	1.0	1.1	1.1	1.8	1.4	1.7	2.4	0.7	1.8	1.0
Non-residents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Total	1.3	4.0	1.8	1.9	1.8	2.0	2.5	3.1	3.9	4.1	4.7	4.8	5.7	7.8	5.8	7.1	8.7	3.3	7.4	4.4

Excess credits	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.2
Funds	ND	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.5	0.5	0.5	0.6	0.6	0.0	0.0	0.0	0.0	0.4	0.0	0.3
Non-residents	1.0	0.7	0.6	0.9	0.4	0.8	0.7	0.9	1.2	1.2	1.3	1.1	1.7	1.5	1.5	1.8	2.1	1.0	1.7	1.2
Total	1.0	1.1	0.9	1.2	0.8	1.1	1.1	1.4	1.9	2.0	2.1	2.2	2.8	1.5	1.5	1.8	2.1	1.6	1.7	1.6

Utilisation rate	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Mean 1990–2000	Mean 2001–2004	Mean 1990–2004
Individuals	0.94	0.96	0.95	0.95	0.93	0.89	0.92	0.94	0.94	0.93	0.94	0.89	0.90	1.00	1.00	1.00	1.00	0.92	1.00	0.94
Funds	ND	0.65	0.64	0.65	0.62	0.70	0.71	0.54	0.61	0.65	0.66	0.65	0.65	1.00	1.00	1.00	1.00	0.64	1.00	0.74
Non-residents	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.07	0.07	0.07	0.05	0.07	0.05
Total	0.55	0.79	0.67	0.61	0.70	0.64	0.69	0.69	0.67	0.67	0.69	0.69	0.67	0.83	0.80	0.80	0.80	0.67	0.81	0.71

Note: This table sets out estimates of aggregate utilisation rate of imputation credits by various classes of resident and non-resident equity investors in Australian companies over the 17 years from 1988 to 2004 inclusive. Credits Received represents the aggregate amount of imputation credits received by investors. Credits Used represents the aggregate amount of imputation credits that are used by investors to reduce their worldwide personal tax liabilities (i.e. the after-company-before-personal-tax utilisation value of imputation credits). Excess Credits represents the aggregate amount of imputation credits that are not used by investors to reduce their worldwide personal tax liabilities. The after-company-before-personal-tax utilisation rate of imputation credits is equal to the ratio of Credits Used to Credits Received. Amounts (except for the utilisation rate) are shown in $Abn. ND indicates that data are not available.

has gone to resident individuals. Of this amount, an average of $A3.3bn each year has been used by resident individuals, funds and non-residents to reduce their worldwide personal tax liabilities, leaving on average $A1.6bn in excess imputation credits per year. For 2001–2004, $A9.1bn in credits have been received each year on average of which $A7.4bn has been used leaving $A1.7bn in excess credits each year. As shown in the last panel of the table, this corresponds to an average utilisation rate of 0.67 over 1990–2000 and 0.81 over 2001–2004, with the latter period reflecting the refundability of excess imputation credits to certain resident investors since 1 July 2000. With respect to the different classes of investors, resident individuals and funds have consistently obtained substantial value from imputation credits, but little value has been obtained by non-residents who have an average utilisation rate of only 0.05 over the entire 1990–2004 period. This should not be surprising because, in the absence of trading opportunities, imputation credits are worthless to most investors in this class (i.e. to Types I and II non-residents). In summary, there has been a significant elimination of double taxation of dividends since 1990 for resident shareholders in Australian firms but not for foreign shareholders. We note that from a policy perspective, a 100 per cent utilisation value of credits is not necessarily desirable. For example, according to Munro (1981, p. 178), 'For a net capital importer such as Australia, then one of the major reasons for the retention of a separate corporations tax is the need to levy the wealth that foreign owners derive from Australian sources'. Justification for taxing non-residents on their Australian source income is commonly based on arguments involving the local provision of infrastructure and economic resources used in generating that income.[10] Allowing refunds of imputation credits to non-residents would then be contrary to this objective and would result in a transfer of Australian taxation revenue to non-resident investors and foreign tax authorities.[11]

V Impact on the Rate of Return to Equity Investors

The imputation tax system has brought about a fundamental change in the nature of returns earned by equity investors in Australian resident companies and, hence, a fundamental change in how we measure the rate of return to investors.[12] Specifically, pre-imputation, the after-company-before-personal-tax return on equity consisted of two components: dividends and capital gains. Comparable returns post-imputation, consist of three components: dividends, capital gains and the value of any attached imputation credits. Existing accumulation indices in Australia only measure returns attributable to capital gains and dividends and, therefore, implicitly attribute zero value to imputation credits. In this section, we provide preliminary evidence of the impact of the imputation system on the rate of return to equity investors and, accordingly, preliminary evidence on the extent to which Australia is integrated into world capital markets.

We estimate the annual (discrete) rate of return attributable to dividends and capital gains using the Australian Securities Exchange (ASX) All Ordinaries accumulation index for the period 1958–2005.[13] To estimate the annual rate of return attributable to imputation credits, we follow Brailsford et al. (2008) and use the annual imputation credit yield on the ASX All Ordinaries index for the period 1998–2005, sourced from the ATO. For the period 1988–1997, we estimate the annual imputation credit yield on the index using the ASX All Ordinaries accumulation and price indices and assuming that dividends are, on average, 75 per cent franked at the prevailing corporate tax rate. The imputation credit yield measures the amount of imputation credits distributed on the shares underlying the index. In this paper, we estimate the value of the imputation credit yield using the average imputation credit utilisation rates set out in Table 4.[14] Our estimate of the annual (discrete) grossed up rate of return attributable to dividends, capital gains and imputation credits is then equal to the sum of the return on the ASX All Ordinaries accumulation index and the estimated value of the corresponding imputation credit yield for that year.

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[10] Review of Business Taxation (1999a, p. 22).

[11] Similarly, according to the Review of Business Taxation (1999b, p. 49): 'If franking credit trading were allowed non-residents shareholders could effectively sell their franking credits to residents. This would allow them to obtain at least a partial refund of the tax paid on Australian source income at the entity level and would not be consistent with the intentions of tax policy'.

[12] Officer (1994).

[13] Brailsford et al. (2007) caution the use of data prior to 1958 due to concerns over data quality.

[14] For example, the imputation credit yield on the index for (the year end December) 2004 is 1.6 per cent. Based on an average utilisation rate of 0.80, the rate of return to investors due to imputation credits in 2004 is 1.3 per cent.

TABLE 5
Historic Rate of Return to Equity Investors

	Equity return		Equity premium	
Period	Dividends and capital gains only	Dividends, capital gains and the value of imputation credits	Dividends and capital gains only	Dividends, capital gains and the value of imputation credits
Pre-imputation: 1958–1987				
Mean	0.154**	0.154**	0.070	0.070
Standard error	0.047	0.047	0.047	0.047
Post-imputation: 1988–2005				
Mean	0.128**	0.142**	0.051	0.064
Standard error	0.034	0.034	0.035	0.036
Difference in means (1958–1987 vs. 1988–2005)				
t-statistic	0.653	0.827	0.742	0.920
Full period: 1958–2005				
Mean	0.145**	0.150**	0.063**	0.068**
Standard error	0.032	0.032	0.032	0.032

Note: This table sets out the historic rate of return to equity investors over the period 1958–2005. The first column shows the annual equity return on the ASX All Ordinaries accumulation index. The second column shows the equity return grossed up for the value of imputation credits. The third and fourth columns present corresponding estimates of the annual equity risk premium which is equal to the equity return less the yield on long-term government bonds. ** Indicates significant at the 5-per cent level based on a two-tailed *t*-test.

In Table 5 we set out estimates of the historic rate of return to equity investors over the period 1958–2005, including estimates for the pre-imputation period from 1958 to 1987 and the post-imputation period from 1988 to 2005. In the first two columns, we show the historic equity return from dividends and capital gains only and the historic equity return grossed up to include the value of imputation credits. The equity returns averaged 15.4 per cent per annum over 1958–1987. Post-imputation the average return is 12.8 per cent per annum if imputation credits are ignored and 14.2 per cent per annum if imputation credits are included; however, the differences are not statistically significant. All else equal, if Australia was fully integrated into world capital markets, then following the introduction of the imputation tax system, we would expect to see little or no change in the return when imputation credits are ignored and an increase in the return when imputation credits are included.

Further evidence is provided in the third and fourth columns of Table 5, where we set out estimates of the historic equity risk premium over the period 1958–2005. For each year in our sample, the equity premium is equal to the equity return less the yield on long-term government bonds.[15] The equity premium averaged 7.0 per cent per annum over 1958–1987, 5.1 per cent over 1988–2005 if imputation credits are ignored and 6.4 per cent over 1988–2005 if imputation credits are included. Again the differences are not statistically significant, but all else equal, if Australia was fully integrated into world capital markets, then, post-imputation, we would expect to see little or no change in the equity premium when imputation credits are ignored and an increase in the equity premium when imputation credits are included. Due to the small sample sizes and large standard errors, these results can only be considered preliminary. Notwithstanding, because corporate tax is essentially a pre-payment of personal tax, post-imputation, then the extent to which imputation credits are valued implies that returns derived from

[15] Yields on 10-year government bonds, at or near the end of December each year, are taken from Butlin (1977) for the period 1958–1973, the RBA Statistical Bulletin for 1974–1975, McMillan & Martin (1993) for 1976–1993 and the RBA website for 1994–2005.

existing (unadjusted) accumulation indices underestimate the after-corporate-before-personal-tax return on equity.

VI Conclusion

Based on ATO data, we find that the amount of imputation credits received by resident individuals, funds and non-residents in aggregate each year has averaged $A6.0bn over 1990–2004, including an average of $A9.1bn per annum over 2001–2004. On average, $A4.4bn of the credits received in 1990–2004 were used by investors to reduce their worldwide personal tax liabilities, including an average of $A7.4bn per annum over 2001–2004. This corresponds to an average utilisation rate of 0.67 over 1990–2000 and 0.81 over 2001–2004. In short, the policy shift to an imputation tax system has led to a significant elimination of double taxation of dividends for resident shareholders in Australian firms but not for foreign shareholders. Our results are relevant not only to the ongoing policy debate concerning the efficacy of integration tax systems but also are of relevance to the application of various equilibrium asset pricing models that require an estimate of the value of an imputation credit.[16]

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[16] For example, Officer (1994) and Lally and van Zijl (2003).

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