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International tax arbitrage
via corporate income
splitting

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Abstract

If capital for corporate finance was available from a common global pool and at zero transaction cost, then does after-tax arbitrage require harmonisation of income tax rates across jurisdictions? This paper shows that the answer is in the negative. When a corporation has the choice in deciding the fraction of income that it distributes as dividends with the remainder held for future capitalisation, then such choice brings about arbitrage in after-tax rates of return to investors facing a common pre-tax return but different rates of income taxes. Policy implications are drawn from this result.

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International tax arbitrage via corporate income splitting¹

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Abstract

If capital for corporate finance was available from a common global pool and at zero transaction cost, then does after-tax arbitrage require harmonisation of income tax rates across jurisdictions? This paper shows that the answer is in the negative. When a corporation has the choice in deciding the fraction of income that it distributes as dividends with the remainder held for future capitalisation, then such choice brings about arbitrage in after-tax rates of return to investors facing a common pre-tax return but different rates of income taxes. Policy implications are drawn from this result.

¹ We gratefully acknowledge helpful comments from two anonymous referees of this journal, though the usual disclaimer still applies.

1. Introduction

As part of cross-border liberalisation of trade in goods, services, and capital, there have been calls for harmonisation of tax rates across nations. It is argued that the failure to harmonise tax rates between countries will lead to tax competition. This in turn, it is pointed out, could have a deleterious effect on trade and growth similar to that experienced from competitive currency devaluations in the depression years of the 1930s (see Vann 1998). One strategy suggested to bring about harmonisation of tax rates is through the creation of a supranational taxing authority. This is unlikely in the short-term since such action puts in question the legitimacy of the modern state. The establishment of a World Tax Organisation may take time as suggested by the recent experience of economic unification from the EC.

Taxation issues on an international context are treated in a piece-meal fashion by individual national jurisdictions and existing international organisations. Amongst the latter, the International Monetary Fund (IMF), the Organisation for Economic Corporation and Development (OECD), and the World Trade Organisation (WTO) have attended to issues of taxation on an international basis. The IMF in fulfilling its role as the lender of last resort to economies facing liquidity crises has, as part of its rescue package, included reforms to domestic taxation. The preference by the IMF has been for the implementation of a broad-based consumption tax. The OECD is the defacto supranational body on broad economic policies for its members, all except Mexico and the Czech Republic being industrial countries. The OECD takes an active role in taxation amongst its members by providing model tax treaties and publication of Revenue Statistics for all of its members. The aim of policy coordination by the OECD has been the pursuance of the goal of attaining the highest

sustainable economic growth and employment in member countries, but this membership extends to an exclusive club. The World Trade Organisation (WTO) whose membership extends over a much wider group of countries is engaged in indirect taxation only, particularly those pertaining to tariffs and excise duties. None of the above agencies fulfil the role of a supranational taxing authority and hence the suggestion for a World Tax Organisation (see Mintz 1998).

Calls for fiscal reciprocity and harmonisation of tax rates across countries are not new and will continue, but this is not strictly necessary for attainment of arbitrage in the after-tax rate of return on investment in the corporate sector.² The analysis in this paper shows that if domestic firms can choose the portion of income to be paid as dividends as against the rest which is re-invested for future capitalisation, then significant differences in income-tax rates between jurisdictions is consistent with arbitrage in after-tax returns to investors residing in these jurisdictions. Given that the portion of corporate income distributed as dividends is bounded between zero and one, extent of variation possible in corporate and personal-income tax rates is also bounded; these bounds are wider when dividends are franked than otherwise.

Here we consider the specific case where institutional investors seek funds from their respective jurisdictions, each with a unique set of corporate and personal income tax rates. These institutions operate in perfectly competitive markets such that the after-tax rate of return to investors is equalised. Investment is made by purchasing shares in the financial institution which then invests the pool of funds in a global company. Let the return to this investment by the global company be constant over time. The

puzzle is as to whether the institutional investor can return a common after-tax return in the face of diverse taxing rates across jurisdictions.³ A numerical example is used later to illustrate the above possibility.

The rest of the paper is organised as follows. Section 2 presents the analytical framework. Section 3 presents numerical estimates to illustrate the general results. Section 4 provides implications for tax policy from this analysis. Conclusions and recommendations for further research follow.

2 The Analytical framework

For tractability and ease of exposition we start off with several strong assumptions, some of these will be relaxed later. Let an investor at time 0 invest P dollars for T years in a stock which earns an annual return of r . We first consider the flows at each t : post corporate tax yield (y) from this outlay at time t can be written as

$$y(t) = rP[1 + r(1 - d)(1 - t)]^{t-1} \quad (1)$$

where δ is the fraction of income distributed (such that $1 - \delta$ is re-invested and $0 \leq \delta \leq 1$) and τ is the rate of corporate taxation; tax payments (x) arising from the investment are given as

$$x(t) = d\tau y(t) + (1 - d)t y(t) = y(t)[d(\tau - t) + t] \quad (2)$$

² See Miller (1902) on early work on fiscal reciprocity and Miller and Modigliani (1961) on the role of dividend policy in valuation of shares.

³ We relax the Miller-Modigliani (MM) (1961) zero-tax assumption.

where μ is the marginal tax rate faced by the investor; dividends, net of tax, received by the investor at each t is given by

$$d(t) = \mathbf{d}(1 - \mathbf{m})y(t) \quad (3);$$

and, the ensuing franking credits is given by

$$f(t) = \mathbf{d}ty(t) \quad (4).$$

Since the investment is made for a period of T years, the net present value (NPV) of stocks at time 0 with a discount factor ϵ is given as follows: the NPV of yield is

$$Y = \frac{\mathbf{r}^P}{\mathbf{s} - \mathbf{e}} \left[\left(\frac{1 + \mathbf{s}}{1 + \mathbf{e}} \right)^T - 1 \right], \quad \mathbf{s} = \mathbf{r}(1 - \mathbf{d})(1 - \mathbf{t}) \quad (5),^4$$

σ being the compound growth rate of after-tax retained earnings; that for total tax paid is

$$X = [\mathbf{t} + \mathbf{m} - \mathbf{tm} - 2\mathbf{dm}(1 + \mathbf{t})]Y \quad (6);$$

dividends collected is

$$D = \mathbf{d}(1 - \mathbf{m})Y \quad (7);$$

franking credits received is

⁴ Note that capital letters are used to denote stocks of the respective flow variables in small letters.

$$F = dtY \quad (8);$$

and, capital gains which is equivalent to the capitalisation of all retained earnings is

$$R = Y - D - X = (1 - d)(1 - t)Y \equiv K \quad (9).$$

Now, after-tax income (I) in NPV terms on an initial outlay of P is given as

$$I = D + (1 - m)K + F = [1 - m - t + t(2d + m - dm)]Y \quad (10),$$

normalising P to unity allows equation (10) to reflect the rate of return on an initial investment. Capital gains, as shown by equation (10), are taxed at the rate of the marginal tax rate for personal income.

Several of the above equations follow from the definition of the variables on the left-hand-side of the equality sign, we elaborate on the meaning of the important equations only. Equation (1) shows that the flow of after-tax income at each time period (t) is the return to accumulated capital. The tax payments in equation (2) are the sum of personal tax applying to dividends distributed and corporate taxes paid on retained earnings. Equation (5) shows that the net present value of after-tax income flows depends on the gap between the after-tax returns on capital accumulation, this being represented by the parameter σ , and the discount rate (ϵ); the length of investment (T) has a crucial role in determining the stock of yield (Y). The rest of the NPV computations are intuitive and are derived from the NPV of yield (Y).

It is clear from equation (10) that a dividend imputation system with full franking does not guarantee immunity from double taxation of after-tax corporate yield (Y); this only holds true if and only if

$$\mathbf{d} = \frac{1 - \mathbf{m}}{2 - \mathbf{m}} \equiv \mathbf{d}^* \quad (11),$$

the satisfaction of the above condition can only be coincidental and particularly so if firms choose δ to arbitrage the rate of return accruing to investors across different taxing jurisdictions. This is the first result of this paper. A numerical example is used in the next section to illustrate arbitrage of after-tax returns from splitting corporate income between dividends and retained earnings.

3. Numerical Simulations

To permit tractability, suppose an Australian publicly listed institutional investor (AustCo) earns a ten percent rate of return on its investment from which it distributes 40 percent as dividends to its shareholders. All of these shareholders are Australian residents facing the top marginal rate of income tax of 48.5 percent.⁵ Furthermore, assume that the investment is made for 10 years, the shares cost unity, and the discount rate is five percent, the latter being the rate on ten year bonds. The parameters used are summarised in table 1 below.

⁵ This rate is inclusive of medicare levy of one and a half percentage points.

Table 1: Parameters used for AustCo

<i>Description</i>	<i>Symbol</i>	<i>Value</i>
Corporate tax rate	τ	36 percent
Marginal personal income tax rate	μ	48.5 percent
Rate of return on investment ^a	ρ	10 percent
Discount rate	ε	5 percent
Dividend share of earnings ^a	δ	40 percent
Period of investment ^a	T	10 years
Value of initial investment	P	1

Notes: ^a chosen arbitrarily.

On the basis of the parameters provided in table 1, the net present value (NPV) of stocks are as follows.

Table 2: Net present value of stocks

<i>Description</i>	<i>Symbol</i>	<i>Value</i>
Yield	Y	0.91
Tax	X	0.41
Dividends	D	0.19
Capital gains	K	0.35
Franking credits	F	0.13
After tax income	I	0.50

The above parameters and rate of return are taken as the baseline case in all of the numerical simulations that follow. We now let AustCo compete with other

institutional investors in a global company which provides a constant pre-tax return to investment.

Tax arbitrage across jurisdictions

The global company, GlobeCo, is funded by institutional investors in Australia (AusCo), Japan (JapCo), and the USA (USCo). Let the residents of each of these countries hold shares in their respective resident institutional investors only. For tractability, we disallow purchase of shares by foreigners in any of the investment institutions, this imposition will be relaxed later. Each of these investors demands a common rate of return on their investment. The corporate investment structure is depicted in figure 1 below.

Figure 1: Corporate Investment Structure

The question posed is as to whether the three institutional investors can provide a common after-tax rate of return to shareholders in the three countries given that each of these countries has a unique combination of corporate and personal income tax

rates. The only parameter of those listed in table 1 that the company has a choice over is δ , the fraction of income that is distributed as dividends. The answer, as shown in table 3 below, is in the affirmative; the investment institutions can provide a common after tax rate of return in the face of different income tax rates by choosing the portion of income that is distributed as dividends. The table below shows the computations for this specific example.

Table 3: Arbitrage in after-tax rate of return to shareholders (percent)

	τ	μ	δ	after-tax return	X/Y
Australia	36.0	48.5	40.00	49.65	45.22
Japan	37.5	50.0	42.95	49.64	44.59
USA	35.0	39.6	22.87	49.65	47.90

Note: X/Y is the effective tax rate when stocks in NPV terms are used in the computation; full-franking of corporate taxes paid is assumed in these calculations.

Given that AustCo distributes 40 percent of its income as dividends, the Australian shareholder earns an after-tax return of approximately 50 percent; JapCo and USCo are able to match this return to their respective resident shareholders by distributing 43 and 23 percent, respectively, of income as dividends. The after-tax rate of return is equalised through choice of the proportion of income distributed as dividends as against the remainder which is held for future capitalisation. Given the pre-tax return on investment of 10 percent being higher than the discount rate of five, a lower US personal income tax rate induces larger capital growth and hence a larger effective tax rate when calculated in net present value terms. The far right-hand-side column of table 3 shows that the effective tax rate when stocks of yield and tax collected in net

present value (NPV) terms for the US being about three percentage points higher than the rest. We next generalise the above findings.

We consider the extremes, the tax rates which will force the institutions to distribute all and nil of its income, respectively, as dividends for the after-tax return reported in table 2 above. In other words, we investigate the extremes of the tax rates from those reported in table 1 which will give the after-tax return of 50 percent reported in tables 2 and 3 above. As a controlled experiment, we change only the tax rate on personal income and consider the two polar cases of complete and zero franking.

Table 4: Extremes of tax rates with after-tax arbitrage on investment

		With FULL franking		With ZERO franking	
Case	δ	τ	μ	τ	μ
I	0	0.36	<i>0.233</i>	0.36	<i>0.435</i>
II	1	0.36	<i>0.717</i>	0.36	<i>0.526</i>

Notes: The calculated figures are given in bold italics; and the baseline parameters and after-tax return are provided in table 1.

The results in table 4 show that personal tax rates can vary widely with arbitrage in after-tax returns; the extent of this variation is greater with, as against without franking of corporate taxes. Personal income tax rates have an important role in determining the share of income distributed as dividends. In the case of complete franking, a personal tax rate of 23.3 percent results in none of the corporate income being distributed as dividends; on the other extreme a personal tax rate of 71.7 percent induces all of the corporate income to be distributed as dividends. A personal tax rate

in-between these two extremes is consistent with the attainment of after-tax arbitrage of corporate investment when complete franking is allowed. The case without any franking is different to the extent that now a much narrower personal tax spread is consistent with after-tax arbitrage of corporate investment. Franking of corporate taxes paid enables wider disparities in rates of personal income taxes across jurisdictions.

The importance of the results in table 4 is illustrated using the above calculations in respect of income tax rates in Australia. For the parameters given in Table 1, with franking Australia does not have to enter into harmonisation of personal tax rates with 34 of the 36 countries listed in Table 1; the exceptions being Switzerland and Hong Kong who have personal marginal tax rates of 11.5 and 20 percent respectively. In contrast, in the case of zero franking, tax rates in 27 of the 36 countries are not consistent with arbitrage of after-tax returns from splitting corporate income between dividends and retained earnings.

We next question the plausibility of the assumptions made in this analysis. All of the foregoing analysis has assumed that companies can choose the fraction of income they distribute as dividends, the remainder of which is then held for capital growth and future distribution. This is not strictly true since the dividend policy is driven by a host of considerations (see Hakansson, 1982 and Black, 1976 on the dividend puzzle), true to the extent that now there are several forms of equity and financing options that enable this choice.⁶ We have also assumed that firms access capital from the global pool with the requirement that after-tax rate of return to investors is

equalised. This is an extreme position but the proliferation of global finance companies with the objective of maximising shareholder returns in a competitive environment provides support to this imposition. Furthermore, we have assumed no foreign investment, this obviously is incorrect. The preceding analysis necessitates that investors be distinguished in respect of the tax rates they face and the ensuing distribution they receive; in so far as this is allowed through innovative financing products, foreign investment is accommodated in the above analysis. Finally, a constant return to investment has been assumed as an extreme position; relaxation of this assumption to diminishing returns will bring about arbitrage in after-tax returns earlier than otherwise.

4. Tax policy implications

There are three policy implications from the above analysis. First, with franking of corporate taxes, there is little need for harmonisation of tax rates across jurisdictions; there are only a few exceptions where this is necessary. Second, reductions in the top marginal personal income tax rate will induce greater retention of corporate income for future capitalisation; as an example, our simulations suggest that reducing top marginal rates to 36 percent — the current rate of tax on corporate income in Australia — will drop dividend distributions from 40 to less than 18 percent as well as reduce total income tax collections but this will be at the gain of corporate savings. Third, in a world with complete franking of corporate income, corporate tax rates matter only at the margin and as such there is little point in harmonising these rates across countries.

⁶ See Deutch and Rumble (1998) on availability of innovative financial products. Hakansson (1982)

5. Conclusion

This paper presents three results. First, complete franking of corporate income taxes paid does not provide immunity from double taxation of income. Second, there is little need for harmonisation of tax rates on personal income to bring about arbitrage in after-tax returns; this being particularly true when franking of corporate income is permitted. Third, a marginal tax rate on personal income being higher than on corporate income induces lower corporate savings when the corporate sector competes for funds across jurisdictions.

The analysis has assumed that statutory rates are complied with and that arbitrage in after-tax return holds. The extent to which these impositions hold are empirical issues requiring separate attention. This together with the theoretical propositions from the above analysis has to be confronted with real data, this is the next stage of this research.

and Black (1976) note that dividend policy is driven by a host of considerations, tax rates being only one of these.

Table 1: Income tax rates across countries (percent)

Country	Marginal Income Tax Rate on Individuals ^a	Marginal Income Tax Rate on Corporations ^a	Effective corporate tax rates ^b
<i>Industrial Countries</i>			
Australia	47	36	37.28
Austria	50	34	29.92
Belgium	46.62	39	27.12
Canada	29	38	37.76
Denmark	58	34	41.32
France	54	41.66	37.99
Germany	53	45	41.32
Greece	45	35	47.06
Ireland	48	36	5.72
Israel	50	36	14.18
Italy	51	37	34.77
Japan	50	37.50	54.09
Luxembourg	30.26	32	22.05
Netherlands	60	36	24.29
New Zealand	33	33	76.92
Norway	28	28	26.09
Portugal	40	36	29.63
Spain	47.60	35	28.23
Sweden	56	28	16.22
Switzerland	11.50	9.80	37.33
United Kingdom	40	31	28.97
United States	39.60	35	
<i>High Performing Asian Economies</i>			
Hong Kong	20	16.50	13.30
Indonesia	56	56	38.80
Korea Rep.	40	28	48.24
Malaysia	30	36	10.01
Singapore	28	26	5.10
Taiwan	40	25	16.38
Thailand	37	30	16.24
<i>Other Developing Countries</i>			
Argentina	33	33	54.52
Brazil	25	25	50.10
Chile	45	42	12.98
Colombia	35	35	33.05
Egypt	32	42.50	55.56
India	30	35	46.71
Jamaica	25	33.33	19.66
Mexico	35	34	36.99

Notes: ^b These effective rates are for US MNEs operating abroad, the rates reported are annual averages for the period extending from 1983 to 1992. Source: ^a Coopers and Lybrand (1998); ^b Athukorala and Chand (2000).

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