TAXATION AND VALUATION OF INTERNATIONAL REAL INVESTMENTS

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Abstract

The study analyses the incentives for multinationals caused by linking different national tax systems. The dividend tax capitalization hypothesis is extended to include taxes during the repatriation and onward distribution (as equalization tax) to derive the relevant cost of capital formulae for each source of finance. No clear tax advantage of using debt from the parent to the foreign subsidiary is found. Tax conditions are derived for finance companies in third countries used by multinationals to park and rotate profits such as realization gains from trade sales of their subsidiaries. The same tools are applied to analyse corporate inversions.

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1. Introduction

National economies are increasingly linked to the world economy through trade and investment. Among the most important decisions of multinationals are how much to invest and where and in which country to locate their headquarters. These decisions are influenced by tax policy, particularly how countries tax income from foreign investment. National economies recognize the importance of keeping their tax systems competitive. The established developed countries face the challenge of the economies in transition countries and tax havens. Estonia is a prime example of the former in that it does not tax undistributed corporate profits at all. Among developed economies Ireland appeals to foreign direct investment with her low rate of corporation tax. Corporate inversions, multinationals relocating the host country of their parent companies, have been seized upon in the U.S. tax debate. The recent German tax reform was partially designed in response to the tax minimization strategies of multinationals by exempting the realized capital gains of their equity holdings from corporation tax to improve Germany's attractiveness as a business location.

Kari and Ylä-Liedenpohja (2002) analyse the conditions that would provide multinationals with tax neutrality in financial and dividend policies and which consequently would treat all investment projects neutrally in the comprehensive income tax sense. The distorting aspect of the problem is analysed here. The focus is on the incentive effects caused by linking differing national tax systems with possibly differing effective tax rates on similar economic activity. The economic definition of income is assumed to be the tax base in each jurisdiction. Therefore, the consequences of such obvious tax asymmetries as claiming the expenses of an activity in a high tax rate country and channelling the revenues from the same activity to a low tax rate country are not addressed.

The model is made up of investments by the multinational through its foreign subsidiary and of their different sources of financing. Not only new share issues, profit finance and debt from the parent company, but also debt and undistributed profits from a special finance company, located in a third country, are allowed as sources of external finance to the subsidiary. The financial activities of the parent company are an integral part of the model. Therefore, the tax treatment of foreign-source income during its repatriation to the parent and onward distribution to its shareholders in contrast to domestically generated

income are the focus. The modelling is motivated by the imputation system with equalization tax, but is general enough to be applicable to other corporation tax systems with similar constructions. Equalization tax guarantees that any home-country destination dividends are taxed in the home country at the same rate than the rate of imputation.

Other problems of interest are factors which explain the existence of special finance companies in third countries and corporate inversions.

The standard dividend tax capitalization hypothesis of applied tax theory, the "trapped equity" approach, is used and extended to the international framework to derive the relevant cost of capital formulae.[1] The "dividend tax" contains all possible elements: the differential corporation tax on distributions in the host country of the subsidiary, taxes during the repatriation of foreign-source income, the differential dividend tax (including possible imputation credits) levied on shareholders from their effective capital gains tax rate. This approach makes it possible to value consistently the opportunity cost of profits generated by the multinational in different jurisdictions, but used perhaps in other units to finance investment projects.

One kind of dividend tax is the equalization tax on onward-distributed foreign-source income. It is shown to operate slightly differently from repatriation taxes because it can be avoided by transforming such profits into taxable profits of the home country investments which can be distributed without equalization tax.

Alworth (1988) and Keen (1991) were among the first to analyse the investment decisions of multinational companies using a dynamic investment model. Sørensen (1990) studied the same problem by extending the static King-Fullerton approach to international investments. Some years earlier, however, Sinn (1984) and Hartman (1985) presented the trapped equity argument in the international framework. They claim that taxes on cross-border dividend payments will not affect a subsidiary's cost of capital even where equity is the marginal source of finance. The cost of capital is rather determined by home and foreign country corporate taxes. Later Sinn (1993) introduced a model to analyse the impact of international taxation on the growth of a foreign subsidiary. Hines (1994) applies the same model basis to analyse the incentive created by the credit and deferral system to

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1 Everyone familiar with King (1977) recognizes the source of the methodology.

tax foreign earnings. Weichenrieder (1995) analysed several separate issues, among them incentives created by the German imputation system in the case of a multinational company and incentives for profit shifting created by the international tax system. Tax planning using financing vehicles is one of the questions on which there is little economic analysis. However, Giovannini (1989) gives an extensive account of such third-country structures, and a recent study by European Commission (2001) presents calculations about the effects of such strategies on the cost of capital of multinationals.

The paper is organized as follows. The next section reviews the familiar cost of capital concepts of a parent and its foreign subsidiaries. The tools are directly applied in Section 3 to modify the cost of capital formulae of the subsidiary when finance is raised through the a third country finance company. Section 4 summarizes the tax cost ranking of investment projects in terms of sources and channels of finance from the point of view of the multinational as a whole. Section 5 looks at such topical problems as what factors explain the existence of the third country finance company, corporate inversions, special financial operations carried out within the parent, the analyses of which either follow directly from the general simple set-up of this paper or need only a modest re-specification of the original concepts. In particular, we show the equalization tax to affect the cost of capital of an investment in the home country, but financed from repatriated foreign-profits. Section 6 contains a summary of the main findings and a concluding policy discussion.

2. Multinational investment decisions

We allow for the possibility that the countries of residence (r-country) of the final financiers (owners and debtors) of the multinational, the home country (h-country) of the parent company, the foreign countries (f-country) hosting the subsidiaries engaged in productive activities, and the third country (t-country) hosting a finance company that possibly has the legal ownership of the subsidiaries and also provides finance to them may all be different from each other. Figure 1 contains the schematic structure of the internal financing flows of the multinational.

Figure 1
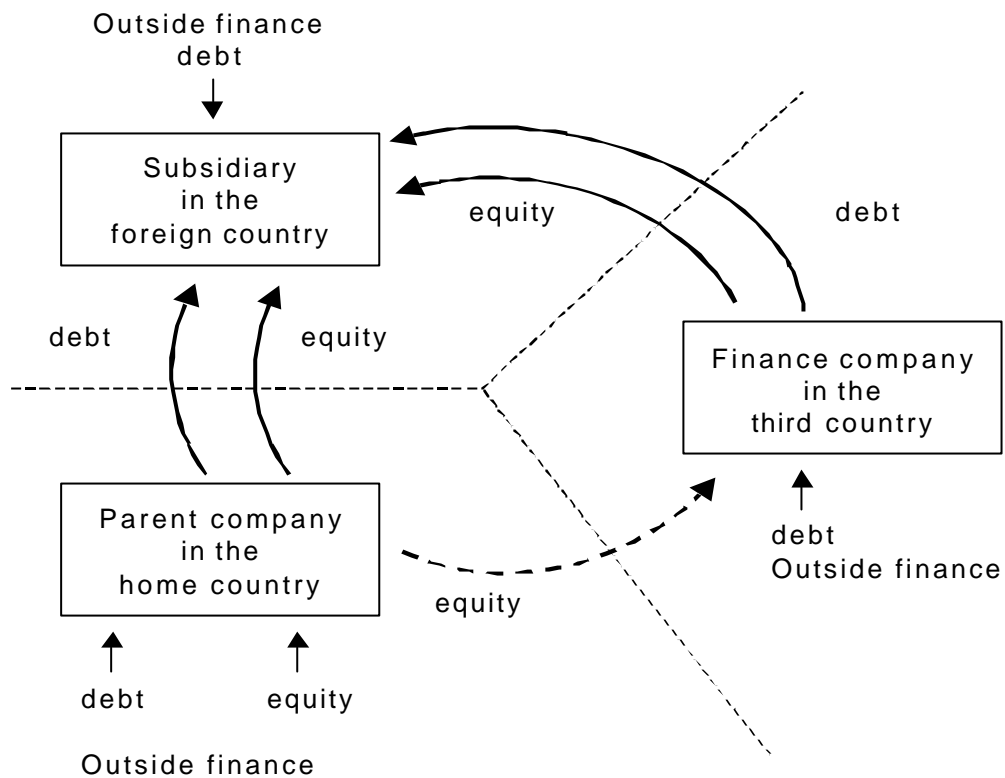
(i) Equity raised from the market A corporation with internationally dispersed ownership operates in its h-country and contemplates setting up a subsidiary in the f-country. If the parent company raises finance through an equity issue, it can use it either in the h- or f-country. An investment in the f-country must give the owners the same marginal post-tax return as on their alternative financial asset:

(2.1) $\qquad q^{hf}\left(1-t^{f}\right)MRR^{f}=\left(1-t^{b}\right)r$

where q^{hf} denotes the post-tax dividend accruing to the shareholders of the parent from one euro's dividend from the subsidiary taking into account all taxes during the repatriation and onward distribution phases, t^{f} denotes the f-country corporation tax rate, MRR^{f} = the marginal pre-tax real rate of return after true economic depreciation on investment in the f-country, r = the pre-tax real rate of interest on the alternative financial investment, and t^{b} denotes the owners' personal tax rate on real interest income in their r-countries. Therefore the minimum pre-tax real rate of return on investment in the f-country from (2.1) is as follows:

$$(2.2) \quad MRR^{f} = \frac{\left(1-t^{b}\right)r}{q^{hf}\left(1-t^{f}\right)} \qquad \text{(new issues on f-equity)} [2]$$

The detailed definition of q^{hf} is given below after the general structure of the cost of capital formulae has been established.

If the proceeds of the new share issue are invested by the parent in the h-country, the h-country corporation tax rate t^{h} replaces t^{f} in (2.1), while q^{hf} is replaced by q^{h}, reflecting the post-tax dividend accruing to the shareholders in the parent from one euro's post-tax profit generated by the h-country investment, taking into account the possible imputation credit. Therefore, the cost of capital of such an investment is

$$(2.3) \quad MRR^{h} = \frac{\left(1-t^{b}\right)r}{q^{h}\left(1-t^{h}\right)} \qquad \text{(new issues on h-equity)}$$

If d^{ht} denotes the repatriation and onward distribution taxes, then q^{hf} and q^{h} are related by $q^{hf} = (1- d^{ht})q^{h}$.

The proceeds of the new issue can also be invested in the f-country subsidiary in the form of debt from the parent. Each period in which it repatriates an amount of interest b^{hf} from the subsidiary such that, after paying all taxes r^{hf} during repatriation and in the h-country, the available post-tax dividend stream just equals the shareholders' return on the alternative financial asset:

$$(2.4) \qquad q^{h}\left(1-r^{hf}\right)b^{hf} = \left(1-t^{b}\right)r$$

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[2] Here we stick to the traditional definition of the cost of capital of new issues as an opportunity cost in the financial markets, unlike Sinn (1993) who takes into account the time path of utilizing the exogenous internal investment opportunities in the subsidiary and equates the cost of capital to the marginal Tobin's q of the subsidiary.

If the fraction b^f of repatriated interest b^{hf} is deductible from the f-country corporation tax base, the minimum real rate of return MRR^f in the f-country subsidiary is such that the economic profit is zero:

(2.5) $MRR^f - b^{hf} - t^f\left(MRR^f - b^f b^{hf}\right) = 0$

Substituting for b^{hf} from (2.4), condition (2.5) leads to

(2.6) $\qquad\qquad MRR^f = \dfrac{\left(1 - b^f t^f\right)}{\left(1 - t^f\right)} \dfrac{\left(1 - t^b\right) r}{q^h\left(1 - r^{hf}\right)}$ (new issues on f-debt)

(ii) Profits of the parent: If the parent uses undistributed profits to finance its investments, the opportunity cost of one euro of such funds to the owners is q^h, their post-personal tax dividend if one euro of post-corporation tax profit were distributed. Its mirror image is the market valuation g^h of one euro of post-tax undistributed profit. In arbitrage equilibrium the market price g^h must be such that investors are indifferent between pocketing the post-tax dividends or selling their shares. Then they realize a post-tax capital gain of $\left(1 - t^g\right) g^h$ per euro of post-tax profit of the corporation, t^g being the ownership share-weighted accrual-equivalent tax rate on undistributed profit. Hence the no-arbitrage condition

(2.7) $\left(1 - t^g\right) g^h = q^h$

gives the market valuation coefficient of undistributed profit

(2.8) $g^h = \dfrac{q^h}{1 - t^g}$

When the ownership of the parent company is internationally dispersed, the question rises about the investors whose marginal tax rates determine g^h. Unlike the traditional assumption in applied tax research, Kari and Ylä-Liedenpohja (2002) adopt the view that no single owner category determines g^h, but all market participants are marginal ones.

Therefore the personal dividend tax is weighted by the ownership shares of the investors' effective tax rates, reflecting the imperfect granting of the imputation credits on foreign destination dividends. As in Kari and Ylä-Liedenpohja (2002), the ownership shares are assumed to be good proxies for the weights derived from theoretical models on ex-dividend day share price behaviour (Michaely and Vila 1995).[3]

When the parent company refrains from a dividend distribution of one euro and instead invests it as equity in a foreign subsidiary, the shareholder's wealth increases by g^h euros. The investment yields a post-tax dividend stream to the shareholder equal to $q^{hf}(1-t^f)MRR^f$ in every future period, assuming the true depreciation to be continuously reinvested, which maintains the income generating power of the asset intact. The company invests up to the point at which the real rate of return on investment in the f-country equals the post-tax return on the shareholder's alternative financial asset:

$$(2.9) \qquad \frac{q^{hf}(1-t^f)MRR^f}{g^h} = (1-t^b)r$$

The pre-tax cost of capital on the f-country equity investment financed from a marginal euro of post-tax profit retained by the parent is thus

$$(2.10) \qquad MRR^f = \frac{(1-t^b)r}{(1-t^g)(1-t^f)} \cdot \frac{q^h}{q^{hf}} = \frac{(1-t^b)r}{(1-t^g)(1-t^f)(1-d^{hf})} \qquad \text{(parent profits on f-equity)}$$

If the profits of the parent are retained and invested in its h-country, the cost of capital is the familiar one

$$(2.11) \qquad MRR^h = \frac{(1-t^h)r}{(1-t^g)(1-t^h)} \qquad \text{(parent profits on h-retention)}$$

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[3] Support for such an "all traders are marginal" view is provided by Liljeblom, Löflund and Hedvall (2001) in a market with tax heterogeneity among foreign and domestic investors. They find that arbitrage in companies with equal amounts of domestic and foreign owners forces a price drop to values within the common no-arbitrage interval, but may deviate from it in companies where a certain investor category dominates.

If the parent's profits finance the f-country subsidiary in the form of debt, the owners' wealth increment is g^h. Therefore, the onward-distributed post-tax dividend stream from the repatriated interest $q^h(1 - r^{hf})b^{hf}$ must give the same post-tax rate of return as their alternative financial asset:

$$(2.12) \qquad \frac{q^h\left(1 - r^{hf}\right)b^{hf}}{g^h} = \left(1 - t^b\right)r$$

Solving (2.12) again for b^{hf} and substituting it into condition (2.5), the minimum real rate of return MRR^f in the f-country subsidiary is

$$(2.13) \quad MRR^f = \frac{\left(1 - b^f t^f\right)}{\left(1 - t^f\right)} \frac{\left(1 - t^b\right)r}{\left(1 - t^g\right)\left(1 - r^{hf}\right)} \qquad \text{(parent profits on f-debt)}$$

(iii) Profits of the subsidiary: When post-tax profits generated by the subsidiary are invested, the owners sacrifice q^{hf} of post-tax dividend income per euro of post-corporation tax profit of the subsidiary, but see their wealth increase by g^f equal to

$$(2.14) \qquad g^f = \frac{q^{hf}}{1 - t^g}$$

which is analogous to condition (2.8). Therefore, the minimum MRR^f is determined by a similar argument as in (2.9), but substituting g^f for g^h. Because of (2.14), q^{hf} appears both in the numerator and denominator of the expression. The pre-tax cost of capital on investment financed from a marginal euro of post-tax profit retained in the subsidiary is thus

$$(2.15) \quad MRR^f = \frac{\left(1 - t^b\right)r}{\left(1 - t^g\right)\left(1 - t^f\right)} \qquad \text{(f-profits on f-retention)}$$

This is the "trapped equity" argument in the international setting. The cost of capital for investment financed from internal funds in the subsidiary does not depend on any dividend

taxes. Dividend distributions on equity accumulated from undistributed post-tax profits no longer face "dividend tax" $(1-q^{hf})$, because "dividend tax" is already deducted from the share price g^f at the moment of profit retention. Similarly, if the f-country profits are repatriated and invested in the h-country, the cost of capital (2.11) continues to hold, because the payment of the repatriation phase "dividend tax" accordingly increases the market valuation factor from g^f to g^h. This is the cost of capital side of the trapped equity argument in the international framework. Repatriation taxes do not affect the incentive for repatriating the f-country profits. In section 5 below we shall examine briefly how the role of equalization tax differs in this respect.

(iv) <u>Debt from the market:</u> If it is the subsidiary which raises debt finance directly in the financial market at the rate of interest r, the minimum MRR^f follows from (2.5) by substituting r for b^{hf}:

$$(2.16) \qquad MRR^f = \frac{1-b^f t^f}{1-t^f} \cdot r \qquad \text{(f-debt)}$$

If debt is issued by the parent company, the minimum MRR^h on the h-country debt-financed investments is the familiar

$$(2.17) \qquad MRR^h = \frac{1-b^h t^h}{1-t^h} \cdot r \qquad \text{(h-debt)}$$

We do not consider the alternative of using the proceeds from the h-country debt issue on the f-country equity and f-debt in order to minimize duplication of our formulae, because the finance company established in the t-country is introduced in the following.

3. Special Financing Vehicle

There are many reasons for the existence of financing companies inside multinationals. This section develops tools for the analysis of their role using the cost of capital approach. We recognize two kinds of host countries for finance companies: (i) tax havens which have

a partial network of bilateral tax treaties to prevent double-taxation of foreign-source income, but which typically have a very low rate of corporation tax to maximize their tax revenue, and (ii) those tax treaty countries which have a classical corporation tax at regular rates, but exempt foreign-source dividends from their corporation tax, including realization gains by holding companies, and apply the credit method to foreign source interest income. The equity stake of financing companies is assumed to be close to nil. It would be straightforward to analyse this from the above.

(i) Debt issues: The finance company itself is assumed to raise funding from the proceeds of debt issues in the market. Therefore, if such funds are injected into the subsidiary as debt, the parent needs to repatriate the amount $(1 - r^{tf})b^{tf} = r$ of interest income per euro borrowed to pay the necessary interest expenses in the t-country, with r^{tf} possibly different from r^{hf}, where r^{tf} includes the t-country corporation tax and the effect of the possible interest deductibility. Substituting $r/(1 - r^{tf})$ for b^{hf} in the no-profit condition (2.5), the following MRR^{f} is obtained:

$$(3.1) \qquad MRR^{f} = \frac{(1 - b^{f}t^{f})r}{(1 - t^{f})(1 - r^{tf})} \qquad \text{(t-debt on f-debt)}$$

If the finance company injects equity into the subsidiary, the no-profit condition (2.5) changes into $(1 - d^{tf})(1 - t^{f})MRR^{f} - r = 0$ which leads to

$$(3.2) \qquad MRR^{f} = \frac{r}{(1 - d^{tf})(1 - t^{f})} \qquad \text{(t-debt on f-equity)}$$

where d^{tf} stands for the tax rate on equity income during the repatriation phase from the f- to the t-country including the effect of the t-country corporation tax.

(ii) Profit finance: The finance company accumulates profits (foreign-source dividends and realization gains accumulated thereby), because it acquires legal ownership of some of the multinational's subsidiaries. The cost of capital formulae for such profit finance are

constructed along the familiar lines. Such income has been subject to the repatriation tax d^{tf} and has a market valuation of

$$(3.3) \qquad g^t = \frac{q^{ht}}{1-t^g} = \frac{q^h(1-d^{ht})}{1-t^g}$$

per euro, where d^{ht} consists of repatriation and onward distribution phase taxes within the multinational. Analogously to (2.10) and (2.13), the cost of capital formulae financed from such profits are thus as follows

$$(3.4a) \qquad MRR^f = \frac{(1-t^b)r}{(1-t^g)(1-d^{tf})(1-t^f)} \qquad \text{(t-profits on f-equity)}$$

$$(3.4b) \qquad MRR^f = \frac{1-b^f t^f}{1-t^f}\frac{(1-t^b)r}{(1-t^g)(1-r^{tf})} \qquad \text{(t-profits on f-debt)}$$

If profit is repatriated from the t-country to the h-country and the repatriation tax d^{ht} is paid, $1/(1-d^{ht})$ of euros must be sent from the t-country to have one euro for investment in the h-country. The owners' wealth increases accordingly by the factor $1/(1-d^{ht})$ from g^t to g^h. Therefore, the "trapped equity" cost of capital (2.11) follows.

4. Tax comparisons of cost of capital

Each cost of capital formula above can be written equivalently by grossing up the post-tax rate of interest on the alternative financial asset. Therefore the project MRRs are compared by their numerators. To facilitate closer scrutiny of them, recall the definition $q^{hf} = q^h(1-d^{hf})$ above where d^{hf} is made up of the following elements:
in the repatriation phase
- the f-country withholding tax in cases of exemption and excess credits
- the extra h-country corporation tax in cases of deficit credits, and
in the onward distribution phase

- the possible equalization tax equal to the imputation credit on the h-country destination dividends, assuming that the f-country destination dividends are relieved of it.

Similar considerations apply to d^{ht} in cases of t-country source dividends, as evident from condition (3.3).

There are four elements that affect the cost of capital comparisons:

(i) the investor-level post-tax euros after

    - effective dividend tax q^{h}

    - effective accrual-equivalent capital gain tax $(1-t^{g})$

    - effective interest income tax $(1-t^{b})$

(ii) the multinational-level post-tax euros of foreign-source income, combining the effect of the f-country corporation tax and repatriation and onward-distribution taxes as defined above

    - equity income $(1-d^{hf})(1-t^{f})$ or $(1-d^{tf})(1-t^{f})$

    - interest income $(1-r^{hf})(1-t^{f})$ or $(1-r^{tf})(1-t^{f})$

(iii) the multinational-level post-tax euro of domestic-source income

    - h-country corporation tax $(1-t^{h})$

(iv) the degree of deductibility of the real interest expenses b^{f} and b^{h}.

In all comparisons below the f-country rate t^{f} of corporation tax is assumed to be not higher than the h-country one t^{h}.

New issue finance: The relevant cost of capital expressions are (2.2), (2.3) and (2.6), having the tax multipliers

(4.1a)   f-equity: $q^{h}(1-d^{hf})(1-t^{f})$

(4.1b)   h-equity: $q^{h}(1-t^{h})$

(4.1c)   f-debt: $q^{h}(1-r^{hf})(1-t^{f})/(1-b^{f}t^{f})$

Consider first whether to allocate the proceeds from new issues on f-equity or h-equity. The repatriation and onward distribution phase taxes on a return of f-equity may then

outweigh the possible lower f-country corporation tax compared to that in the h-country[4] except for the case of deficit credits when the return on f-equity is effectively taxed at the h-country rate t^h. This comparison of the multinational level post-tax euro of foreign-source versus domestic-source income is called the base case.

Consider next the alternative to allocate the proceeds from new issues on f-debt. With interest deductibility $b^f = 1$ and with the h-country crediting the f-country withholding tax on interest income against its corporation tax, the returns on h-equity and f-debt are taxed the same. Therefore the issue whether to channel the funds on f-equity or f-debt is equivalent to the base case. Without interest deductibility $b^f = 0$, the repatriation taxes on interest income r^{hf} being logically zero when the h-country applies exemption, the return on f-debt and f-equity will be subject to equalization tax when distributed onward. Whether to invest the funds in the f- or h-country reduces to the base case comparison. When the h-country credits the f-country taxes against its corporation tax, the returns on h-equity, f-equity and f-debt are taxed the same.

<u>Profit finance from the parent</u>: Its uses are given in (2.10), (2.11) and (2.13) with the tax multipliers

(4.2a) f-equity: $\left(1 - t^g\right)\left(1 - d^{hf}\right)\left(1 - t^f\right)$

(4.2b) f-debt: $\left(1 - t^g\right)\left(1 - r^{hf}\right)\left(1 - t^f\right)/\left(1 - b^f t^f\right)$

(4.2c) h-retentions: $\left(1 - t^g\right)\left(1 - t^h\right)$.

Profit finance from the subsidiary, condition (2.15) has the tax multiplier

(4.2d) f-retentions: $\left(1 - t^g\right)\left(1 - t^f\right)$.

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[4] Estonia, for instance, has a 35.14 per cent tax rate on distributed dividends and repatriated realization gains (if at least 75 per cent of the sold subsidiary is made up of real estate assets) although the corporation tax rate is zero. Dividends are exempt from Finnish corporation tax, but subject to equalization tax. Therefore, equity investment in Estonia from the proceeds of a new issue by a Finnish multinational is tax-disadvantaged compared to equity investment directly by its

From (4.2a-d) it is clear that if interest expenses are not deductible from the tax base in the f-country $b^f = 0$, the expressions (4.2a-b) differ from (4.2c-d) due to the potential repatriation tax d^{hf} or r^{hf}. The taxation of f-equity and f-debt differ if the repatriation tax rates on their returns are different, and the comparison of investing the parent's profit either in the f-subsidiary or in the h-country is as in the base case. If debt interest expenses are deductible $b^f = 1$, channelling profits from the parent to the f-subsidiary debt depends on the repatriation tax on interest income in relation to the corporation tax rate in the h-country. Under the credit method they are equal $r^{hf} = t^h$, so that f-debt and h-retentions are taxed the same. Thus the comparison between f-equity and f-debt reduces to the base case.

If the profits generated by the f-subsidiary are not reinvested in the f-country, but are repatriated and invested in the h-country, the standard cost of capital for a project financed from the h-country profits, condition (2.11) above, continues to hold, because the payment of the repatriation phase "dividend tax" accordingly increases the market valuation factor of such profits from g^f to g^h.

Profits from the finance company: The relevant formulae (3.4a-b) have the following tax multipliers:

(4.3a)   f-equity: $\left(1 - t^g\right)\left(1 - d^{tf}\right)\left(1 - t^f\right)$

(4.3b)   f-debt: $\left(1 - t^g\right)\left(1 - r^{tf}\right)\left(1 - t^f\right)/\left(1 - b^f t^f\right)$.

With a low r^{tf} (low rate of corporation tax in the t-country) and with interest deductibility $b^f = 1$, t-country profits will be invested in f-debt rather than either in f-equity or repatriated and retained in the h-country, condition (4.2c). This is again a base case comparison. If r^{tf} corresponds to a regular corporation tax rate, f-debt is taxed as h-country profits. Whether to allocate t-country profits on f-equity or f-debt is the base case. Without interest deductibility similar considerations apply as in the case of profit finance from the parent.

Finnish owners without the multinational and equalization tax. But, even the latter would rather invest in their h-equity (taxed once) than in Estonian equity (double-taxed).

<u>Debt issue in the market</u>: In cases of t-country-raised debt, formulae (3.1) and (3.2), the tax multipliers are:

(4.4a) f-equity: $\left(1-t^{b}\right)\left(1-d^{tf}\right)\left(1-t^{f}\right)$

(4.4b) f-debt: $\left(1-t^{b}\right)\left(1-r^{tf}\right)\left(1-t^{f}\right)/\left(1-b^{f}t^{f}\right)$

and for h-country debt from (2.17):

(4.4c) h-debt: $\left(1-t^{b}\right)\left(1-t^{h}\right)/\left(1-b^{h}t^{h}\right)$

and for f-country debt from (2.16):

(4.4d) f-debt: $\left(1-t^{b}\right)\left(1-t^{f}\right)/\left(1-b^{f}t^{f}\right)$.

Contrasting (4.4b) with (4.4c) and (4.4d), the repatriation tax on foreign-source income means that the h- and f-countries favoured by the multinational for tax reasons over the t-country are the markets in which debt issues are sold.

Consider next the problem of the funding source of f-equity. Contrasting (4.1a) and (4.2a), we observe that it is the investor-level tax rate of capital gains vs. dividends which determines whether f-equity is funded from the profits of the parent or from the proceeds of new share issues, because the repatriation-phase tax is the same for both sources of funds. Add condition (4.3a). If the t-country has a low rate of corporation tax, a low repatriation tax, the t-country as a source of funding f-equity is tax-disadvantaged, if the h-country applies either the exemption or pure credit method, meaning her nil repatriation tax.

The question of whether outside finance to the subsidiary is channelled in the form of f-equity or f-debt depends on a similar type of consideration as the base case between f-equity vs. h-equity. In the case of taxing the return on f-debt, the repatriation tax rate r^{hf} is in practice the same as the h-country corporation tax rate (due to the credit method).

Therefore we do not find any massive tax incentives to invest in the f-country in the form of debt, except for t-debt from the t-profits of a country with a low d^{tf}.

5. Finance vehicles and corporate inversions

Here we will shed some more light on the factors determining the existence of t-country finance companies and the typical headquarter financial operations of multinationals. One of the topical issues in the taxation of multinationals is the potential relocation of their headquarters, the problem of corporate inversion.

(i) Why do t-country finance companies exist? Above we observed that the t-country finance company is tax-disadvantaged as a market of debt issues, but has a role in allocating its profits on f-debt if the t-country has a low corporation tax rate, meaning a low r^{tf}. The same condition implies that the t-country is tax-disadvantaged as a source of funding f-equity if the h-country applies either the exemption or pure credit method, meaning a d^{hf} of nil. This view is too simple because all subsidiaries are considered to be going concerns and equity income is always repatriated as dividends.

Yet the essential nature of the multinational is that it manages a portfolio of subsidiaries which are bought and sold. Therefore, the return on the f-country equity is also repatriated as realized capital gains, which
- are often not subject to any f-country withholding tax, but may face time
  restrictions on repatriation
- are most often taxed in the h-country at the corporation tax rate t^h on their full nominal amount.

One set of t-countries exempts foreign-source dividends and realization gains. The other taxes them at low rates of corporation tax (tax havens). Both sets are ideal host countries of finance companies that temporarily park revenue from the trade sale of a subsidiary without immediate high taxes. Such trade sales may contain goodwill gains and losses compared to their book values.

Thus one feature explaining the existence of t-country finance companies may be to distinguish capital gains tax on retained earnings from that on goodwill, which is seldom done by tax economists. Officer (1982) is the exception, with Ball (1984) arguing on similar lines. A tax on realized goodwill is also an implicit tax on the future cash flows which cause a goodwill gain. If cash flows are taxed comprehensively without depreciating goodwill against such tax, the tax on the realized capital gain leads to excessive taxation of the future dividends and capital gains generated by the asset (subsidiary) in question.

This is why according to the old continental tradition long-term capital gains are not taxed in countries such as Switzerland and the Netherlands (and were not taxed in Finland before 1985 nor in the UK before April 1965). Irving Fisher pointed this out too. If the running yield of an asset (bond, forest, share) is already taxed comprehensively, a tax on the realized gain will break the neutrality of comprehensive income tax.

(ii) <u>Parent company financial decisions</u>: Post-corporation tax income generated in the h-country is ideal for dividend distributions because then the parent company need not pay equalization tax on the h-country destination dividends, which repatriated dividends may be subject to. So the latter must be either transformed into h-country-taxed income by investing such funds in marketable securities in the h-country, the return on which can be distributed as dividends without equalization tax (Weichenrieder 1998) or used to repurchase shares in the parent company and cancel them, in which case the owners receive their return in the form of capital gains or reinvested back in some other f-country where the promised MRR^f exceeds the relevant cost of capital.

If repatriated dividends that were subject to equalization tax when distributed onward are instead invested in the h-country, Kari and Ylä-Liedenpohja (2003) show equalization tax to drive the cost of capital of such funds below the one of domestic profits of the multinational. Due to the equalization tax, one euro of post-tax f- or t-profits would give rise to a dividend of $1/(1+t^e)$ of a euro. Therefore, net dividend q^{ef} is only a fraction $1/(1+t^e)$ of q^h in (2.7) and g^{ef} likewise only a fraction $1/(1+t^e)$ of g^h in (2.8). This amends the basic arbitrage condition as (2.9) into

$$(5.1) \qquad \frac{q^h \left(1 - t^h\right) MRR^{eh}}{g^{ef}} = \left(1 - t^b\right) r$$

from which the minimum required real rate of return MRR^{eh} follows

$$(5.2) \qquad MRR^{eh} = \frac{(1 - t^b) r}{(1 - t^g)((1 - t^h)(1 + t^e))} = \frac{(1 - t^b) r (1 - u)}{(1 - t^g)((1 - t^h))} \qquad \text{(f-profits on h-investment)}$$

The final expression is due to the fact that $t^e = u/(1-u)$ with u = the rate of imputation. Equalization tax capitalizes onto the value of foreign-source profits, but because it is an avoidable tax by the h-country investment activity, it reduces the cost of capital of such funds in the h-country[5]. Kari and Ylä-Liedenpohja (2003) analyse also other aspects of equalization tax that potentially distort the transfer pricing decisions of the multinational. But from the above situation it directly follows that repatriation and onward distribution taxes can be avoided by pricing the inputs sent from the h-country to the f-country, if $\left(1 - t^h\right) > \left(1 - d^{hf}\right)\left(1 - t^f\right)$ holds true.

(iii) Corporate inversions: One strategic decision concerns corporate inversion. Under what condition would the parent company switch from the h-country to the t-country? This is an issue in the USA, in particular, but is also topical in the European policy debate. The problem can be directly analysed by the tools developed above to explain the existence of separate finance companies. In the USA the question seems to be why the legal residence of the parent switches from the USA to a tax haven while the normal headquarter operations stay. This is solely a problem of taxing income from capital and foreign-source income in particular. In the high-tax Northern European policy debate both the switch of headquarter operations and the legal residence of the parent to a lower tax country are at issue. This problem has to do with the tax system as a whole and not least the taxation of earned income of professionals employed in the headquarters of multinationals

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[5] Weichenrieder (1998) in fact derives the same cost of capital as (5.2) but does not observe the equalization tax to increase the incentive for domestic investment. Instead, he is interested in the depressing effect on domestic investment of a reduction in the rate of imputation and therefore in the future tax benefits from such an investment.

We identify above two kinds of t-countries: tax havens with a low rate of corporation tax and countries with corporation tax at regular rates, but exempting foreign-source dividends and realization gains. The latter group typically taxes earned income at about the same rate as the Northern European h-countries. Therefore they mostly host finance vehicles. In addition, legislation does not allow the main headquarter operations and legal tax residence of the parent to be in separate countries. In the USA there does not seem to be such a link. Therefore tax havens are attractive relocation countries for the parents of US multinationals. But corporate inversions are not only caused by a low rate of corporation tax in the t-country. Other economic forces derive from the rules on how the USA taxes foreign-source income compared to the t-country.

The two most often mentioned problems (Desai and Hines Jr. 2002, for example) of the US system are the following. The first relates to the imperfect crediting of foreign corporate taxes due to reallocating interest on debt raised in the USA against the US tax on foreign-source income (push factor). This causes d^{hf} to be considerably non-zero in the state of permanent "excess credits". The additional contributing factor[6] is that the USA more often than its competitors does not offer deferral benefits to those profits which are retained and reinvested in the foreign subsidiary or in its host country, but taxes them widely on an accrual basis (CFC legislation). Tax benefits are obtained from the switch if d^{tf} is permanently lower than d^{hf}. A similar tax benefit derives from avoiding equalization tax, if the parent relocates from the country of the imputation system to one with classical corporation tax

.

Second, after the headquarter switch to the third country, the US operations are typically financed from loans from the new parent company. Therefore, due to the deductibility of debt interest, US corporate taxes are reduced while the USA cannot levy any withholding tax on such interest payments due to bilateral tax treaties. Therefore the switch becomes more attractive (pull factor). The tax benefit stream obtains from the lower r^{tf} (the USA is an f-country after the switch) on repatriated interest in contrast to equity income being taxed at the US rate of corporation tax t^h before the switch.

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[6] The easiness to transfer the ownership of immaterial rights to a low tax country is also a contributing factor to a relocation**.**

Our analysis above also reveals a third source of tax savings. Foreign-source interest income from the portfolio of subsidiaries is effectively taxed in the USA at the rate of the US corporation tax, but in tax havens at their low rate r^{tf}. This may be a sizeable effect.

The tax cost of corporate inversions is the capital gains tax of the owners when selling their shares in the old parent company to the new one. Due to increasing institutional ownership such taxes may be quickly recovered by the owners as higher future dividends.

Thus interest deductibility globally is the major source contributing to the tax benefits of corporate inversions. Eliminating both interest deductibility and the taxation of realized capital gains within the corporate sector would make special finance companies in the t-countries unnecessary and headquarter switches unprofitable, because both interest and equity income would then be taxed at source at regular rates.

6. Conclusion

Taxes during the repatriation and onward distribution phase of foreign-source income can outweigh the possibly lower foreign corporation tax rate compared to that of the home country when the problem is to invest the proceeds from new share issues either in the country hosting the foreign subsidiary or the parent company. Foreign equity will tend to be funded from the profits of the parent, if the owners of the parent company face a lower effective rate on capital gains than on dividends, but the repatriation and onward distribution taxes within the multinational do not affect the choice.

We cannot detect any large tax benefits in the use of loans from the parent to fund foreign subsidiaries except for loans from finance companies. Due to the repatriation-phase tax on foreign-source income, both the home and foreign country are favoured by the multinational over the third country as the markets where debt issues are sold. The existence of finance companies in third countries may be mainly explained by their low or nil tax rate - in contrast to the home-country corporation tax rate - on realized capital gains from the actively managed portfolio of foreign subsidiaries of the multinational. The low

corporation tax rate of tax havens and interest deductibility globally explain corporate inversions - relocations of headquarters.

The parent company distributes dividends from income generated in the home country to avoid paying equalization tax on onward-distributed foreign-source dividends. The latter are used to repurchase its own shares or invested in home country securities to earn taxable home country income which can be distributed without equalization tax. Such foreign-source dividends are shown to carry a lower cost of capital than domestic-source profits.

We conclude that in the world as a whole
   a. interest income tends to go untaxed because of (i) the deductibility of interest expenses in the foreign and home country and (ii) non-taxed pension funds and institutions being the major final investors on corporate debt; removing (i) globally would guarantee the single-taxation of interest income without any role for tax havens
   b. the legal ownership of subsidiaries tends to be concentrated in third countries which do not include realized gains on long-term assets in their corporation tax base; removing such a tax in the home countries would eliminate the need to use third-country investment vehicles. Such a move would likely enhance repatriation flows to the home country and would increase world efficiency by removing the incentive to maintain finance companies in third countries
   c. wither personal taxes on investment income (interest, dividends, capital gains) because such a move would eliminate the tax discrimination of direct household ownership over non-taxed pension funds and institutions.

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