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EFFECTS OF EQUALIZATION TAX ON MULTINATIONAL INVESTMENTS AND TRANSFER PRICING

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Abstract: This paper analyzes effects of equalization tax on the decisions of a multinational company. Equalization tax is an extra corporation tax on dividend distributions to ensure that the underlying profit of a dividend has borne a tax in the corporate sector equal to the imputation credit given to the shareholder. Equalization tax is shown to increase incentives for home-country real and financial investments and for transfer pricing to shift taxable income even from low-tax countries to high-tax home-countries of the parent companies. The current EU process of exchanging the imputation system and an equalization tax for a classical system may thus have adverse tax revenue effects in the countries concerned, but improves efficiency of the global economy.

Key words: Dividend taxation, International taxation, Investment incentives, Transfer pricing

JEL classification: H25, F23, H32

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Tiivistelmä: Kirjoitus tarkastelee yhtiöveron hyvitysjärjestelmiin yleisesti sisältyneen täydennysveron vaikutuksia monikansallisen yrityksen käyttäytymiseen. Täydennysverolla pyritään varmistamaan, että yhtiöveron hyvitykseen oikeutetuista osingoista on maksettu yhtiötasolla vähintään hyvitystä vastaava yhtiövero. Täydennysveron osoitetaan vahvistavan emoyhtiön kannustimia investoida reaali- ja finanssipääomaan yhtiöveron hyvitysjärjestelmää soveltavassa kotimaassaan. Täydennysvero synnyttää myös kannustimen siirtää voittoja siirtohinnoittelun keinoin ulkomailta emoyhtiön kotimaahan. Voitonsiirto voi tulla kannattavaksi jopa matalan verotuksen maasta ankaran verotuksen maahan. Monissa EU-jäsenmaissa vireillä oleva siirtyminen hyvitysjärjestelmästä klassiseen järjestelmään saattaa siten aiheuttaa siirtyville maille verotulomenetyksiä. Samalla kuitenkin kansainvälisten pääomamarkkinoiden tehokkuus paranee.

Asiasanat: Osinkoverotus, Kansainvälinen verotus, Investointikannustimet, Siirtohinnoittelu

Contents

1. Introduction

With the rapid rise in income tax rates, the integration of corporate and personal tax systems became the focus of tax policy and academic research in the 1960s into how to achieve higher efficiency in national economies. The imputation system, which credits the corporation tax on distributed profits against the personal income tax on dividends, was adopted in a growing number of countries in Europe and outside.[1]

The imputation system faces two principal issues in open economies, stemming from the desire of governments to protect their tax revenues. They seldom extend imputation credits to the foreign shareholders of dividend-distributing companies and they treat foreign profits differently from domestic profits as the sources of distributions. The latter problem derives from the basic design of the imputation credit not to exceed the domestic corporation tax payments of the distributing company. This was implemented by either granting a lower imputation credit on dividends distributed from foreign profits than on fully taxed domestic income dividends (differentiated credit), or by levying a special distribution-based tax to adjust the company-level taxes up to the imputation credit on dividends. Such a tax is commonly known either as the equalization tax or the compensatory tax.

In the case of multinationals the root of the problem is the unintended interaction of two otherwise well motivated systems: international double tax relief on cross-border income flows (foreign tax credit and exemption) and the correspondence of corporation tax to imputation credit. Equalization tax is triggered by the resulting low corporation tax on repatriated profits in the home countries of distributing companies.

The methods vary between countries in detail, but purport to achieve the same effect. The prime example of an equalization tax is the French *précompte*. Other applications include the now discontinued UK surplus *Advance Corporation Tax* (*ACT*), i.e. the portion of *ACT* not recovered against mainstream corporation tax, and the German *Nachsteuer*. In the mid 1990s Germany swapped its equalization tax for a system of differentiated credits.[2] Canada never implemented an equalization tax as part of its imputation system.

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[1] Other solutions also existed to alleviate corporate-source income from full double taxation, as dividend deduction and the split-rate method (OECD 1991).

[2] The U.S. dividend relief system includes an analogous arrangement. The *Excludable Dividend Amount* (*EDA*) is defined on the basis of domestic and creditable foreign corporate taxes. Any dividend distribution over the *EDA* is taxed in the hands of the shareholders as ordinary income at their marginal tax rates while dividends not exceeding the *EDA* are taxed at a concessionary rate of 15 per cent which was proposed to be zero in its original design (U.S. Treasury 1992). The unused *EDA* also steps up the acquisition cost of shares in capital gains taxation.

Aspects of equalization tax and other asymmetries created by imputation systems have been studied previously. Devereux and Freeman (1995) use simple capital market equilibrium conditions and analyse how different stylized forms of imputation systems affect international savings and investment flows. Their starting point is the claim by Boadway and Bruce (1992) that a national imputation system does not affect domestic investment in an international environment. Devereux and Freeman argue that this result depends crucially on who is the marginal shareholder and on the type of imputation system.

The effects of surplus *ACT* on the decisions of multinational companies (MNC) are discussed by Freeman and Griffith (1993). They concentrate on its potential detrimental effect on the competitiveness of domestic multinationals. Bond, Chennells and Devereux (1996) carried out econometric research finding the tax to have a statistically significant and quantitatively important influence on dividend pay-outs. The most relevant reference from our point of view is Weichenrieder (1995), who analyses several issues created by the international tax system, among them distortions in investment and finance and incentives for profit-shifting created by the German imputation system. Weichenrieder (1998) focuses on the investment incentives generated by the system of differentiated credits [3] and is also central to our analysis. Our study shows equalization tax to have identical incentive effects on domestic and foreign investment as the system of differentiated credits and provides new results on the profitability of transfer pricing.

The European economies have largely parted with the imputation system due to the above problems. In fact, there are rulings by the *European Court of Justice* (*ECJ*) which regard such practices as discriminating against foreign shareholders and foreign source finance.[4] The UK even scrapped *ACT* before converting the imputation system into the dividend relief system. Germany and Ireland gave up the imputation system altogether. Finland, France and Italy are planning to do so because of the ECJ rulings.

Governments tend to be rather nationalistic when it comes to their tax revenue. An equalization tax raises little direct revenue, but, as implied particularly by our analysis of transfer pricing incentives, may perhaps indirectly result in a big multiple. The policy turnaround away from the imputation system and from equalization tax may thus lead to adverse revenue consequences in the countries concerned. The flip side, of course, is the potential efficiency improvements in the global economy. We hope to add to the understanding of these areas.

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[3] Weichenrieder (1994, 1995 ch. VI c.) shows how the German system of differentiated credits creates incentives for the parent company to become a financial investor. He refers to this phenomenon as the ”Siemens effect”.

[4] EC (2003) discusses these rulings and their implications.

The rest of the paper proceeds as follows. The next section sets up a skeletal dynamic investment model for MNCs and implants a stylized equalization tax as part of it. Section 3 derives the explicit effect of an equalization tax on the basic cost of capital formulae for the parent and its foreign subsidiary first under the assumption that the parent company has no access to financial market investments and, thereafter, relaxing the assumption. Section 4 studies the tax condition for MNCs to enter into transfer pricing even from a low-tax country to a high-tax one to avoid paying equalization tax. Section 5 concludes.

2. The model

We apply the standard neoclassical model of firm investments to study the effects of equalization tax on the decisions of an MNC. Following Sinn (1993) and Weichenrieder (1995, 1998), consider an MNC consisting of a parent company, resident in the home country, and its wholly owned legally independent subsidiary, operating in a foreign country. The MNC applies similar technology in both countries. The parent is owned by individuals residing in the home country.

In the following the starred variables refer to the subsidiary and the non-starred ones to the parent. Thus let K denote the stock of real capital and $\Pi(K)$ operating profit net of economic depreciation with the standard properties $\Pi' > 0$ and $\Pi'' < 0$. The parent company can accumulate financial assets F with a rate of return i. Financial investments are made only by the parent company. The parent's budget constraint is

$$\Pi(K) + iF + (1-\omega)D^* + Q + C = G + Q^* + I + E + T, \tag{1}$$

The sources of funds are domestic profits $\Pi(K)$, the return on investments in financial markets iF, repatriated foreign dividends D^* after foreign withholding tax ω, issues of new equity Q and, following Weichenrieder (1995), profits shifted from the subsidiary C. We abstract from debt as a source of finance. Funds are spent on dividend distributions G, the subsidiary's equity Q^*, domestic physical investment I, net investment in financial markets E and home country taxes T.

The subsidiary's budget constraint is

$$\Pi(K^*) + Q^* = D^* + I^* + C + c(C) + T^*, \tag{2}$$

Its sources of funds are operating profit $\Pi(K^*)$ and equity injections from the parent Q^*. The subsidiary uses these for dividend repatriations D^*, local physical investment I^*, profit-shifting via transfer pricing C and foreign country taxes T^*. Transfer price manipulation is assumed to cause administrative costs and efficiency losses $c(C)$ with the properties $c' > 0$, $c'' > 0$, borne by the subsidiary.

The home and foreign country capital stocks develop as follows:

$$\begin{aligned} \dot{K} &= I \\ \dot{F} &= E \\ \dot{K}^* &= I^* \end{aligned} \tag{3}$$

The firm maximizes its market value

$$(4) \qquad \max_{\{G,\, D^*,\, C,\, Q,\, Q^*\}} \int_{t_0}^{\infty} (\gamma G - Q) e^{-\rho(t-t_0)} dt ,$$

where γG denotes the value of the after-tax dividends received by the shareholders and ρ is their after-tax discount rate.

As to the tax system, we first explain the central features of equalization tax and then model it in the framework of the multinational firm. The dividend-paying corporation is liable to pay equalization tax if the dividend distribution exceeds the sum of the current and past fully taxed after-tax profits as follows:

$$(5) \qquad T_{eq} = \tau_e \{\max[G - (P + R), 0]\},$$

where τ_e denotes the equalization tax rate, G dividends as above, P current domestic profit and R retained domestic profits from previous years. Though systems have differed considerably between countries, description (5) captures many typical features. One is that dividends are only compared to the home country after-tax profits.[5] Another is the inter-temporal smoothing of the equalization tax liability as reflected in (5) by taking past retained profits into account along with current profits.[6]

We proceed by splitting the dividend G into two parts

$$(6) \qquad G = D + D_e.$$

where D is 'normal dividend', which does not lead to equalization tax liability, and D_e 'excess dividend', i.e. the part of dividends which exceeds the threshold $P+R$ and triggers the equalization tax payment (5).

An upper limit for the normal dividend D now follows from the principle in (5). To simplify the analysis, we leave R out and constrain D to the current domestic after-tax profit P. This does not affect our central results.[7] The taxable domestic profit is $\Pi(K)+iF+C$, consisting of profits earned on domestic real investments $\Pi(K)$ plus the return on financial investments iF plus foreign profits shifted by transfer pricing from the subsidiary C. The constraint for D is thus:

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[5] Or equivalently the imputation credit is compared to corporation tax paid to the home country.

[6] Many countries apply time-limit rules for retained profits. In France retained profits are taken into account from the last ten years. A ten year rule is applied in Finland, too. Germany, however, had no such time limit.

[7] In an earlier version of this paper (Kari and Ylä-Liedenpohja 2003) we analyse the firm's policy in the presence of the reserve R of past after tax profits. It only affects policy during the growth path.

(7) $D \leq (1-\tau)[\Pi(K)+iF+C]$,

where τ is the rate of the domestic corporation tax. If this upper constraint (7) for D is binding at some point of time and if the firm is still willing to increase the amount of dividends, the firm must set $D_e > 0$ and pay equalization tax $\tau_e D_e$. We require that

(8) $D, D_e \geq 0$

hold to rule out tax-subsidized equity financing through $D<0$ or $D_e<0$.

The parent company's and the subsidiary's taxes T and T^* are defined by

(9) $T = \tau[\Pi(K)+iF+C] + \tau_e D_e, \quad T^* = \tau^*[\Pi(K^*)-C- c(C)]$

The parent's total tax liability consists of domestic corporation tax at rate τ and equalization tax. The home country is assumed to give international double-tax relief using the exemption method, which explains why T in (9) is not affected by profit repatriations D^* and foreign taxes. The subsidiary's taxes consist of the foreign corporation tax, the base of which is profits from local production less income shifted to the parent company and its cost.

To further simplify the analysis, we assume that capital gains are tax exempt but that investors pay income tax at rate τ on dividends and interest income. This implies for the discount rate $\rho = (1-\tau)r$, where r is the owners' required pre-tax real rate of return, and for the tax valuation parameter of dividends $\gamma=(1-\tau)/(1-u)$, where u is the rate of imputation credit assumed to satisfy $0 < u \leq \tau$.

The current-value Lagrangean for the problem is

(10) $L = \gamma(D+D_e) - Q + \lambda_1\{(1-\tau)[\Pi(K)+iF+C]+(1-\omega)D^*+Q-D-(1+\tau_e)D_e-Q^*-E\}+$

$\lambda_2 E + \lambda_3\{(1-\tau^*)[\Pi(K^*)-C-c(C)]-D^*+Q^*\} + q_1\{(1-\tau)[\Pi(K)+iF+C]-D\} +$

$q_2 D + q_3 D_e + q_4 Q + q_5 D^* + q_6 C + q_7 Q^* + q_8 F$

The first-order necessary conditions are

(11a) $\partial L/\partial D = \gamma - \lambda_1 - q_1 + q_2 = 0$,

(11b) $\partial L/\partial D_e = \gamma - (1+\tau_e)\lambda_1 + q_3 = 0$

(11c) $\partial L/\partial D^* = (1-\omega)\lambda_1 - \lambda_3 + q_5 = 0$

(11d) $\partial L/\partial C = (1-\tau)\lambda_1 - (1+c')(1-\tau^*)\lambda_3 + (1-\tau)q_1 + q_6 = 0$

(11e) $\partial L/\partial E = -\lambda_1 + \lambda_2 = 0$

(11f) $\partial L/\partial Q^* = -\lambda_1 + \lambda_3 + q_7 = 0$

(11g) $\partial L/\partial Q = -1 + \lambda_1 + q_4 = 0$

(11h) $\dot{\lambda}_1 = \rho\lambda_1 - (1-\tau)\Pi'(K)[\lambda_1+q_1]$

(11i) $\dot{\lambda}_2 = \rho\lambda_2 - (1-\tau)i[\lambda_1+q_1] - q_8$

(11j) $\dot{\lambda}_3 = \rho\lambda_3 - (1-\tau^*)\Pi'(K^*)\lambda_3$

3. Equalization tax and the MNC's investment policy

This section aims to analyse how equalization tax affects investment by the MNC. We focus more on the steady state but also present some observations concerning the growth path. We start from a situation where the parent does not invest in financial assets. For the moment the issues raised by transfer pricing are abstracted from. The parent is assumed to repatriate an exogenous amount of profits D^* from the subsidiary. This corresponds to the parent company owning a mature subsidiary which distributes its entire profits to the parent.

No equalization tax, no financial flexibility

Let us first look at a benchmark in which the home country tax system is as assumed above, except without equalization tax. Thus there is no capital gains tax but interest income, dividends and corporate profits are taxed uniformly at the same rate τ and an imputation system with $u \leq \tau$ is run. The parent finances its investment from retained earnings in the steady state. Thus its steady state cost of capital for domestic investment is

$$\Pi'(K) = r \tag{12}$$

that is, it equals the market rate of interest. In line with the new view of corporation tax (Auerbach 1979 and Sinn 1987), the marginal source of finance is retained profits, and the elements of the dividend tax, now the imputation rate u, do not affect the cost of capital (12).

The corresponding condition determining the subsidiary's steady-state stock of capital is

$$\Pi'(K^*) = \frac{1-\tau}{1-\tau^*} r \tag{13}$$

Here the cost of capital depends on the relationship between the personal tax rate τ on income from capital in the home country and the foreign country corporation tax rate τ^*. A lower τ^* than τ causes $\Pi'(K^*)$ to be less than $\Pi'(K)$.

Equalization tax, no financial flexibility

Introduce next an equalization tax in the home country and consider its effects on the foreign-country cost of capital. Assume a mature parent, which repatriates all foreign profits and pays out all foreign and domestic profits as dividends to its shareholders. Because D^* is exempted from the home-country corporation tax, $D_e>0$ holds true, which implies $q_3=0$ in conditions (11). Under conditions (11b) and (11c) the shadow values for the parent's and subsidiary's retained earnings

take the values $\lambda_1 = \gamma/(1+\tau_e)$ and $\lambda_3 = (1-\omega)\gamma/(1+\tau_e)$. Using these and condition (11f), we observe that the marginal source of finance of a mature subsidiary is retained earnings, not new share issues.[8]

The effect of equalization tax on the subsidiary's investment and cost of capital follows from condition (11j):

$$(14) \qquad \Pi'(K^*) = \frac{1-\tau}{1-\tau^*} r$$

We observe that equalization tax does not enter into the subsidiary's cost of capital. This result confirms the new view of corporate taxation in the international framework (Hartman 1985; Sinn 1984, 1987, 1993), which says that dividend tax factors and repatriation taxes do not affect the cost of capital if the marginal source of finance of the subsidiary is its retained earnings.

Note, however, that this neutrality result does not mean that an equalization tax would not have any impacts on foreign investment. Applying the thinking of Sinn (1991, 1993), the initial equity provided by the parent is now sensitive to an equalization tax because the repatriated dividends D^* are subject to it while the source of such funds Q* is not. This is the case if the source of Q^* is fully taxed domestic profits $\Pi(K)$, the shadow value of which is not reduced by the equalization tax rate τ_e. We do not treat this issue in any more depth since our main interest lies in the effects of an equalization tax on the domestic economy.

Consider next the investment by parent. The parent has three alternative sources of finance: new share issues, domestic profits and foreign profits. The benefits of a policy of increasing D and financing this spending by reducing D_e can be seen by studying $\partial L/\partial D - \partial L/\partial D_e$ from (11a) and (11b). The difference is positive for a mature parent, which implies that to reduce foreign income dividends is the preferred way to finance investment. With equalization tax, foreign profits therefore always dominate domestic profits as the source of finance for the parent's investment. Similarly, using condition (11g) and the steady state value for $\lambda_1 = \gamma/(1+\tau_e)$, we observe that foreign profits also dominate equity issues Q. So we conclude that a mature parent's marginal source of finance under such a tax system is foreign profits.

The cost of capital of a parent that enjoys a stream of tax-exempt dividends D^* from its mature subsidiary is then derived from condition (11h). Using $\rho = (1-\tau)r$, we obtain :

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[8] The difference $\lambda_3 - \lambda_1$ measures the marginal advantage of substituting new issues of shares for retentions (see Sinn 1987, p.80). As it is negative here retained earnings is the preferred financing form.

(15) $$\Pi'(K)= \frac{1}{(1+\tau_e)} r$$

The cost of capital is now lower than in case (12). The equalization tax creates an incentive to increase home country real investment. The explanation for this somewhat surprising result follows the new view. Equalization tax is deducted from the opportunity value of foreign-source profits. Such funds are therefore cheaper than domestic-source profits, reducing their cost of capital in the home country.

Earlier Devereux and Freeman (1995) and Weichenrieder (1995, 1998) have reported similar effects on domestic investment incentives. Using capital market equilibrium conditions, the former study argues that a tax integration scheme, which grants credits only for taxes on domestic profits, gives an incentive for the domestic company to withdraw funds from its world market investments to use them for domestic investments, reducing its pre-tax rate of return requirement until the post-corporation tax rate of return on domestic and world market investments is equal. Similarly, Weichenrieder (1995, 1998) shows that the cost of capital for domestic investment may be very low in an imputation system that gives a lower imputation credit for dividends distributed from foreign income than for domestic-source dividends. In fact our formula (15) corresponds exactly to formula (21) in Weichenrieder (1998) under the same assumptions about the tax rates and using $t_e = u/(1-u)$, where u is the imputation rate. An equalization tax and a system of differentiated imputation credits thus create equivalent incentives.

More light can be shed on the tax effects in (15) by inspecting the parent's policy during the growth phase.[9] In the appendix we show that the parent approaches its maturity phase in a regime following a policy:

(16) $$D = (1-\tau)[\Pi(K)+iF+C];\ D_e = 0;\ I = D^*$$

So prior to its maturity phase the parent invests its foreign repatriated profits and pays out its domestic profits as dividends. By reinvesting the repatriated profits the parent foregoes paying equalization tax and in fact transforms today's possible foreign income dividends into future domestic income dividends, which can be distributed without any equalization tax liability. This tax-induced investment impetus continues until the benefits of the income transformation and the costs of the reduced marginal return on real investment are in balance.

[9] It is still assumed that the parent obtains an exogenous flow of repatriated foreign profits.

Equalization tax under full financial flexibility

In the preceding section the parent has no access to financial market investment. The parent's only investment opportunities are domestic investment I and an equity injection into the foreign subsidiary Q^*. A useful exercise is to look at the parent's policy when it has access to the financial markets as an investor. A good background to this is the analysis by Weichenrieder (1994, 1998) on the effects of the asymmetries of the former German dividend taxation system. He shows that, allowing for financial flexibility, the effects of the differential imputation rates change remarkably and may even induce an MNC to postpone the distribution of foreign-source profits forever.

To see this, derive the parent company's steady-state cost of capital for domestic real investment in the case where it has access to capital market investment $E \geq 0$.[10] Assume first that the parent distributes domestic-source dividends $D>0$.[11] This implies $q_2=0$ and $\lambda_1+q_1=\gamma$. By differentiating (11e) with respect to time and using (11h) and (11i), we obtain $\Pi'(K)= r +q_8$. This condition tells us that with a marginal rate of return on domestic real investment $\Pi'(K)$ greater than the market interest rate r, the parent's stock of financial capital F is not positive. This is obvious because taxes do not change the comparison. But, when the parent's capital stock K reaches the value at which $\Pi'(K)= r$ is satisfied, the parent starts to invest in financial assets F. At a uniform home-country tax rate τ on income from capital, $q_1= 0$ holds under condition (11i), whereby (11a) and (11b) imply $q_3> 0$ and $D_e = 0$. The parent thus distributes domestic profits only and invests the repatriated foreign profit D^* in the financial markets. The firm's equity increases constantly. As we show in the appendix, the transversality condition is satisfied despite the continuous growth of the firm's capital stock.[12]

Because the condition

(17) $\Pi'(K)= r$

defines the size of the parent's domestic stock of real capital, the availability of financial investment abolishes the effect (15) of an equalization tax on the firm's real capital investment, but induces the parent to invest an infinitely continuing flow in financial markets and never to pay out foreign-source profits as dividends.

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[10] In this section we assume $i=r$, i.e. the parent's and the owner's rate of returns on financial assets are equal.

[11] Note that if the firm pays no dividends, $D=0$ implies $q_2>0$ and $q_1=0$ and further by (11a) and (11b) $q_3>0$ and $D_e=0$. Thus $D=0$ cannot be a steady state for an infinitely living firm.

[12] In literature, Weichenrieder (1998) and Kari (1999) report similar solutions, in which an infinitely-living firm increases its stock of financial capital in its final policy regime.

In the preceding section we gave an interpretation of the parent's investment policy during the final growth phase. Under this the parent, by investing foreign profits, aims to transform foreign-income dividends into more leniently taxed domestic-income dividends. Now this interpretation is even more evident. The parent never pays out foreign-income dividends but distributes the continuously growing amount of domestic income, thanks to the growing returns on reinvested foreign profits.

4. Equalization tax and transfer pricing

The preceding analysis relies on the assumption that the foreign subsidiary has only one way to repatriate profits to the parent, namely dividend payments D^*. Note that they are paid from after-tax foreign profits and are tax-free in the hands of the parent due to the exemption method. As made clear above, they trigger equalization tax liability when distributed onward. In practice there are other alternatives too, such as interest and royalty payments, the tax treatment of which usually differs from that of intra-company dividends. Another alternative to dividend repatriations is profit-shifting between the units of an MNC either using transfer pricing of goods and services or optimizing the financial structure of the company by intra-firm debt transactions. These issues and implications of them for tax policy have received increasing attention in applied and analytical tax literature in recent years.

This section analyses equalization tax in an environment where the MNC has some room for transfer pricing. Usually transfer pricing is assumed to be used to shift profits from high-tax economies to tax havens and countries with exceptionally low corporate tax rates, as shown by Weichenrieder (1995, 1996) and Haufler and Schjelderup (2000). It is, however, possible that the particular structures of tax systems alter this picture, and this is in fact the main idea behind our analysis in this section. We assume the home country corporate tax rate to be higher than the foreign one $\tau > \tau^*$, but analyse the condition under which it would be beneficial to shift income to the high-tax home country.

In our skeletal model variable C depicts shifted pre-tax profits from the subsidiary to the parent. Setting $C>0$ decreases the subsidiary's taxable profits and increases the parent's profits (see definition (9)). Profit-shifting activity causes some convex costs for the subsidiary due to the administrative costs and inefficiencies produced by the distorted transfer prices. These costs are denoted above by $c(C)$. The incentives for profit-shifting can be analysed from condition (11d), repeated here:

$$(11d) \qquad \partial L/\partial C = (1-\tau)\lambda_1 - (1-t^*)(1+c')\lambda_3 + (1-\tau)q_1 + q_6 = 0$$

which gives the benefits and costs to the owner of the multinational from a one-unit increase in C. The first term is the increase in the home country after-tax income from a change in C valued at the shadow price of the parent's retained after-tax profits λ_1. The second term is the loss in the foreign country after-tax income valued at λ_3. The third term gives the value of the marginal release in the upper constraint for normal dividends D, which is caused by an increase in domestic profits. Remember that D derives from the MNC's home-country after-tax profits, which can be distributed without equalization tax liability.

As in section 3, assume that there is no access to capital market investment and let the parent and its subsidiary both be mature. From section 3 we obtain $\lambda_1+q_1=\gamma$ and $\lambda_3 = (1-\omega)\gamma/(1+\tau_e)$ in this case. By substituting these into condition (11d) and rearranging we obtain the condition for transfer pricing as follows

$$(18) \qquad c' = (1+\tau_e)\frac{(1-\tau)\gamma + q_6}{(1-\tau^*)\gamma(1-\omega)} - 1$$

Note that $C > 0$ implies $c'>0$ and $q_6=0$ due to the properties of cost function $c(C)$ and the Kuhn-Tucker conditions. From these and (18) we obtain a tax rate condition for income-shifting from the foreign country to the home country:

$$(19) \qquad \frac{(1+\tau_e)(1-\tau)}{1-\omega} > (1-\tau^*)$$

Equalization tax τ_e increases the lhs of (19) and thus increases the probability that despite the assumption $\tau \geq \tau^*$ a proportion of foreign profits are transferred to the home country using transfer pricing.[13] Foreign withholding tax ω works in the same direction.

This increased incentive for transfer pricing caused by equalization tax may again be interpreted as a motivation to transform foreign profits (foreign-income dividends) into domestic profits (income dividends) which can be distributed to shareholders without any equalization tax.

This result is derived in a framework in which the parent has no access to financial market investment. If we relax this assumption but retain the assumptions concerning the tax system, condition (18) becomes $(1-\tau)/(1-\omega)>(1-\tau^*)$.[14] The effect of equalization tax on transfer pricing vanishes. This, however, is not a general result but depends crucially on the assumptions for example of a unified tax rate on capital income and corporate profits and no capital gains taxation.

If, for example, capital gains taxation τ_g is added into our model, equalization tax becomes important again. The tax rate condition becomes $(1-\tau)/[(1-\omega)(1-\tau_g)]>(1-\tau^*)$.[15] The reason is that capital gains tax reduces the benefits from a policy of retaining foreign profits and investing them in financial

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[13] The analysis assumes implicitly that due to the convexity of the cost function only part of the foreign profits is shifted to the home country and the rest of them is repatriated as dividends D^*. Thus the parent's marginal source of finance is foreign income dividends despite the fact that part of profits is repatriated using profit shifting.

[14] In the financial investment case $\lambda_1 = \gamma$ instead of $\gamma/(1+\tau_e)$.

[15] If τ_g is introduced $\lambda_1 = (1-\tau_g)\gamma$ by condition (11i). To derive the tax rate condition substitute this into (17).

assets. In this case a preferred way to implement the avoidance of equalization tax is to transfer-price the foreign profits into the home country. As a result domestic corporation tax will be paid on the profits but foreign corporation tax and domestic equalization tax are avoided.

5. Conclusions

Measures to integrate personal and corporate taxes often run into difficulties in the case of multinationals. One example is the imputation system implemented usually with either an equalization tax or with a system of differentiated credits on foreign-income and domestic-income dividends. Equalization tax is levied on the basis of dividend distribution to guarantee that the company has always paid corporation tax equal to the amount granted as imputation credits to its shareholders. We model equalization tax in the context of a dynamic investment model of an MNC. Our major interest is in the effects of the tax on the parent's decisions.

In particular, we show that equalization tax reduces the parent company's cost of capital for domestic real investment. The intuition for the result is that repatriated foreign profits are a cheap source of finance for the parent's investment because onward distribution of these profits would cause equalization tax liability. The profits earned on these investments can, however, be distributed without any additional tax burden. We also show that if the parent company has access to financial markets as an investor, the effect on real investment vanishes. The parent, however, invests all foreign profits in financial assets and distributes domestic profits only. By this policy the parent transforms foreign-source dividends into future domestic-source dividends, which can be distributed to shareholders without equalization tax. Comparing these results to Weichenrieder (1998), who analyses the system of differentiated credits, shows that the two systems lead to similar investment incentives.

We also argue that equalization tax increases incentives to shift foreign profits to the home country using transfer pricing. It may even lead to the counter-intuitive outcome that international profits are reported and taxed in a high-tax country. Transfer pricing can again be seen as a means to transform foreign profits into domestic profits which can be distributed without equalization tax. Depending on the characteristics of the tax system, the parent company applies either both approaches to evading equalization tax liability – transfer pricing and financial investment – or only one of them.

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Appendix

1. Parent's policy during its growth phase (section 3.2)

Assume D^* is exogenously determined and $C=Q^*=F=0$. There are now four different regimes, depending on whether the non-negativity constraints for D and D_e are binding or non-binding. The regime that satisfies $D>0$, $D_e>0$ is shown to be the steady-state regime. It is characterized by $\Pi'(K)=r/(1+\tau_e)$ and $\lambda_1=\gamma/(1+\tau_e)$.

The regime $D=0$, $D_e>0$ is not feasible. $D_e>0$ implies $q_3=0$ and further by (11a) and (11b) $q_1=0$ and $D=(1-\tau)\Pi(K)$. Thus the upper constraint for D must be binding if $D_e>0$.

Assume an optimal amount of outside equity is injected into the parent company at the time the firm is started. The condition for this equity investment is $\lambda_1=1$ (Sinn 1993). In the potential growth regime $D=D_e=0$ the shadow price λ_1 may take the following values: $\lambda_1>\gamma$, and in the last remaining regime $D>0$, $D_e=0$: $\gamma/(1+\tau_e) < \lambda_1 < \gamma$.

Based on the values of the shadow price λ_1 in different regimes we can draw the growth path for the parent firm. Assume $\gamma<1$ due to partial imputation credit. After initial equity injection the firm starts its growth in regime $D=D_e=0$. When the capital stock has reached the size at which $\lambda_1=\gamma$, the firm switches to regime $D>0$, $D_e=0$. The firm grows in this regime until the above conditions prevailing in the steady state are satisfied. If there is full imputation credit $s=\tau$, the parent starts its internal growth with regime $D>0$, $D_e=0$.

2. The transversality conditions in the financial investment case (section 3.2)

The transversality conditions for the problem are

$$\text{(A1)} \qquad \lim_{t\to\infty} \lambda_1(t)K(t)e^{-\rho t} = \lim_{t\to\infty} \lambda_2(t)F(t)e^{-\rho t} = \lim_{t\to\infty} \lambda_3(t)K^*(t)e^{-\rho t} = 0$$

Note that $K(t)$ and $K^*(t)$ and their shadow prices $\lambda_1(t)$ and $\lambda_3(t)$ are constants in the financial investment regime of section 3.2. Thus the terms in the first and third condition in (A1) approach zero when $t\to\infty$. The parent's financial capital F grows as follows: $\dot{F} = (1-\omega)D^*$. Note that $(1-\omega)D^*$ is positive and constant in the regime. This implies that F grows at a decreasing rate. Since λ_2 is a constant, the value of $\lambda_2 F e^{-\rho t}$ approaches zero when $t\to\infty$. Thus the transversality condition related to F is also satisfied.

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