

**Neutralities and Non-Neutralities in International  
Corporate Taxation: An Evaluation of Possible and  
Recent Moves**

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# Neutralities and Non-Neutralities in International Corporate Taxation: An Evaluation of Possible and Recent Moves\*

By Marcel Gérard

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## I. Introduction

Two major tax events occurred in the European Union in 2001. In January 2001 Germany – after Ireland and, *de facto*, UK in 1999 – moved away from the imputation system<sup>1</sup> and in October the EU Commission released a report on company taxation which announced the Commission's objective to provide EU businesses with a consolidated corporate tax base for their EU-wide activities.<sup>2</sup>

Those two events reflect the same trend. When, in the 1970s, economists started to cope seriously with the taxation of companies – see the seminal works of King (1974) and Stiglitz (1973) – the vision of the company was clearly that of an entity operating in a single jurisdiction and owned by shareholders who were

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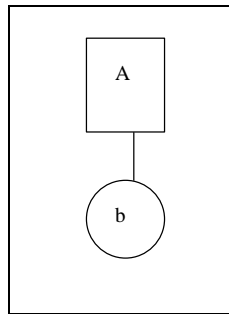
<sup>1</sup> On the German tax reform, see a.o. *Dickescheid* (2001), *Fuest and Huber* (2000; 2001), *Homburg* (2000), *Keen* (2002) and *Schreiber* (2000). In the present paper, however, we focus primarily on the aspects of the reform which are relevant for intercompany flows of funds. Note that for dividends received by multinationals the use of the exemption system was already dominant in Germany.

<sup>2</sup> See European Commission (2001, 582 final).

individuals and residents of that jurisdiction.<sup>3</sup> Therefore economists considered that the marginal shareholder of a firm was an individual resident of the same jurisdiction and their focus was on the integration of the tax basis of the firm and of the individual shareholder, especially to ensure that progressivity was not altered by flat levies at corporate levels. All that had to be related to the vision of what was – or still is – an equitable tax system, a vision much influenced by authors like Haig (1921) and Simons (1938): they viewed an equitable system as a system where every taxpayer is taxed according to his or her ability-to-pay measured by his or her global income, independently of the type, source and use of the components of that income. In a framework where factors were immobile across jurisdictions, that vision of equity was not incompatible with that of efficiency – see Ramsey (1927). Figure 1 illustrates that situation: A is a company and b an individual shareholder of the same jurisdiction, deemed to be the marginal one; the tax system aims at integrating A and b.

Figure 1

**Integration when the Marginal Shareholder is a Resident Individual**



At this prospect, the imputation, or crediting, system – where a fraction of the corporate tax paid by the company on profits to be distributed as dividends, is regarded as an advance payment on the tax liabilities of the shareholder – seemed to be especially desirable. The proposal of European tax harmonization issued by the EC Commission and reported by King (1977, pp. 57 and 58) was clearly in line with that view.

Around a quarter of a century later Fuest and Huber (2001) conclude “in an open economy, where the marginal shareholder is a foreigner, it is not desirable

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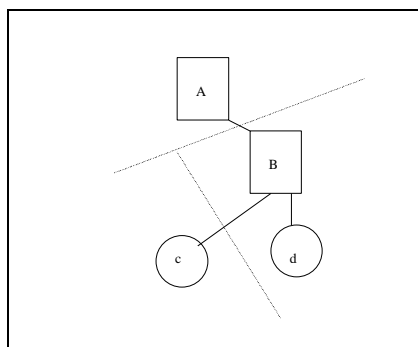
<sup>3</sup> According to King (1977), more than 80 percent of US firms owners at the end of the sixties, were individuals, as opposed to institutions. Corresponding figures for the UK were 47 percent. However, even then, those figures were progressively declining.

to offer double taxation relief for dividends paid by domestic firms to domestic shareholders<sup>4</sup>.

That move illustrates quite well that we are now in another world, where capital is mobile and local companies are often subsidiaries of multinational enterprises. On figure 2, A and B are companies, separated by a borderline and foreign company B is the marginal shareholder of company A; c and d are individual shareholders possibly non-residents of the same jurisdiction as B. The tax system then aims at integrating A and B, rather than B and its individual shareholders.

Figure 2

**Integration when the Marginal Shareholder is a Foreign Company  
within the Multijurisdictional Firm**



That move of the vision of integration parallels the 2001 German tax reform. For a long time, that country had been a champion of imputation, with a full and repayable crediting system. However, as already pointed out by Boadway and Bruce (1992), as well as by Devereux and Freeman (1995), the properties of such system are usually not allowed to cross the borders; imputation of foreign tax is usually limited to the level of domestic tax liabilities<sup>4</sup> so that the imputation system discriminates between resident and non-resident shareholders, which is especially hard to accept in today's European Union.

If equity with respect to foreign shareholders cannot be an issue of special interest for the government of a given country, the absence of the financial neutrality property is however subject to consequences. Moreover, new forms of tax neutrality become relevant in an international or interjurisdictional setting, like

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<sup>4</sup> The reason for that limitation is obvious. If there were no such limitation, the foreign government would have the possibility to export the burden of its tax revenue by highly taxing non-residents without causing them any damage in terms of net income.

neutrality with respect to the decision whether to incorporate a foreign affiliate entity<sup>5</sup>, and with respect to the location of the parent entity or of the foreign affiliate.

The concept of integration can be reinterpreted in that new context, shifted from the integration between a domestic company and its individual shareholders to that between the members of a given multijurisdictional set of interrelated companies or branches.

The recent European Commission communication – EU Commission (2001) – goes a step forward in that direction when it proposes to organise a consolidated tax base for related entities operated on the territory of the European Union.

Section II below suggests the concept of a perfectly integrated tax system, i.e. a tax system that has no influence on the financial decisions, the legal organisation and the location of the various entities of a multijurisdictional firm. It is a system “as if” the set of jurisdictions considered were a single jurisdiction. In section III we suppose that the tax base of each entity of a multijurisdictional firm is computed separately and we explore the possibility for a tax system set up in that framework to become a perfectly integrated one; we conduct the analysis for the two most popular forms of interjurisdictional tax systems, imputation and exemption. That exercise provides us with the opportunity to look at the German reform. In section IV we conduct a similar exercise assuming that a single consolidated tax base is computed for the whole multijurisdictional firm according to the tax law of the parent entity or to a common tax law; that unitary tax base is then apportioned among the jurisdictions of the different entities. That exercise allows us to examine the new direction suggested by the recent EU Commission report on company taxation, which argues that such a system can prevent Europe from some harmful tax competition and transfer pricing issues. Some conclusions are suggested in section V.

## II. A Perfectly Integrated Tax System

Let us assume a multijurisdictional firm which consists of a parent and two affiliated active entities like plants or stores, either incorporated – they are then subsidiaries of the parent – or not – they are then branches of the parent. The affiliated active entities are located in two different jurisdictions denoted by  $i$  and  $j$  while the parent is located in  $h$ , a jurisdiction which can be either  $i$  or  $j$ . Without loss of generality the parent can be either a company or an individual. Deemed to live for a long time, the multijurisdictional firm has invested one unit of money in production tools which are distributed among the affiliates. A fraction  $\alpha$  has been invested in the entity located in jurisdiction  $i$  and a fraction  $1-\alpha$  in the entity located in jurisdiction  $j$ . Together the two entities produce and sell one unit of

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<sup>5</sup> When a foreign affiliate is incorporated, it becomes a subsidiary and has its own legal personality; otherwise it is termed a branch, a foreign entity operated under the legal umbrella of the parent located abroad. Among the branches, tax law usually makes a distinction between permanent establishments like a plant or a store, and non-permanent establishments, like a representation or a hall of exhibition; in this paper we suppose that branches are permanent establishments.

good per period. Entity  $i$  produces a fraction  $\alpha$  and entity  $j$  produces  $1-\alpha$ . Entity  $i$  sells a fraction  $q$  of the entire production on the retail market while entity  $j$  sells  $1-q$ . The excess production  $\alpha-q$  of entity  $i$ , supposed to be positive, is sold by that entity to entity  $j$  at an internal transfer price. Adopting an intertemporal perspective<sup>6</sup> we define  $c$ ,  $v$  and  $p$  as the – exogenously – discounted flows of unit production costs, unit retail prices and internal transfer prices respectively, with  $c \leq p \leq v \leq 1$ .<sup>7</sup>

We consider that, apart from manipulating transfer prices, four avenues exist to channel income from the active entity  $i$  (viz.  $j$ ) to the parent one  $h$ . Three are relevant when  $i$  is incorporated: dividends, characterised by sub- or superscript  $f = 1$ , interest –  $f = 2$  – and capital gains –  $f = 3$ ; one refers to the transfer of business income –  $f = 4$  – when  $i$  is a permanent establishment, thus an unincorporated entity. Then, if there is no integration at all, the profit of entity  $i$ , for its parent  $h$ , channelled through avenue  $f$  and before tax at parent level<sup>8</sup>, is

$$(1) \quad y_{hf}^i = (1 - \tau_i^f)[vq + p(q - \alpha) - c\alpha] + \tau_i^f a_i \alpha, \quad h = i, j$$

with

$$(2) \quad \begin{aligned} \tau_i^f &= \tau_i^d, & f &= 1 \\ &= \lambda_i \tau_i^u, & f &= 2 \\ &= \tau_i^u, & f &= 3 \\ &= \tau_i^b, & f &= 4 \end{aligned}$$

where  $\tau_i^d$  stands for the tax rate on distributed profit in jurisdiction  $i$ , assumed to be invariant over time,  $\tau_i^u$  is the tax rate on undistributed profit,  $\lambda = 0$  under usual corporate tax rules where interest payment is deductible against the corporate tax base, and  $\lambda = 1$  if cash flow tax is at work,  $\tau_i^b$  is the tax rate on the benefits of a branch in  $i$ . Moreover  $a_i$  is a tax shield, the presence of that term aiming at capturing possible interjurisdictional differences in terms of tax base composition;  $a_i$  (viz  $a_i$ ) is comprised between 0 and 1 and can be seen as a discounted flow of depreciation allowances - notice that under cash flow tax  $a_i = 1$ .<sup>9</sup>

<sup>6</sup> In this paper, however, intertemporality is kept as simple as possible in order to avoid technical difficulties which could distract us from the core issue; on that issue see *Myles* (1995) and typical intertemporal approaches like *Auerbach* (1979) and *Bradford* (1981).

<sup>7</sup> Tax elements affecting the various sources of funds will be introduced directly in the equations, so that we can use a discount rate independent of the tax rates.

<sup>8</sup> The equation below describes profit rather in an accounting sense, the corresponding net present value is  $y_{hf}^i - \alpha \left( \text{viz } y_{hf}^j (1 - \alpha) \right)$ .

<sup>9</sup> On the cash flow tax see *Bradford* (1977).

At the level of the parent entity additional taxation at rates  $\tau_{hi}^f$  and  $\tau_{hj}^f$  occurs, possibly depending on the source jurisdiction of the flow (either  $i$  or  $j$ ), the financial channel used ( $f = 1, 2, 3$ ) and the legal organisation of the active entity ( $f =$  either 1, 2, 3 or  $f = 4$ ); also corresponding tax shields may exist, which are denoted  $a_{hi}$  and  $a_{hj}$  respectively.

In such a framework it is likely that the multijurisdictional firm can make a profit in strategically selecting the type of finance, the legal organisation, the location of the parent, that of the active affiliate entities, or even the transfer price  $p$ , for the purposes of maximising its value  $V$  – or minimising its overall tax liabilities. In other words, the multijurisdictional firm

$$(3) \quad \text{Max } V = \sum_{h,f,\alpha,p} \sum_h \sum_f \left( y_{hf}^i + y_{hf}^j - T_{hi}^f - T_{hj}^f \right) - 1$$

with

$$T_{hi}^f = \tau_{hi}^f [vq + p(\alpha - q) - (c + a_{hi})\alpha]$$

and

$$T_{hj}^f = \tau_{hj}^f [v(1 - q) - p(\alpha - q) - (c + a_{hj})(1 - \alpha)] .$$

Under a perfectly integrated tax system, however, equation (3) becomes,

$$(4) \quad V = (1 - \tau)(v - c) + \tau\alpha - 1$$

totally independent of any reference to finance, organisation or location-specific parameters, which in turn implies that effective tax is identical across jurisdictions and amounts to  $\tau(v - c - a)$ . Then, the multijurisdictional firm has no tax incentive to modify its financing policy, its legal organisation, the location of the plants and that of the parent company, or to manipulate the transfer price. This system is viewed here as a desirable objective, especially since it provides no incentives to make decisions solely for tax purposes and puts an end to tax competition. It is termed neutral with respect to finance decision, legal organisation, capital export and capital import. Note that capital export neutrality alone paves the way for tax competition in order to get headquarters or parent entities, while sole capital import neutrality calls for tax competition to get subsidiaries or branches and to transfer pricing strategies.

We will now explore under which conditions some particular tax designs can become perfectly integrated tax systems. We do that first in a setting characterised by separate tax bases, then in a framework where the tax base is consolidated.

### III. Separate Tax Bases

In that setting the tax base is computed separately for each entity. However the overlapping of tax bases – e.g. the tax base of the parent company can include that of its subsidiaries – can produce double taxation – e.g. the tax base of the subsidiary is taxed first at that level, and second at the level of the parent company. Most jurisdictions, however, have set up mechanisms to mitigate that double taxation; a typology of those systems is proposed by Alworth (1988), Mintz and Tulken (1996) and Gérard and Gillard (2001). A first way to alleviate the full double taxation is to adopt what Feldstein and Hartman (1979) term *full taxation after deduction*. However, the most popular instruments to alleviate full double taxation are imputation – also named crediting – and exemption. Both have interesting properties but neither results in a perfectly integrated tax system unless they are supplemented with some additional institutional features.

#### 1. Imputation

Under an *imputation* or *crediting* system a fraction  $x_{hi}^d$  of the tax paid by the subsidiary in  $i$  on the profits to be distributed as dividends to the parent in  $h$  is regarded in that latter jurisdiction as an advance payment on tax liabilities at that level; the advance, or tax credit, can also be computed as a fraction of the gross dividend. A generalisation of the imputation mechanism implies that a fraction  $x_{hi}^\lambda$  applies in case of interest, a fraction  $x_{hi}^g$  in case of capital gains – on that latter generalisation, see Gérard (1982) – and a fraction  $x_{hi}^b$  in case of business income from a branch. Then, denoting  $x_{hi}^f$ ,  $f = 1, 2, 3, 4$  for  $x_{hi}^d, x_{hi}^\lambda, x_{hi}^g$  and  $x_{hi}^b$  respectively, and similarly when from  $j$ , net income of the parent is, assuming  $\tau_{hi}^d = \tau_{hj}^d = \tau_h^f$  and allowing  $f$  to be different depending on the active entity,

$$\begin{aligned}
 (5) \quad V = & (1 - \tau_h^f) \left( 1 - \tau_i^f + x_{hi}^f \tau_i^f \right) [vq + p(\alpha - q) - c\alpha] \\
 & + (1 - \tau_h^f) \left( 1 - x_{hi}^f \right) \tau_i^f a_1 \alpha \\
 & + (1 - \tau_h^f) \left( 1 - \tau_j^f + x_{hj}^f \tau_j^f \right) [v(1 - q) - p(\alpha - q) - c(1 - \alpha)] \\
 & + (1 - \tau_h^f) \left( 1 - x_{hj}^f \right) \tau_j^f a_j (1 - \alpha) - 1.
 \end{aligned}$$

We can now examine and discuss the properties of that system, starting with financial neutrality.<sup>10</sup> Then we can state that<sup>11</sup>,

<sup>10</sup> Our approach is consistent with the so called "new" view – see, inter alia, Sinn (1991) – under the assumption that the marginal investor can be a parent company, possibly located in another jurisdiction.

<sup>11</sup> The imputation system examined in that subsection turns out to be a classical system – i.e. a full double taxation system – if  $x$  vanishes. A combination of such a classical system with a cash flow tax ( $\lambda_i = a_i = 1$ ) – see also below – also exhibits the property

Proposition 1 (F-neutrality) – *The imputation system is neutral with respect to financial choices if (1) the imputation is full, generalised, incentive compatible and repayable, and (2) the tax rate at parent level does not discriminate among types of income.*

*Full and generalised* imputation implies  $x_{hi}^f = 1$ ,  $f = 1, 2, 3$ . This condition is rarely met by actual systems. Although  $x_{hi}^d = 1$  under most full imputation systems and  $x_{hi}^\lambda$  is not relevant since cash flow tax is almost never used<sup>12</sup>,  $x_{hi}^g$  is nonetheless usually zero. *Incentive compatible* means that it must be in the parent's interest to use the system.<sup>13</sup>

The *repayability* condition implies that the tax administration of the parent jurisdiction accepts that the tax liability of the parent might be negative and then repays it with the amount of the excess credit. Such a condition rules out the limitation of the credit to the level of the parent's domestic tax liabilities. However, repayability is never operated at the international level.<sup>14</sup> Non-repayability, and a *fortiori* absence of crediting, discriminates between resident and non-resident shareholders, a major reason which motivated Germany to give up that system (see the example below). Finally *non-discrimination among types of income* implies that the tax rate at parent level is independent of the type of income, so that  $\tau_h^f = \tau_h$ ,  $f = 1, 2, 3$ . This implies in particular that the capital gains are taxed as dividends and interest income, when accrued, or that an equivalent system is operated.

If those conditions are fulfilled,  $V$  is independent of the financing policy since,

$$(6) \quad V = (1 - \tau_h)(v - c) - 1, \quad f = 1, 2, 3.$$

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of F-neutrality; that results immediately arises from equation (5) and parallels the contribution of *Kari and Ylä-Liedenpohja* (2002) to this issue of ifo Studien. Conditions for LO-neutrality then follow while KX-neutrality and KM-neutrality further require  $\tau_i = \tau_j$  and  $\tau_h$  independent of  $h$  respectively. As a consequence, such classical with cash flow system is a Perfectly Integrated Tax System.

<sup>12</sup> A notable exception is Italian Irap – see a.o. *Alworth and Arachi* (2001), *Bordignon et al.* (2001); the Italian corporate tax system consists of a dual income tax called Irpeg and a direct tax on value added called Irap (the rate of that latter tax is smaller but the base includes interest payments and wage costs).

<sup>13</sup> That condition is no longer relevant when exchange of information is at work between the paying company and the tax administration of the investor or if the existence of a tax base at parent level is otherwise exactly known by that administration. However, it is a key condition when the parent is a private person operating in a framework of anonymous shares and bank secrecy, especially if he or she is a non-resident. Therefore, a withholding tax levied at source but fully creditable on the parent's own tax liability, and repayable if necessary, can be a useful companion of a crediting system.

<sup>14</sup> See especially *Grubert* (1998); a noticeable exemption seems to be the German-French tax treaty. An alternative solution pointed to me by *Alfons Weichenrieder* is having the tax repaid by the jurisdiction of the paying entity rather than by that of the recipient; such a system, which looks like an upstream exemption, is actually the one suggested by tax treaties for withholding taxes. Otherwise mechanisms of clearing can also be set up.

Then, only the tax rate of the parent jurisdiction is relevant and imputation applies the *residence* principle of interjurisdictional taxation. However, non-repayability can turn the imputation system into an application of either the *residence* principle or the *source* principle, depending on the relative size of the levies in both jurisdictions.

The last equation also shows that the *tax shields* granted to the active entities are lost when the income reaches the shareholder: granting additional tax shields in active entities' jurisdictions increases the profit at that level, but reduces the tax credit for the shareholder accordingly. This remark is especially meaningful when the active entity and the parent belong to different jurisdictions, and it raises the question of the way the tax shields and incentives cross the borders; clearly, in the system described above, an incentive given by the foreign jurisdiction turns out to be a transfer to the government of the parent jurisdiction.

In line with this, the marginal effective tax rate amounts to  $\tau_h$  so that there is a tax wedge.<sup>15</sup>

Turning now to legal organisation, we have,

Proposition 2 (LO-neutrality) – *The imputation system is neutral with respect to the legal organisation of the business if (1) the imputation is full, generalised, incentive compatible and repayable, (2) the tax rate at parent level does not discriminate among types of income including profits from branches, and (3) the tax shield is available for the parent independently of the location of the branch or the subsidiary and whatever it is statutorily granted to the branch, the subsidiary or the parent.*

Then,

$$(7) \quad V = (1 - \tau_h)(v - c) + \tau_h a_h - 1, \quad f = 1, 2, 3, 4 .$$

Additional requirement (3) of the above proposition imposes a complete re-computation of the tax base according to the rules prevailing in the jurisdiction of the parent. This is apparently the method adopted by Japan and the US. Then the marginal effective tax rate amounts to

$$\frac{\tau_h(1 - a_h)}{1 - \tau_h a_h} < \tau_h .$$

The three conditions stated above also allow us to write that,

Proposition 3 (KX-neutrality) – *If it is neutral with respect to the legal organisation of the business, the imputation system is also neutral with respect to the location of the branches or subsidiaries.*

Under those conditions, if tax competition is at work, it is to attract headquarters, not active branches or subsidiaries. If governments compete to get jobs

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<sup>15</sup> The marginal effective tax rate is defined as the difference between the internal rate of return without and with taxation, divided by the former; the tax wedge is the numerator of that fraction. See *King and Fullerton (1984)*; *Gérard (1993)*.

provided by multijurisdictional firms, the imputation system operated under the mentioned conditions certainly mitigates tax competition. Otherwise an immediate corollary is that no problem of transfer pricing occurs since  $V$  is independent of  $p$  as it is of  $\alpha$  and  $q$ .

Do we now have a candidate for the *perfectly integrated tax system*, free of tax competition? The answer is negative. Indeed stopping potential tax competition for getting headquarters further involves  $(\tau_h, a_h)$  to be independent of  $h$  which needs a further *harmonisation of the tax rates and bases*. Then,

**Proposition 4 (Perfectly integrated tax system)** – *An imputation system neutral with respect to the location of the branches or subsidiaries, is a perfectly integrated tax system if tax parameters in the parent jurisdiction are independent of the location of the parent.*

To conclude our discussion of imputation, consider the example of Germany before the recent tax reform and assume that the German parent company  $G$  can impute the corporate tax paid by its German subsidiary  $i$  on profits distributed as dividends, while the foreign parent company  $F$  cannot (we assume, rather unrealistically that no other tool to alleviate double taxation is then available). Given the German tax parameters –  $\tau_i^d = .3165$ ,  $\tau_i^u = .422$ ,  $\tau_G = \tau_i^u$  and the supposed foreign parameters – actually the Belgian figures –  $\tau_F = .4017$ , except for capital gains where it is zero, one obtains the following, assuming no tax shield and noting  $1 - \theta_G = (1 - \tau_G)(1 - \tau_i^u)$  and  $1 - \theta_F = (1 - \tau_F)(1 - \tau_i^d)$ ,

$V_h^f$	German parent	Foreign parent	Discrimination
Dividend	$1 - \tau_G = .578$	$1 - \theta_F = .409$	1.413
interest	$1 - \tau_G = .578$	$1 - \tau_F = .598$	0.967
cap. gain	$1 - \theta_G = .334$	$1 - \tau_i^u = .578$	0.578
branch	$1 - \tau_i^b = .578$	$1 - \tau_i^b = .578$	1.000

Generalisation of the imputation to capital gains and branch income should set equal all the figures of the first column. Should those tax credits further cross the border and imputation applies, all the figures of the second column should be equal too. However the actual system discriminates between resident and non-resident parent investors as shown by the discrimination ratios of the last column. Moreover, equalisation of the tax rates across jurisdictions could make the system that we have analysed a perfectly integrated one.

As a conclusion of this discussion, imputation or crediting is an elegant construction. However, the conditions for that system to have the desirable properties mentioned and discussed so far are hard to satisfy and almost never met in the real world, especially the condition of repayability.

## 2. Exemption

The alternative to imputation is the *exemption* system. Then one jurisdiction gives up taxing of income, either the jurisdiction of the active entity,  $i$  or  $j$ , or, most usually, that of the residence of the parent company, i.e.  $h$ .<sup>16</sup> Let us denote by  $\delta_{hi}^f$  the fraction of the income from source  $i$  channelled through means  $f$  which is not tax exempt in parent jurisdiction  $h$ .<sup>17</sup> Then we have,

$$(8) \quad \begin{aligned} V = & (1 - \delta_{hi}^f \tau_h^f)(1 - \tau_i^f)[vq + p(\alpha - q) - c\alpha] \\ & + (1 - \delta_{hi}^f \tau_h^f) \tau_i^f a_i \alpha \\ & + (1 - \delta_{hj}^f \tau_h^f)(1 - \tau_j^f)[v(1 - q) - p(\alpha - q) - c(1 - \alpha)] \\ & + (1 - \delta_{hj}^f \tau_h^f) \tau_j^f a_j (1 - \alpha) \end{aligned}$$

with again  $f$  possibly different among source jurisdictions.

The following propositions then hold.

**Proposition 5 (F-neutrality)** – *The exemption system is neutral with respect to financial choices if (1) exemption at parent level is full, (2) the tax system at subsidiary level does not discriminate between distributed and undistributed profits, and (3) cash flow tax is at work.*

*Full exemption* at parent level means that  $\delta_{hf} = 0$ ,  $f = 1, 2, 3$  while the *absence of discrimination between distributed and undistributed profits* implies  $\tau_i^d = \tau_i^u = \tau_i$  and similarly for  $j$ . The further requirement that *cash flow tax is at work* implies  $\lambda_i = \lambda_j = 1$  and  $a_i = a_j = 1$  so that,

$$(9) \quad \begin{aligned} V = & (1 - \tau_i)[vq + p(\alpha - q) - c\alpha] + \tau_i a_i \alpha \\ & + (1 - \tau_j)[v(1 - q) - p(\alpha - q) - c(1 - \alpha)] \\ & + \tau_j a_j (1 - \alpha) - 1. \end{aligned}$$

<sup>16</sup> A notable exception is foreign profits derived from a non-permanent establishment. According to article 7.1 of the model tax convention of the OECD, taxation is then only permitted in the parent entity jurisdiction. Conversely if business abroad is carried through a permanent establishment, the jurisdiction of that establishment is the only one entitled to tax the corresponding profit.

<sup>17</sup> In real tax systems, for  $f = 1$  or  $d$ ,  $\delta_{hi}^f$  is in general close to zero, but it is often equal to 1 when the flow of dividends is channelled through a tax haven.

Such a system is operated according to the *source* principle.<sup>18</sup>

For an exemption system neutral with respect to financial choices to be LO-neutral, the last equation also needs to hold for  $f = 4$ .<sup>19</sup>

**Proposition 6 (LO-neutrality)** – *The exemption system is neutral with respect to the legal organisation of the business if (1) exemption at parent level is full, (2) the tax system at subsidiary level does not discriminate between distributed and undistributed profits and taxes branch profits similarly, and (3) cash flow tax is at work.*

An immediate consequence of F- and LO-neutrality is that,

**Proposition 7 (KM-neutrality)** – *If it is neutral with respect to the legal organisation of the business, the exemption system is also neutral with respect to the location of the parent.*

Under those conditions, if tax competition is at work, it is to attract branches or subsidiaries. Therefore, if governments compete to get jobs provided by MNE, the exemption system certainly boosts tax competition. This situation characterised by equation (9), is likely to generate problems of strategic location of production and distribution as well as of transfer pricing.

Indeed, it turns out that,

$$(10) \quad \frac{\partial V}{\partial \alpha} = (\tau_j - \tau_i)(p - c - 1), \quad \frac{\partial V}{\partial q} = (\tau_j - \tau_i)(v - p).$$

If  $\tau_j > \tau_i$ , the sign of that expression is positive and there is a tax incentive to locate the active entity in  $j^{20}$  and to set  $p = v$ .

Indeed manipulating price  $p$  used for internal transactions within the multijurisdictional firm can also change the value of the firm, since,

$$(11) \quad \frac{\partial V}{\partial p} = (\tau_j - \tau_i)(\alpha - q).$$

Especially if the  $i$  entity is an excess producer,  $\alpha - q > 0$  and  $p$  will be increased if  $\tau_j > \tau_i$  in order to minimise the tax base in the higher taxing jurisdiction.<sup>21</sup>

<sup>18</sup> For a partial application, see the Italian reform mentioned in note 6 above. An alternative way to organise F-neutrality can be giving up taxing not only interest payments but also any ordinary capital income, see the Allocation for Capital Equity, or ACE suggested by the Institute for Fiscal Studies (1991), see *Gammie* (1992).

<sup>19</sup> Inspection of the last equation immediately shows that the exemption system violates the Haig-Simons view of horizontal and vertical equity according to which each parent has to be taxed in line with his or her ability-to-pay. Indeed here each parent is taxed separately on its location-specific incomes, whatever the total amount can be. Thus, in terms of equity in the Haig-Simons view, moving from imputation to exemption means a loss.

<sup>20</sup> Then assuming that  $v - c - 1 > 0$  means that the return of the investment within the firm is not smaller than the one outside the firm. This is a weak assumption since otherwise the investment is not undertaken.

Do we now have a candidate for the perfectly integrated tax system, free of tax competition? The above derivatives imply that the answer is negative: stopping potential tax competition for getting branches or subsidiaries further involves  $(\tau_i, a_i)$  to be independent of  $i$  and  $j$ , which needs a further harmonisation of the tax rates and bases. Then,

**Proposition 8 (Perfectly integrated tax system)** – *An exemption system neutral with respect to parent's location, is a perfectly integrated tax system if tax parameters in the branches' or subsidiaries' jurisdictions are independent of the location of those entities.*

Now consider the example of Germany after the recent tax reform, assuming again a German branch or subsidiary of either a German or a foreign parent. Now tax parameters are  $\tau_G = \tau_i^d = \tau_i^u = .2675$ ,  $\tau_F = .4017$ ,  $\delta_{Gj} = 0$ ,  $\delta_{Fj} = .05$  remembering that we use Belgian figures for the foreign investor. We note  $1 - \eta_G = (1 - .00\tau_G)(1 - \tau_i)$  and  $1 - \eta_F = (1 - .05\tau_F)(1 - \tau_i)$ .

$V_h^f$	German parent	Foreign parent	discrimination
dividend	$1 - \eta_G = .723$	$1 - \eta_F = .718$	1.007
interest	$1 - \tau_G = .733$	$1 - \tau_F = .598$	1.224
cap. gain	$1 - \tau_i = .733$	$1 - \tau_i = .733$	1.000
branch	$1 - \tau_i = .733$	$1 - \tau_i = .733$	1.000

Inspection of the last column immediately reveals that the discrimination between a domestic and a foreign corporate investor has sharply declined after the reform despite the size of the difference in terms of statutory corporate tax rates. Had we set  $\delta = 0$  in any case and introduced cash flow tax, then the values would be equal to  $1 - \tau_i = .7325$  in every cell of the first two columns and to unity in the last one.

<sup>21</sup> See the literature on transfer pricing, in particular the critical appraisal of transfer pricing manipulation in conclusion of the empirical study of *Bernard and Weiner* (1990). They argue that while in general multinational corporations can reduce their tax obligations by setting transfer prices that differ from at arm's length prices, their ability to do so is constrained by tax regulation in their home and host countries. Otherwise it may be easier to avoid taxes through other channels – we immediately think of management fees and royalties for patents or know how – while transfer price may serve a primarily managerial role within the firm, as described by *Eccles* (1985) and *Robbins and Stobaugh* (1973). See also e.g. *Elitzur and Mintz* (1996) and *Weichenrieder* (1996) and on the specific issue of the primary and secondary adjustments, *Gérard and Godefroid* (2001).

As a conclusion of this discussion, exemption can be a good candidate for the status of a perfectly integrated tax system if supplemented with cash flow tax and harmonised tax rates and bases.<sup>22</sup> However, a problem arises with exemption if the income comes from a low tax jurisdiction: it could be useful then to have it deemed to be channelled through a fictive jurisdiction with a minimum accepted tax rate supposed to be the source one. Incidentally let us note that under this system each administration only has to know the rules of its own tax system, which can reduce compliance costs. Moreover notice that, when corporate tax rates on active entities are equal across jurisdictions and cash flow tax is at work – then  $a = 1$ , the marginal effective tax rate vanishes so that, using that criterion, the efficiency loss involved by this augmented exemption system is smaller than the one under imputation.

#### IV. Consolidated Tax Base

Imagine now that a *consolidated tax base* is computed in the jurisdiction of the parent entity and then *apportioned* to jurisdictions  $i$  and  $j$  according to some criteria, such as sales, labour cost, the distribution of the property or even value added.<sup>23</sup> The consolidated tax base is then,

$$(12) \quad t = v - c - a_h$$

further apportioned to the two jurisdictions according to some criteria. Consider only one such criterion, *value added*, which seems to be most in line with the EU way of thinking. Then, tax liabilities in the respective jurisdictions are

$$(13) \quad \tau_i \frac{vq + p(\alpha - q) - c\alpha}{v - c} (v - c - a_h)$$

and

$$(14) \quad \tau_j \frac{v(1 - q) - p(\alpha - q) - c(1 - \alpha)}{v - c} (v - c - a_h)$$

so that the net income of the firm becomes

$$(15) \quad \begin{aligned} V = & v - c - 1 \\ & - \tau_i \frac{vq + p(\alpha - q) - c\alpha}{v - c} (v - c - a_h) \\ & - \tau_j \frac{v(1 - q) - p(\alpha - q) - c(1 - \alpha)}{v - c} (v - c - a_h). \end{aligned}$$

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<sup>22</sup> That system is close to the Comprehensive Business Income Tax (CBIT) proposed by the US Treasury in 1992, see US Treasury Dept. (1977) and Tax Law Revue, 47 (3), 1992, especially *Sunley* (1992). The entire issue of that latter publication was devoted to various analyses of the US Treasury proposals; indeed the US Treasury outlined various alternatives, but the favoured one was CBIT.

<sup>23</sup> On consolidated tax base and apportionment, see *Goolsbee and Maydew* (2000) and *Weiner* (2001).

If *sales on the retail market* is used instead of value added, or the distribution of labour cost or of *property*, equation (15) becomes

$$(16) \quad V = v - c - \left\{ [\tau_i q + \tau_j (1 - q)] (v - c - a_h) \right\} - 1$$

or

$$(17) \quad V = v - c - \left\{ [\tau_i \alpha + \tau_j (1 - \alpha)] (v - c - a_h) \right\} - 1.$$

We can now examine the system of a consolidated base with apportionment according to the same criteria as in the previous section. First, since we are within a consolidated entity the problem of the financial neutrality within the firm is no longer relevant and the system is F-neutral. However, a problem arises when financing outside the firm is considered. It might be solved using the rules described for the exemption mechanism. Then,

Proposition 9 (F-neutrality) – *The consolidated tax base with apportionment system is neutral with respect to financial choices if it incorporates an F-neutral exemption system for outside finance.*

Second, consolidation involves neutrality with respect to legal organisation, assuming that the legal form of the entity is not a criterion of apportionment. Then,

Proposition 10 (LO-neutrality) – *The consolidated tax base with apportionment system is neutral with respect to the legal organisation of the business if the legal organisation of the business is not part of the set of criteria of the apportionment rule.*

Apportionment does not imply capital import neutrality and thus neutrality with respect to the location of the parent since  $V$  is not independent of  $h$ . However, if the composition of the tax base becomes independent of the jurisdiction where it is computed, then the consolidated tax base with apportionment system can be KM-neutral. Within the EU, this is an argument to set up common rules for computing the tax base.

Notice that if the system fulfils the conditions of F-neutrality including the cash flow tax, then  $a_h = 1$  necessarily independent of  $h$ . Then,

Proposition 11 (KM-neutrality) – *The consolidated tax base with apportionment system is neutral with respect to the location of the parent if the computation of the tax base obeys rules which are independent of the location of the parent.*

At this stage, we first note that, when value added is used as the apportionment criterion, the consolidated tax base with apportionment rules out neither transfer pricing strategies nor tax competition.<sup>24</sup> Indeed, from (15)

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<sup>24</sup> Although they use another type of model, *Nielsen, Raimondos-Moeller and Schjelderup* (2001) obtain a similar result, concluding "that the strategic and tax-saving incentives to exploit transfer pricing may well be stronger under formula apportionment than under separate accounting".

$$(18) \quad \frac{\partial V}{\partial p} = (\tau_j - \tau_i)(\alpha - q) \frac{v - c - a_h}{v - c}.$$

However, unlike Nielsen, Raimondos-Moeller and Schjelderup (2001), we observe a smaller effect than under separate accounting<sup>25</sup>, since

$$(19) \quad \frac{v - c - a_h}{v - c} < 1, \quad a_h > 0.$$

A similar observation holds when we examine strategic location of either production or distribution. Indeed,

$$(20) \quad \frac{\partial V}{\partial \alpha} = (\tau_j - \tau_i)(p - c) \frac{v - c - a_h}{v - c}$$

and

$$(21) \quad \frac{\partial V}{\partial q} = (\tau_j - \tau_i)(v - p) \frac{v - c - a_h}{v - c}.$$

If we use another apportionment formula, the signs of the results are similar,

$$(22) \quad \frac{\partial V}{\partial q} = (\tau_j - \tau_i)(v - c - a_h)$$

if sales on the retail market is the criterion and

$$(23) \quad \frac{\partial V}{\partial \alpha} = (\tau_j - \tau_i)(v - c - a_h)$$

if labour cost or property is the criterion. Note, however, that moving the place in which the good is sold – changing  $q$  – can be less harmful than moving the place of production – changing  $\alpha$ , e.g. since the former can destroy less jobs than the latter.

It turns out that the only way to rule out tax shifting strategies and tax competition incentives is to harmonise the tax rates, so that,

**Proposition 12 (KX-neutrality)** – *The consolidated tax base with apportionment system is neutral with respect to the location of the branches and subsidiaries, and the strategic use of transfer pricing as well, if the tax rates are independent of the location of the branches or subsidiaries.*

It should be noted that substituting an apportionment formula determined in an aggregate way does not change the problem since the firm can always escape paying tax in a high tax jurisdiction simply by closing down its entity in that jurisdiction.

As a conclusion,

**Proposition 13 (Perfectly integrated tax system)** – *The consolidated tax base with apportionment system is a perfectly integrated tax system if (1) it incorpo-*

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<sup>25</sup> Remember that  $a_h \leq 1$ , and the previous assumption that  $v - c - 1 > 0$ .

rates an *F*-neutral exemption system for outside finance, (2) the composition of the tax base is independent of the jurisdiction where the consolidated tax base is computed, and (3) the tax rates are independent of the jurisdictions where the entities are located.

Also observe that now the marginal effective tax rate vanishes if a cash flow tax is at work, even if the tax rates differ among jurisdictions, the formula for that statistic being,

$$\frac{(\tau_i \beta_i + \tau_j \beta_j)(1 - a_h)}{1 - (\tau_i \beta_i + \tau_j \beta_j) a_h}$$

where  $\beta_i$  and  $\beta_j$  are the respective apportionment factors. E.g.

$$\beta_i = \frac{vq + p(\alpha - q) - c\alpha}{v - c}.$$

## V. Conclusion

Some policy conclusions arise from the discussion conducted in the paper, as well as avenues for further research. However the European Union is no isolated island and the new EU suggested direction is likely to have implications for the flows of funds between the EU and partner countries, especially the US.

Let us start suggesting some policy conclusions for the EU. First, due to the discrimination among resident and non-resident investors implied by the non-repayability of excess tax credit, the imputation system, as actually operated, is apparently inconsistent with the objectives of the European Union, where such discrimination is against the basic principles of the Union.<sup>26</sup> Nevertheless it could come back to the forefront if supplemented as indicated in this article, so that tax bases and rates were harmonised and excess credit made repayable. This is not impossible in an integrated area like the EU, possibly through the operation of an interjurisdictional clearing mechanism. In the absence of such supplements the German move obeys the change in the vision of integration and the need to eliminate discrimination among investors from different jurisdictions of residence. Especially, as far as individual shareholders are concerned, the system can be made consistent with the subsidiarity principle which requires that, if possible, tax rates be determined by the member jurisdictions independently; in that case, cross-border exchange of information has to be set up in the same line as it has been decided for interests at EU level.<sup>27</sup>

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<sup>26</sup> Within the European Union, imputation has recently been abolished not only in Germany – since January 1, 2001 – but also in Ireland and, de facto, in the United Kingdom – both since April 6, 1999. However, it is still at work in Finland, France, Italy, Portugal and Spain.

<sup>27</sup> On exchange of information see a.o. *Bachetta and Espinoza* (1995; 2000), *Eggert and Kolmar* (2000; 2001) and *Huizinga and Nielsen* (2000).

Second, exemption can be made a perfectly integrated tax system if combined with cash flow tax and harmonised – or approximated – tax rates and bases at affiliate jurisdiction level. If this is the case that system can avoid strategic use of transfer pricing and delocation of production or sales for tax purposes while keeping tax bases computed separately. Obviously harmonisation of tax rates goes beyond the objective of the EU Commission; however, perfect integration implies that the rates be decided at Union level; this is inherent in a system based on the source principle.

Third, replacing the computation of separate tax bases with a consolidated tax base with an apportionment formula does not *per se* eliminate incentives for tax shifting and thus transfer pricing strategies and moving the location of sales or production for tax purposes. The consolidated base with apportionment system can do that only if it is supplemented with an harmonisation of the bases and rates across jurisdictions, although perfect integration also calls for cash flow tax and other financial neutrality requirements as under the exemption system.

Then, since perfect integration has the same requirements under both exemption and consolidation with apportionment, what is to be gained from implementing the latter rather than the former? Assuming that the four properties are desirable, consolidation with apportionment implies a reduction in compliance costs since the team of tax experts of the MNE has only to know how taxation is operated in the jurisdiction of the parent company. Also, as compared to exemption, consolidation with apportionment allows for the compensation of losses within the multinational enterprise. Both exemption and consolidation with apportionment seem to be superior to imputation since, as long as tax rates are not equalised, the imputation system can imply repayability by a jurisdiction of taxes levied in another jurisdiction.

Finally, since in any case harmonisation of bases and rates is needed, why not tax multijurisdictional firms at Union level and apportion the revenue according to aggregate criteria, possibly turning corporate taxation to an interjurisdictional redistributive instrument. From a policy point of view, this is certainly an avenue to explore.<sup>28</sup>

Those conclusions suggest another research avenue to explore, i.e., to come back to the different steps set forth above and to evaluate the potential welfare gain generated by each of them. A related issue is to investigate whether the new suggested EU direction will mitigate or boost tax competition among EU member states.

However, as mentioned above, the new EU suggested direction is likely to have implications not only within that area but also for the flows of funds between the EU and partner countries, especially the US. To cope with that important issue we need to work at two levels.

First, we need to conduct economic investigation using models with at least one jurisdiction left outside the perimeter of consolidation; the theoretical analysis proposed by Hauffer and Wooton (2001) as well as the simulation exercises conducted by Sorensen (2000; 2001) can be especially helpful at that level. As

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<sup>28</sup> This is close to the Eucit option suggested by European Commission (2001).

the former authors point out, calculations reported by Sorensen confirm that a coordinated increase in capital tax rates among the EU members will be beneficial for the union as a whole, but they also show that regional tax coordination promises only a fraction of the gains that could be achieved by worldwide tax coordination.

Second, worldwide tax coordination raises fundamental questions about the organisation of the tax system as a whole. That certainly calls for a dialogue between representatives of the key regional and worldwide organisations, scientists and government experts on such issues as the extension of the EU suggested consolidation perimeter in order to cover a larger geographical area, and fair tax relations between entities outside and inside the consolidation perimeter. In particular one can imagine admission within the consolidation area being subject to the application of EU standards in terms of bases and rates. And similarly the consolidation area can decide to apply the imputation system, as now suggested by the OECD tax treaties model, in its relations with countries outside the area. So, income from outside the consolidation area will be taxed at a rate at least as high as income generated within the area. Such system is rather close to the present US system and the outcome could be the appearance of symmetric large tax systems.

### Summary

Motivated by the move of Germany away from imputation and the objective announced by the EU Commission to provide EU businesses with a consolidated corporate tax base for their EU-wide activities, this paper proposes an analysis of the properties of alternative systems for taxing multinational enterprises, first under separate tax base and then under consolidation with apportionment. In particular it investigates whether those tax systems can become perfectly integrated, i.e. neutral with respect to financial, organisational and location decisions of a multijurisdictional firm; the transfer pricing issue also deserves a special attention.

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