Transfer Pricing: Roles and Regimes

Søren Bo Nielsen

Transfer Pricing: Roles and Regimes

Abstract

Against a background of rather mixed evidence about transfer pricing practices in multinational enterprises (MNEs) and varying attitudes on the part of tax authorities, this paper explores how multiple aims in transfer pricing can be pursued across four different transfer pricing regimes. A MNE has a production subsidiary in one country, from where it sells the produced good locally as well as to a sales subsidiary in a second country. The latter subsidiary is engaged in duopolistic competition with a local competitor. The MNE has two aims in setting the transfer price: strategic delegation and tax minimization. We examine the extent to which the four transfer pricing regimes we set up allow the MNE to pursue these aims. While neither strategic delegation nor tax minimization will be eliminated, trade-offs are inevitable, albeit to varying degree.

Søren Bo Nielsen
Department of Economics
Copenhagen Business School
Porcelaenshaven 16A
Denmark – Frederiksberg 2000 C.
sbn.eco@cbs.dk

1 Introduction

The international tax regime, in particular the taxation of companies with cross-border activities, is under heavy pressure. Dissatisfied with the current state of affairs, the OECD has launched its BEPS (Base Erosion and Profit Shifting) program with the aim of improving the functioning of the current regime (see OECD (2013)). A number of high tax countries worry that they lose corporate income tax revenue, and the EU Commission has even launched the proposal for a completely new corporate tax system for Europe, the CCCTB (Common Consolidated Corporate Tax Base).

The current regime relies predominantly on so-called separate accounting. That is, each company, whether independent or a subsidiary of a multinational enterprise (MNE from now on), is supposed to compute the income it earns in its country of location, after which that income will be taxed at that country's corporate income tax rate. Especially for MNEs the computation of taxable income of its subsidiaries is difficult; in order to delimit these incomes, intra-MNE shipments of goods and services have to be priced by means of transfer prices, and interest rates have to be set for intra-company loans. It belongs to the story that estimates suggest that some sixty percent of world trade is actually trade between entities of MNEs, so reliable transfer prices for this trade is essential for the working of the international tax regime for companies.

Ignoring taxes, a MNE may find it useful to compute transfer prices for internal management and incentive considerations as well as for (external) financial reporting. Transfer prices could be useful as signals of cost or value for goods and services that are delivered from one subsidiary to another in the multinational network. Transfer prices may also be employed in computing surpluses for the purposes of remunerating top employees in the MNE's entities. And yet further needs for transfer prices can be imagined. On top of these possible uses, taxation implies that transfer prices come to determine what incomes the MNE will declare in each country in which it operates. In the same instance, transfer prices become potential instruments for minimizing the overall taxation of the MNE, given the still substantial differences in corporate income

tax rates across countries.[1]

Complaints from MNEs often concern that transfer prices for tax purposes conflict with transfer pricing for internal management purposes. Several responses to such complaints are possible. Some respond that MNEs might just carry more than one set of books, so to speak. One set of transfer prices will be computed in order to provide incentives within the organization; another set will be calculated in order to define taxable incomes of the various affiliates in the MNE network. Others respond that it is not feasible or desirable to operate several books, so argue that actual transfer prices must reflect some trade-off between tax and internal management considerations. Yet others maintain that fulfilling the requests on the part of tax authorities does not need to obstruct internal management in the MNE, if only transfer pricing is carried out in a sensible way.[2]

The literature on transfer pricing is not in agreement as to whether MNEs actually seize the opportunity to employ two books rather than one. Some quotes illustrate this: "... it appears that the majority of multinational firms insist on one set of prices, both for simplicity and in order to avoid the possibility that multiple transfer prices become evidence in any disputes with the tax authorities." (Baldenius et al., 2004). And: "... stricter tax regulations governing MNEs – forcing the use of numbers that may not reflect internal realities – have helped popularize the use of a second managerial set of transfer pricing numbers ... the two transfer prices are shown to be very much interdependent." (Hyde and Choe, 2006). Czechowicz et al. (1982) reports that 89% of U.S. MNEs use the same transfer price for internal and external purposes. Even if the practice of two sets of books has increased since 1982, Eden (1998, p.295-299) finds that, at least for merchandise trade flows, MNEs do not keep

---

[1]There is ample evidence of MNEs shifting profits across countries in order to minimize total tax payments; see, for example, Weichenrieder (1996), Hines (1999), Gresik (2001), Bernard et al. (2006), Devereux (2007) and Huizinga and Leuven (2008).

[2]Klassen et al. (2013) present results from a survey of transfer pricing practices in 219 US MNEs. While their results do not directly bear on the question of conflict between taxation and other considerations in transfer pricing, they do document wide variation in transfer pricing practice as well as the importance of compliance next to tax minimization.

two sets of books. An even more recent survey by Ernst & Young (2003) indicates that over 80% of parent companies use a single set of transfer prices for management and tax purposes. The report adds that "alignment of transfer prices with management views of the business can enhance the defensibility of the transfer prices, ease the administrative burden, and add to the effectiveness of the transfer pricing program. In fact, in many countries management accounts are the primary starting point in the determination of tax liability and difference between tax and management accounts are closely scrutinized" (p.17).

In their overview of the economic transfer pricing literature, Göx and Schiller (2007) reference recent survey results suggesting that a non-negligible number of firms uses only one set of books. They also refer to the above-mentioned Ernst & Young report and go on to write: "By contrast, Springsteel (1999) reports that 77 percent of the firms within a "best practice group" use different transfer prices for the two purposes. The mixed evidence may be explained by the additional administrative expenses and the increased likelihood of a tax audit, or by a lack of internal acceptance for a dual set of prices." (Göx and Schiller, 2007, p. 692) We may add that 'internal management purposes' is actually an imprecise term, as these purposes cover facilitation of proper quantity decisions within the MNE, proper incentives for divisional decision makers, and even adequate financing means for subsidiaries,[3] all of it via well-chosen transfer prices.

Do transfer pricing requirements from tax authorities interfere with internal management of the MNEs? There is not much literature to lean on. A management (accounting) literature has discussed the appropriate use of transfer prices for internal management in multinationals. Only rarely do tax considerations enter these contributions. Another literature on international taxation has presented evidence that transfer pricing in MNEs is very much aimed at minimizing taxes and moving incomes to low-tax jurisdictions (cfr. fn. 1). However, to what extent tax-transfer pricing may conflict with other transfer price uses is likewise rarely discussed.[4]

---

[3]See Devereux and Keuschnigg (2013).

[4]The book edited by Schön and Konrad (2012) features some contributions on distortions between

In this article we provide a simple analysis of the joint existence of strategic delegation concerns and tax minimization in a multinational's transfer pricing within a number of different transfer pricing regimes.[5] The main question we ask is to what extent do delegation and tax concerns conflict in transfer pricing, and to what extent the two roles have to be traded off. The model in the article features a MNE with a production subsidiary (and a headquarter) in one country, from which the good produced is sold locally and through a subsidiary in a second country. Transfer pricing is necessary for the taxation of the two subsidiaries, and we consider a series of realistic transfer pricing regimes. These regimes build on possible transfer pricing strategies of the MNE on one side and on possible requirements emanating from tax authorities on the other side.

Section 2 sets up the model. The sales subsidiary in the second country competes with a local producer in that country's market, and strategic delegation can be employed to provide the subsidiary with a competitive advantage. Section 3 examines transfer pricing of the MNE in four different transfer pricing regimes. The common threads in the insights we derive are (i) regardless of the actual regime, the MNE may to some (albeit varying) extent pursue as well tax minimization as strategic delegation; and (ii) there will inevitably be a trade-off between the two aims, and when the MNE employs both a tax-transfer price and a delegation-transfer price, the latter will be affected by the attempt to minimize taxation. Finally, section 4 provides discussion and conclusion.

2   The model

Model set-up

---

different goals of transfer pricing as well as discussions on the famed Arm's Length Principle.

   [5]For discussions of strategic delegation of decision making we refer to Vickers (1985), Sklivas (1987), Fershtman and Judd (1987) and Katz (1991). See also Schjelderup and Sørgaard (1997). Translated to our context, the key motive behind delegation is the opportunity to improve the competitive position of a subsidiary.

In the following we set up a model which is intended to illustrate the possible tensions between different purposes of transfer pricing as well as the workings of several transfer pricing regimes. It builds on earlier work of ours (with Pascalis Raimondos-Møller and Guttorm Schjelderup), in particular Nielsen et al. (2008, 2010).

The model features a simple multinational enterprise (henceforth MNE). The MNE has a production facility in country A; here it produces for the home market in A and for a second subsidiary in country B. In country B, the subsidiary sells the product in competition with a local producer. The headquarter of the MNE, located in country A, has delegated decisions as to quantity put on the market in B to the subsidiary (manager) there. To assist the subsidiary in B to make an appropriate quantity decision, the MNE uses a transfer price on the good shipped from A to B. The transfer price can take into account the competitive position in which the subsidiary finds itself. Thus, strategic delegation constitutes a first reason for computing a transfer price for the good. Further, countries A and B both apply a corporate income tax on their firms. Incomes of companies are taxed according to the separate accounting principle. Hence, in order to delimit the income of the MNE's subsidiaries in A and B, a transfer price for the good produced in the former subsidiary and shipped to the latter must be computed. Taxation hence constitutes the second reason for establishing a transfer price.

Denoting the quantities the MNE sells in country A and B by Q_A and Q_B, respectively, the subsidiary in A derives a revenue $R(Q_A)$ and incurs a total cost of $c(Q_A + Q_B)$, where c is the constant marginal cost of production. While there is no need to detail the revenue from the market in A any further[6], we need to be more specific as to the market in B. Calling the quantity which a local competitor puts on the market Q_B^* (the asterisk generally referring to the competitor), the inverse demand schedule in country B is taken to be $P = A - b(Q_B + Q_B^*)$. The competitor is assumed to have constant marginal cost of production of c^*.

Below we shall consider several different transfer pricing regimes. The regimes

---

[6]Since we for simplicity assume that marginal cost is constant.

differ according to (i) the number of distinct transfer prices the MNE applies, and (ii) the requirements stipulated and control exerted by tax authorities. In principle, the MNE may employ one transfer price in order to delegate quantity choice to the subsidiary in B and another to compute taxable incomes for the two subsidiaries. It may find this advantageous, or it may decide that the additional costs that are associated with having multiple transfer prices, and to which we alluded in the Introduction, are too burdenful. Furthermore, tax authorities may have different ideas about the computation of 'correct' transfer prices. We encompass this variation in four transfer pricing regimes below.

For now, we need to define at most two transfer prices to be employed by the MNE. First, the transfer price q^D is the price to be used by the subsidiary in B when it pays for delivery of the good from the production facility in A. The subsidiary manager in B will then be asked to maximize before-tax surplus of $\pi_B = [A - b(Q_B + Q_B^*)]Q_B - q^D Q_B$.[7] The superscript 'D' in q^D refers to delegation of quantity-setting powers to the subsidiary manager. Second, the MNE defines a possibly separate transfer price for the computation of subsidiary incomes in the two countries. This transfer price will be denoted by q^T, 'T' for taxation.

The corporate income tax is levied at the rate t_A in country A and t_B in country B. Applying the 'tax transfer price' q^T, the subsidiary in A thus computes after-tax income of $(1 - t_A)(R(Q_A) - c(Q_A + Q_B) + q^T Q_B)$, while that in B derives after-tax income of $(1 - t_B)([A - b(Q_B + Q_B^*)]Q_B - q^T Q_B)$. The competitor in B enjoys after-tax profits of $(1 - t_B)\pi_{B^*} = (1 - t_B)([A - b(Q_B + Q_B^*)]Q_B^* - cQ_B^*)$; maximizing this latter expression is tantamount to maximizing its before-tax profits.[8]

Given an assumption of Cournot-Nash competition between the two companies in B, they elect to produce the following amounts,

---

[7] Delegation is a stylized fact for MNEs. It can be debated whether subsidiary managers normally maximize subsidiary surplus before or after tax. In the present context, this makes little difference, so we stick with the easier assumption of maximization of before-tax surplus.

[8] The expressions for taxable incomes under the corporate income tax are especially simple, since we abstract from capital and fixed costs, focusing exclusively on variable costs.

$$Q_B = \frac{1}{3b}(A + c^* - 2q^D), \qquad Q_B^* = \frac{1}{3b}(A + q^D - 2c^*). \qquad (1)$$

Note that the lower is the delegation-transfer price q^D, the greater is Q_B, and the smaller is Q_B^*.

Transfer pricing regimes

It is time to be more specific about transfer pricing regimes to be studied. We examine four regimes:

Regime 1. This regime implies much freedom conceded to the MNE in transfer price setting. The MNE employs two transfer prices, q^D and q^T. Tax authorities may inspect transfer pricing and quarrel with the two transfer prices being different. The MNE then has to incur costs in order to defend the transfer prices. The quote from the article by Baldenius et al. (2004) in the Introduction refers to possibility that multiple transfer prices become evidence in disputes with tax authorities. Further, the subsequent quote from the Ernst & Young report mentions the increased likelihood of a tax audit in case of a dual set of transfer prices. Against this, we assume that the bigger the divergence between q^D and q^T, the bigger the marginal cost of defending the difference. Furthermore, the bigger the amount of goods shipped, the bigger the costs. All this results in a formulation of (expected)[9] transfer pricing costs of $(u/2)(q^T - q^D)^2 Q_B$, where u is a constant defining the marginal cost of divergence between the two transfer prices.

Regime 2. This regime is inspired by the suggestion by Desai and Dharmapala (2011). They invoke what they call the 'Performance Related Principle', henceforth PRP. They recommend that tax authorities allow the use of prices for tax purposes that are consistent with the internal prices that the firm wants to use for other significant purposes. In the present setting it means that as long as the MNE sets the same transfer price for delegation and tax purposes, $q^D = q^T \equiv q^S$ ('S' for single), the MNE can freely determine the level of the single transfer price q^S.

---

[9]Although transfer pricing costs might be uncertain, we from now on refrain from referring to expected costs and merely write transfer pricing costs.

Regime 3. This regime, like Regime 1, entails much room of manoeuvre for the MNE when setting its transfer prices. Also in Regime 3 the MNE can use two different transfer price regimes. Here, however, tax authorities believe that the tax transfer price needs to reflect the cost of production. In essence, authorities wish to see this transfer price computed along the lines of the 'cost-plus method' endorsed by the OECD.[10] We depict this idea in the following way: The bigger the difference between the tax transfer price q^T and the marginal cost c, the bigger the marginal cost of defending the difference. Furthermore, the bigger the amount of goods shipped, the bigger the costs. This yields a formulation of transfer pricing costs of $(u/2)(q^T - c)^2 Q_B$, where u as in Regime 1 is a constant defining the marginal cost of divergence between the two prices.

Regime 4. The last regime is the regime putting the strongest constraints on transfer pricing behavior on the part of the MNE. In this regime, the MNE as in Regime 2 employs only one transfer price, but unlike the latter regime the MNE will also incur costs of transfer pricing to the extent that the chosen transfer price deviates from its marginal cost. In essence, tax authorities again desire to see the transfer price computed according to the 'cost-plus method', implying that the MNE needs to spend resources to defend a differing transfer price. For simplicity we model transfer pricing costs as $(u/2)(q^S - c)^2 Q_B$, where u as in Regimes 1 and 3 is a constant defining the marginal cost of divergence between the single transfer price q^S and marginal cost c.

Behind all transfer pricing regimes lies a desire on the part of the MNE to delegate quantity decision making from the headquarter to the subsidiary in country B. The literature on strategic delegation has made clear that when a subsidiary faces imperfect competition (other than monopoly) the MNE headquarters may strengthen the competitive position of that subsidiary by delegating decision making and by sup-

---

[10]The OECD Transfer Pricing Guidelines, OECD (2010), lists a number of principles for calculating transfer prices conforming to the basic idea of 'arm's length'. The method which seems most relevant in the present context is the 'cost-plus method'. The cost-plus method strictly speaking allows for the inclusion of a standard (market-based) profit margin, but for simplicity we shall ignore that concession here and interpret the method as the transfer price having to equal marginal cost.

porting that delegation by well chosen prices of goods shipped to the subsidiary (and, presumably, by other means as well). There is an underlying question as to whether the MNE should delegate its decision making. As discussed in Nielsen, Raimondos-Møller and Schjelderup (2008), the MNE improves the competitive position of its subsidiary, but at the same time it does weaken its opportunities for tax manipulation, when only a single transfer price is available. Nielsen et al. characterize the circumstances under which the MNE will indeed delegate decision making, and when it instead prefers to retain centralized decision making. Referring to Nielsen et al., we shall here refrain from going further into the issue of decentralization vs. centralization. However, we shall for comparison briefly discuss a fifth regime of centralization towards the end of the article.

3   Transfer pricing in the different regimes

Regime 1.

As argued above, in principle companies may wish to use different transfer prices for tax and delegation purposes, even thought there may be transfer pricing costs related to any divergence between the two.

With the costs of transfer pricing taken into account, the after-tax profits of the MNE are

$$
\begin{aligned}
\Pi^T \;=\; & (1 - t_A)(R(Q_A) - c(Q_A + Q_B) + q^T Q_B) \\
& + (1 - t_B)([A - b(Q_B + Q_B^*)]Q_B - q^T Q_B) - (u/2)(q^T - q^D)^2 Q_B.
\end{aligned}
\tag{2}
$$

The expressions for Q_B and Q_B^* derived above in equation (1) can now be inserted. Maximizing after-tax profits with respect to the tax transfer price yields

$$
(q^T - q^D) = \frac{(t_B - t_A)}{u}.
\tag{3}
$$

The equation shows how the divergence between the tax and delegation transfer prices should be determined by the split between the two national tax rates and the transfer pricing cost parameter. Whenever $t_B > t_A$, $q^T > q^D$, and vice versa. A relatively high tax rate in country B should be met by a tax transfer price which is large relative to the delegation transfer price.

Maximization with respect to the delegation transfer price produces a more complicated expression for that variable. The most enlightening way of writing the result probably is the following:

$$q^D = c - \frac{A + c^* - 2c}{4} + \frac{6(t_B - t_A)(A + c^* - 2c)}{4(1 - t_B) + 12(t_B - t_A)} - \frac{3(t_B - t_A)(q^T - q^D)}{4(1 - t_B) + 12(t_B - t_A)}. \qquad (4)$$

This expression altogether has four terms. The first term simply is the marginal cost of production. Hirschleifer (1956) recommended many years ago that companies use marginal cost in transfer pricing goods and services shipped between entities of multinational concerns. This recommendation still holds up, provided the receiving entity is engaged in either a perfectly competitive market or is a monopoly.[11] In the intermediate case of oligopoly, the opportunity to affect the intensity of competition leads to a deviation from the marginal cost principle. The deviation is represented by the second term. Since $A + c^* - 2c$ will be taken to be positive throughout, the presence of the second term constitutes a recommendation to lower the transfer price in order to improve the competitive position of the subsidiary in country B vis-a-vis its competitor there. Effectively lowering its costs of receiving and selling the good in the market in B puts it in a position to better compete with the local rival.

The third and fourth terms become relevant whenever tax rates differ across countries. The third term is positive if $t_B > t_A$. A relatively high tax in country B implies that the MNE wishes to set a high transfer price in order to move income from B to A. Since the two transfer prices are 'tied together' to the extent given by equation (3), a high q^T is rendered easier, if also q^D is moved up. This mechanism is reflected

---

[11]And as long as tax rates are equal or merely zero.

in the third term. The fourth term draws attention to the fact that the greater is the quantity shipped from the subsidiary in A to that in B, the more income can be shifted between the two entities for a given tax transfer price. Noting from equation (3) that the product $(t_B - t_A)(q^T - q^D)$ will always be positive when tax rates differ, the fourth term calls for a low transfer price in case of a tax rate difference simply to raise the quantity shipped and hence broaden the base employed for income shifting.

The third and fourth terms can be seen to move q^D in different directions when the greater tax rate is found in country B. However, if instead country A features the greater tax rate, the two mechanisms both move q^D down (i.e. further down than what strategic delegation in itself points to). It is further interesting to undertake some comparative statics analysis. Starting from an initial situation of identical tax rates in the two countries, we quickly conclude that

$$\frac{\partial(q^T - q^D)}{\partial t_B} > 0, \quad \frac{\partial q^D}{\partial t_B} > 0, \quad \frac{\partial(q^T - q^D)}{\partial t_A} < 0, \quad \frac{\partial q^D}{\partial t_A} < 0.$$

Since to begin with, the two tax rates are equal, the fourth term in equation (4) above has no bite, implying that all action emanates from the third term. Accordingly, if country B (A) raises its tax above that of the other country, the delegation transfer price and especially the tax transfer price will be increased (decreased).

Regime 2.

The idea behind the PRP, 'Performance Related Principle', is to require that companies use the same transfer price for different purposes, but then at the same time allow companies complete freedom to select the level of that price. So tax authorities have to content themselves with that particular value, knowing that only one price will be in play in the company's external as well as internal relations.

Denoting the single transfer price q^S, after-tax profits of the MNE as a whole become

$$\Pi^T = (1 - t_A)(R(Q_A) - c(Q_A + Q_B) + q^S Q_B) \tag{5}$$
$$+ (1 - t_B)([A - b(Q_B + Q_B^*)]Q_B - q^S Q_B),$$

where Q_B and Q_B^* are as in equation (1) above, albeit with q^S substituted for q^D.

Maximization of after-tax profits with respect to the single transfer price is straightforward. It is easy to see, though, that the result can be had even more easily by recognizing that PRP represents the limiting case of Regime 1, in which the transfer cost parameter goes to plus infinity. If it becomes infinitely expensive to have two, deviating transfer prices, then the two effectively collapse into one, and transfer costs become zero.

The special case of Regime 1 with an infinitely large transfer pricing cost parameter (and hence $q^T = q^D \equiv q^S$) yields

$$q^S = c - \frac{A + c^* - 2c}{4} + \frac{6(t_B - t_A)(A + c^* - 2c)}{4(1 - t_B) + 12(t_B - t_A)}. \tag{6}$$

Essentially the same formula as above as equation (4) for q^D, with the exception that the fourth term has dropped out.

Transfer pricing under PRP accordingly entails setting the sole transfer price equal to the adjusted marginal cost. One adjustment is due to the fact that the MNE strategically delegates quantity setting to the subsidiary so as to improve that entity's competitive position. A second adjustment attempts to benefit from a difference in national tax rates and occasion a shift in profits from the high tax country to the low tax country. The sign of the latter adjustment depends on the difference in tax rates, while the former adjustment always is negative. Hence, the two adjustments may work in opposite directions (when $t_B > t_A$) or in the same direction (when $t_B < t_A$); in any case it becomes clear that one price attempts to pursue both strategic delegation and tax minimization at the same time, and that the motive of strategic delegation will be partly abandoned in order to chase a smaller tax bill, when tax rates differ.

Seen from the authorities' perspective, requiring that the MNE behaves according to the PRP does not remove its ability to manipulate tax payments, only moderates it.

Regime 3.

This regime reverts to the assumption that the MNE has the disposal of two different transfer prices, q^T and q^D, for tax and delgation purposes. Further, it assumes that tax authorities prefer the cost-plus method used for computing the tax transfer price. Specifically, assume that tax authorities would prefer to see a transfer price equal to marginal cost c, and that the MNE must reckon with increasing costs when having to defend a different tax transfer price, specifically costs of $(u/2)(q^T - c)^2 Q_B$. With this specification of transfer pricing costs the MNE's after-tax profits become

$$
\begin{aligned}
\Pi^T =~& (1 - t_A)(R(Q_A) - c(Q_A + Q_B) + q^T Q_B) \\
& + (1 - t_B)([A - b(Q_B + Q_B^*)]Q_B - q^T Q_B) - (u/2)(q^T - c)^2 Q_B,
\end{aligned}
\tag{7}
$$

where the quantities Q_B and Q_B^* a fortiori will be given by equation (1).

Maximizing after-tax profits with respect to the tax transfer price yields

$$
(q^T - c) = \frac{(t_B - t_A)}{u}.
\tag{8}
$$

With no difference in national tax rates, q^T can be kept at the level of marginal cost. However, if country B (A) has the higher tax rate, the tax transfer price will be increased (decreased) relative to c.

The altered approach of tax authorities to tax transfer pricing spills over to the optimal delegation transfer price as well. We derive

$$
q^D = c - \frac{A + c^* - 2c}{4} - \frac{3(t_B - t_A)(q^T - c)}{4(1 - t_B)}.
\tag{9}
$$

The formula has three terms, of which the first two are repeated from the formulas for Regimes 1 and 2. With no delegation or tax considerations, the transfer price

should equal marginal cost, as in the first term. The second term draws attention to the advantage of endowing the sales subsidiary in country B with a stronger competitive position via a smaller transfer price. Finally, the third term is the tax manipulation term; it is negative, causing the shipped quantity Q_B to increase – unless the two taxes have equal rates. With tax differences, it simply pays to extend the 'base' for profit shifting.

Once more we conclude that while the MNE does have two different transfer prices at its disposal, delegation of quantity setting will be affected by tax minimization concerns.

Regime 4.

In this regime, tax authorities have the same desire to see a tax transfer price at the level of marginal cost as in Regime 3, but now the MNE uses only one transfer price. Whether the limitation to one price is due to a governmental requirement or the company's own decision is in a sense immaterial. In any case, the MNE aims to maximize after-tax profits of

$$
\begin{aligned}
\Pi^T \;=\; & (1 - t_A)(R(Q_A) - c(Q_A + Q_B) + q^S Q_B) && (10) \\
& + (1 - t_B)([A - b(Q_B + Q_B^*)]Q_B - q^S Q_B) - (u/2)(q^S - c)^2 Q_B,
\end{aligned}
$$

once more with Q_B and Q_B^* as in equation (1), albeit with q^S substituted for q^D.

Maximizing the profit expression with respect to q^S we derive a first order condition which in effect is a second order polynomial equation in the transfer price. Solving it becomes quite awkward and not very illuminating. So we content ourselves with looking at the two extreme cases of the transfer pricing cost constant u (a) going to plus infinity, respectively (b) going to zero.

4(a): $u \to \infty$

Intuitively, with very high costs of moving the transfer price away from the stipulated marginal cost level, the transfer price will indeed be set equal to the marginal cost, $q^S = c$. With a tightly enforced rule of marginal cost pricing of the shipped good,

the MNE will have to forget about both improving the competitive position of its subsidiary in country B and any shifting of profits between the two countries.

4(b): $u \to 0$

With the transfer pricing cost parameter going to zero, the expression for profits in (10) effectively becomes exactly the same as (5) above. Hence, the optimal solution for the sole transfer price in Regime 4 with zero transfer pricing costs will be exactly the same as the optimal solution for the transfer price under the Performance Related Principle, PRP. That solution is given in equation (6) above.

With no transfer pricing costs, the company is completely free to pursue both strategic delegation and tax minimization, albeit with only one transfer price. So that price will constitute a trade-off between the two transfer pricing aims.

In the intermediate case of a positive, but finite transfer pricing constant ($0 < u < \infty$), the MNE will have to move the sole transfer price closer to marginal cost. Thereby, it will have to partly give up on striving for competitive advantage and tax savings, while still trading off the two aims against each other.

No decentralization

All the four transfer pricing regimes above have entailed decentralization of decision powers within the MNE. Specifically, the (manager of) the subsidiary in country B has been endowed with setting the quantity to be sold in the local market there in order to maximize (before-tax) profits of the subsidiary. As we discussed above, such decentralization enables influencing the pattern of competition in country B, although it does come at a cost, when only one transfer price is available. The cost consists of not being able to pursue tax minimization as agressively as under full centralization.

Whether or not to delegate decision making therefore is an interesting issue, at least for a MNE wishing to avoid dual transfer prices. We can shed some light on transfer pricing centralization here by looking at the case, in which decisions on both the tax transfer price, q^T, and the quantity sold in B, Q_B, will be taken at headquarter level. We assume that tax authorities prefer the cost-plus method for calculating the tax transfer price, and that costs related to defending a different level is given by

$(u/2)(q^T - c)^2 Q_B$, just as in Regimes 3 and 4. The headquarter then aims to maximize total after-tax profits of

$$
\begin{aligned}
\Pi^T &= (1 - t_A)(R(Q_A) - c(Q_A + Q_B) + q^T Q_B) \\
&\quad + (1 - t_B)([A - b(Q_B + Q_B^*)]Q_B - q^T Q_B) - (u/2)(q^T - c)^2 Q_B,
\end{aligned}
\tag{11}
$$

with respect to both q^T and Q_B. For the former, we get

$$
(q^T - c) = \frac{(t_B - t_A)}{u},
\tag{12}
$$

just as in Regime 3. The optimal quantity sold in country B can be written as

$$
Q_B = \frac{A + c^* - 2c}{3b} + \frac{(t_B - t_A)(q^T - c)}{3b(1 - t_B)}.
\tag{13}
$$

The first term is the conventional duopoly quantity, with the MNE's marginal cost inserted. The second term is the modification suggested by tax minimization. It is zero, if tax rates are identical across countries, but positive for tax differences, meaning that under such circumstances there is a desire to expand the 'base' of profit shifting.

The centralized MNE can and will only interfere with market conditions in country B to the extent that rates of tax in the two countries are not the same. Compared to the decentralized MNE, it has lost the competitive advantage enabled by strategic delegation.

4 Discussion and conclusion

The analysis above provided some insights into transfer pricing within a decentralized multinational enterprise that wishes to take as well strategic as tax concerns into account. We explored to what extent various transfer pricing schemes allow the MNE to pursue strategic delegation of decision making and minimization of tax payments for the company as a whole. The transfer pricing schemes in effect were determined by (a)

internal transfer pricing policy of the MNE, and (b) the attitude of tax authorities to transfer pricing.

The first scheme permits the MNE to have disposal of two transfer prices, although any difference between the two will lead to transfer pricing costs, presumably because tax authorities will or can react to the discrepancy. The second scheme portrays a recent transfer pricing norm, the Performance Related Principle, put forth by Desai and Dharmapala. In this regime, the MNE may use one transfer price only, but can select that price freely. The third scheme again has two transfer prices, but now tax authorities prefer a transfer price according to the cost-plus method endorsed by the OECD (as one of five standard methods). The interpretation of the method implies a transfer price equal to the marginal cost, and any divergence between the tax transfer price and marginal cost then gives rise to transfer pricing costs. Finally, in the fourth regime, only one transfer price is in play, and it will be held up against the cost-plus method and more specifically marginal cost, so that transfer pricing costs will arise in case of divergence between the price and marginal cost.

Common to all regimes is some leeway for pursuing the aim of strategic delegation and at the same time some room for keeping overall tax payments down. However, neither purpose can be pursued in full – transfer pricing costs would be too high or the strategic advantages compromised.

The model was deliberately simple, and we focused merely on one additional role of transfer prices over and above computation of taxable incomes. The strategic delegation motive is relatively simple to model and leads, in our simple framework, to easily interpreted formulas for transfer prices. However, other roles of transfer prices certainly exist. Among these, incentivizing divisional or subsidiary managers seems important, but substantially more difficult to model. Göx and Schiller (2007) call for more theoretical work in the area of transfer pricing, in particular work which at the same time explains, rather than simply assumes, decentralization of decision powers within MNEs. At the same time, further empirical work on the transfer pricing practices actually followed by multinationals would be highly welcome. Hopefully, some of the confusion which we noted in the Introduction and which concerns what goes on in

practice can then be overcome.

5 References

References

[1] BALDENIUS, R., MELUMAD, N. and S. REICHELSTEIN (2004) Integrating managerial and tax objectives in transfer pricing, *The Accounting Review* **79**, 591-615.

[2] BERNARD, A. J., J. BRADFORD JENSEN, and P. K. SCHOTT (2006). Transfer Pricing by US-based Multinational Firms. Working Paper, Tuck School of Business at Dartmouth.

[3] CZECHOWICZ, L.J., F.D.S. CHOI and V.B. BAVISHI (1982) *Assessing Foreign Subsidiary Performance Systems and Practices of Leading Multinational Companies*, New York: Business International Corporation.

[4] DESAI, M. A. and D. DHARMAPALA (2011) An alternative transfer pricing norm. Working paper, Harvard Business School and University of Illinois at Urbana-Champaign, June 2011.

[5] DEVEREUX, M. (2007) The impact of taxation on the location of capital, firms and profits. Working paper, Oxford University Centre for Business Taxation.

[6] DEVEREUX, M. and C. KEUSCHNIGG (2009) The distorting arm's length principle, *Journal of International Economics* **89**, 432-440.

[7] EDEN, L.(1998) *Taxing Multinationals: Transfer Pricing and Corporate Income Taxation in North America.* Toronto: University of Toronto Press.

[8] ERNST & YOUNG (2003) *Transfer Pricing 2003 Global Survey.* International Tax Services.

[9] FERSHTMAN, C. and K. JUDD (1987) Equilibrium incentives in oligopoly. *American Economic Review* **77**, 927-940.

[10] GRESIK, T. (2001) The taxing task of taxing transnationals, *Journal of Economic Literature* **39**, 800-838.

[11] GÖX, R. F. and U. SCHILLER (2007) An Economic Perspective on Transfer Pricing. *Handbook of Management Accounting Research* 673-695.

[12] HINES, J.R. (1999) Lessons from behavioral responses to international taxation, *National Tax Journal* **52**, 304-322.

[13] HIRSCHLEIFER, J. (1956) On the economics of transfer pricing. *Journal of Business* **29**, 172-184.

[14] HUIZINGA, H. and L. LEUVEN (2008) International profit shifting within multinationals: A multi-country perspective. *Journal of Public Economics* **92**, 1164-1182.

[15] HYDE, C.E. and C. CHOE (2005) Keeping two sets of books: the relationship between tax and incentive transfer prices, *Journal of Economics & Management Strategy* **14**, 165-186.

[16] KATZ, M. (1991) Game-playing agents: unobservable contracts as precommitments, *Rand Journal of Economics* **22**, 307-328.

[17] KLASSEN, K., P. LISOWSKY, and D. MESCALL. (2013) Transfer Pricing: Strategies, Practices and Tax Minimization, Working Paper. Available at http://ssrn.com/abstract=2216870.

[18] NIELSEN, S.B., P. RAIMONDOS-MØLLER, and G. SCHJELDERUP (2008) Taxes and Decision Rights in Multinationals. *Journal of Public Economic Theory* **10**, 245-258.

[19] NIELSEN, S.B., P. RAIMONDOS-MØLLER, and G. SCHJELDERUP (2010), Company taxation and tax spillovers: separate accounting versus formula apportionment. *European Economic Review* **54**, 121-132.

[20] OECD (2010) OECD *Transfer pricing guidelines for multinational enterprises and tax administration 2010*. Paris.

[21] OECD (2013) Addressing Base Erosion and Profit Shifting (BEPS). OECD Publishing, February 2013.

[22] SCHJELDERUP, G. and L. SØRGARD (1997) Transfer pricing as a strategic device for de-centralized multinationals. *International Tax and Public Finance* **4**, 277-290.

[23] SCHÖN, W. and K. A. KONRAD (eds.) (2012) *Fundamentals of International Transfer Pricing in Law and Economics*. Springer Verlag.

[24] SKLIVAS, S.D. (1987) The strategic choice of managerial incentives. *Rand Journal of Economics* **18**, 452-458.

[25] SPRINGSTEEL, I. (1999) Separate but unequal-transfer pricing. *CFO Magazine.*

[26] VICKERS, J. (1985) Delegation and the theory of the firm. *Economic Journal* **95**, 138-147.

[27] WEICHENRIEDER, A. (1996) Fighting international tax avoidance: The case of Germany, *Fiscal Studies* **17**, 37-58.