Taxes and Decision Rights in Multinationals

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Abstract

We examine how a multinational's choice to centralize or de-centralize its decision structure is affected by country tax differentials. Within a simple model that emphasizes the multiple conflicting roles of transfer prices in MNEs – here, as a strategic pre-commitment device and a tax manipulation instrument –, we show that decentralization is preferred in case of small tax differentials, whereas centralization can be more profitable, when tax differentials are large. In essence, the organizational flexibility of MNEs is triggered by the scope for tax minimization. Our analysis allows for both commitment and non-commitment to transfer prices, and for alternative modes of competition.

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1 Introduction

This paper explores possible links between de-centralization decisions in multinational enterprises (MNEs) and differences in tax rates in the countries in which they operate. It establishes that whereas without tax differences there may be strategic reasons for delegating decisions to decentral levels, sufficiently large tax differences may lead MNEs to opt for centralization instead.

As it is well known, a central authority in a MNE has by definition joint profit maximization as its goal. That definition, however, says nothing on whether *all* decisions in such vertically integrated companies should be taken at the central authority level. Actually, it is widely recognized that some decisions should be delegated to a decentralized authority level. The theoretical underpinnings of this so-called delegation principle are described in the industrial organization (IO) literature, where a principal may benefit from hiring an agent and giving him/her the incentive to maximize something other than the welfare of the principal.[1]

A multinational enterprise is an integrated, global profit maximizing company and as such it also faces the choice of delegating some authority to its subsidiaries. Whether it does so or not depends on institutional and structural issues that are specific to the MNE activity that we focus on. For example, for the case of R&D activities, there exists a large literature that both documents and explains the extent of de-centralization that takes place within MNEs.[2] Our aim here is to draw attention to the importance of corporate *tax differences* across countries as determinants of MNEs' delegation decisions.

The implications of corporate tax differences are a central theme in the public finance literature on MNEs. In that literature the main focus is on the ability of MNEs to use transfer prices in order to shift profits to low tax jurisdictions.[3] The assumption

[1] See e.g. Vickers (1985), Sklivas (1987), Fershtmann and Judd (1987), and Katz (1991).

[2] See e.g. Grandstrand et al. (1992), Almeida (1996), Papanastasiu and Pearce (2005) for empirical evidence, and Petit and Sanna-Randaccio (2000), Sanna-Randaccio and Veugelers (2005) for theoretical considerations.

[3] While Weichenrieder (1996) studies European multinationals and their transfer pricing behavior,

in that literature is that transfer prices are only used for that one purpose, viz. as a tax-minimizing instrument. However, as we noted above, the industrial organization literature has stressed issues of delegation within MNEs. In particular, transfer prices have been seen as instruments for obtaining strategic advantages vis-a-vis competitors. If one incorporates such delegation issues, transfer prices may have conflicting roles within the MNE. In such a situation, the centralization vs. de-centralization choice of the MNE will have to be reconsidered with the aim of solving the problems related to the conflicting roles of transfer prices. In doing so, the centralization vs. de-centralization choice becomes a function of the tax differential. As far as we are aware, this implication of tax differentials has not been noticed before in the literature.

In presenting our argument as clearly as possible, we choose a simple model where the absence of tax differentials across countries (or of taxation per se) leads the MNE to delegate some authority to its subsidiaries. While the subsidiaries are assigned the authority to choose output and sales levels, the MNE centrally decides the (transfer) price a subsidiary will have to pay for its input purchases. Assuming that the subsidiary operates in a market with Cournot competition, such a decision structure will lead to a higher market share in the subsidiary's market, and thus to higher joint profits. This is exactly the essence of the delegation principle: By introducing a pre-commitment device (here, a low transfer price), the centralized authority can induce the de-centralized authority to take global profit maximizing actions.

Tax differentials, however, can alter the story: If the subsidiary faces sufficiently higher taxes, then earning high (pre-tax) profits in that country due to a strategically set low transfer price will not be profit-maximizing for the MNE anyway. A high and not a low transfer price is needed to shift profits out of the high-tax country. But the high transfer price then inevitably interferes with the market share game of the subsidiary. Consequently, a reconsideration of the delegation decision is called for, and possibly the resolution is centralization in lieu of de-centralization. In fact, it is straightforward to show that the outcome of the delegation decision becomes an endogenous function

Hines (1999) surveys the literature on U.S. multinational behavior. Gresik (2001) provides a comprehensive survey of the literature.

of the tax differential. In our example, small tax differentials foster de-centralization, while large tax differentials (with the subsidiary taxed more heavily) will lead to centralization.

Having presented our argument in its simplest form, we proceed by showing that the decentralization choice is not necessarily contingent on pre-commitment of the transfer price. Recognizing how easy it is for MNEs to alter their transfer price, an alternative sequence of actions has the MNE first deciding on decentralizing, then letting the different entities choose their output levels, and finally choosing the transfer price that maximizes global profits. We show that for some tax differentials this strategy gives the highest profits. Thus, not only can the MNE select whether to centralize its decisions or not; it may also be able to choose how to decentralize.

A few previous papers have recognized the multiple roles of transfer prices and their relationship with taxes. Mintz and Elizur (1996) model the transfer price both as a tax-minimizing instrument and as an instrument to influence the decisions of a self-interested manager in the subsidiary company. However, by imposing a transfer pricing rule, i.e. by fixing the transfer price to a level acceptable to the tax authorities, they focus on the second attribute of transfer prices and how tax competition affects the MNE. More closely related papers are Schjelderup and Sørgaard (1997) and Nielsen et al. (2003), where the transfer price takes on the same dual role as in this paper, i.e. both as a strategic and as a tax-minimizing instrument. However, in both papers delegation is taken as given and is not a matter of choice. Here we endogenize that choice.

A central premise in our analysis is that MNEs do not hold two sets of books where different transfer prices are used (sometimes even on the same transaction) in order to save tax payments and provide managerial incentives. Clearly, two transfer prices assigned to solve two goals would do as least as good as having only one transfer price at disposal.[4] In some countries the practice of two sets of books is illegal, while in some countries two sets of books are legal. In the latter case one set of books would

[4]See Baldenius et al. (2004) and Hyde and Choe (2005) for the superiority of two transfer prices.

be provided for tax accounting and the another for internal resource allocation. The idea that MNEs may assign one transfer price to provide managerial incentives and one to save tax payments, however, does not fit with reality. "*Most MNEs insist on using 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, p.592). This statement is supported by a series of studies on multinationals and transfer pricing behavior.[5]

The rest of the paper is structured as follows. In section 2 we set up our basic model featuring a MNE operating in two countries. The parent company ships goods to the subsidiary which faces competition from a local producer. Decisions as to outputs can either be taken at the central level or at the decentral levels. In the latter case, the choice of transfer price has a bearing on the terms of competition in the subsidiary's country. Analyzing both centralization and de-centralization we identify how the choice between the two depends on country tax differences. Section 3 considers modifications of our model having to do with commitment to the transfer price and the form of competition. Conclusions are found in section 4.

2 The basic model

Consider a MNE that operates in two countries: country A, where the parent firm is located, and country B, where the subsidiary firm is located. The parent produces a product that is sold directly to the consumers in country A, and is also sold to the

[5] 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 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).

consumers in country B through the subsidiary firm, which here takes the form of a retailer. The market in country A is assumed to be monopolistic, while the market in country B is characterized by Cournot competition between the subsidiary and a local firm.[6] To simplify, without bearing on qualitative results, we assume that demand in both countries is linear and all production costs are constant and normalized to zero. Based on these assumptions the firms' profits (absent taxes) are the following:[7]

$$\Pi^A = (1 - Q_A)Q_A + qQ_B \tag{1}$$

$$\Pi^B = (1 - Q_B - Q_B^*)Q_B - qQ_B \tag{2}$$

$$\Pi^{B^*} = (1 - Q_B - Q_B^*)Q_B^* \tag{3}$$

The quantity sold in country i ($i = A, B$) is denoted by Q_i, while an asterisk (*) denotes variables for the local competitor in country B. The transfer price is denoted by q. As is seen, the parent firm has revenues from selling directly to country A's consumers and to the subsidiary in country B (while the costs of producing Q_A and Q_B are zero by assumption). The subsidiary's revenue depends on the sales of the local competitor, while its costs are determined by the transfer price which it has to pay to the parent firm. Finally, the foreign local firm has revenues from selling in its local market (while the cost of producing Q_B^* is zero).

Accounting for taxes, the MNE maximizes after-tax global profits, while the local competitor maximizes its after-tax local profits Π^{B^*}. In each country there is a company tax (t_A, t_B) that falls on the profits of the firms that operate within the country, i.e. taxation is based on the separate accounting system.[8] It is also assumed that in the case where the transfer price deviates from its true (arm's length) value of

[6]This set-up is the simplest possible to portray the strategic considerations involved in setting transfer prices. None of the qualitative results that we present here depends on the Cournot assumption (except for the sign of the transfer price under de-centralization).

[7]Since for our purpose there is no need for general intercept and slope parameters in demand expressions, we take all of them to be unity.

[8]In addition, we assume that the exemption principle of international taxation is in force, so that the subsidiary's income is not liable to tax in the parent's country. In essence, this requires the subsidiary to be a separate legal entity.

zero, the MNE faces a non-tax-deductible transfer pricing cost.[9] We assume that this cost is quadratic and based on the actual difference between the chosen price and the true price (which is zero here), viz. $q^2/2$.[10] That is, if the transfer price is not zero, the MNE incurs costs that are an increasing function of the deviation from zero.[11]

We proceed by examining, in turn, a centralized and a de-centralized decision structure of the MNE. The option of centralization implies that the MNE chooses both its transfer price, output and sales simultaneously (subsection 2.1). We derive the endogenous variables and find the centralized MNE's profits as a function of tax rates t_A and t_B. We next examine the de-centralization option (subsection 2.2), where the MNE chooses centrally only its transfer price, while its entities choose output and sales decentrally. Again we derive the endogenous variables and find the de-centralized profits as functions of t_A and t_B. We finally compare the MNE's profits in the two equilibria (subsection 2.3) and determine the effect of the tax differential on the MNE's organizational structure, viz. centralization or de-centralization.

2.1 Centralized choices

This is the case where the MNE centrally chooses all its decision variables in order to maximize after-tax global profits (Π^C, where superscript C denotes centralized). In

[9] These costs can be thought of as real resource costs that the MNE pays to experts (lawyers, accountants) in order to argue to authorities for the particular level of the transfer price chosen. One can also perceive these costs as an expected penalty that tax authorities impose on distorted transfer pricing.

[10] Including a convex transfer price is necessary in order to obtain an internal solution for the transfer price (see Kant, 1988, and Haufler and Schjelderup, 2000).

[11] One might argue that transfer pricing costs/penalties should depend not only on the extent of transfer pricing distortion, i.e. the difference between q and 0, but also on the volume of the intra-firm transactions Q_B and/or on the actual tax rates t_i. The implications of different transfer price penalty schemes are an interesting topic in itself that has only rarely been touched upon; see Nielsen et al. (2006). Here, however, alternative formulations of the cost/penalty scheme have no qualitative effect on the issue which we examine. Thus, we choose to proceed with the simple quadratic transfer pricing cost function.

doing so, the MNE takes into account the Cournot competition in country B and the cost of transfer-price distortion. The maximization problems of the centralized MNE and its competitor in country B are:

$$\begin{aligned}\max_{q,Q_A,Q_B} \Pi^C &= (1-t_A)\Pi^A + (1-t_B)\Pi^B - \frac{1}{2}q^2 \\ \max_{Q_B^*} \Pi^{B^*} &= (1-t_B)\Pi^{B^*}\end{aligned}$$

By deriving the first order conditions and manipulating them we get the equilibrium values for the choice variables:

$$Q_A = \frac{1}{2} \tag{4}$$

$$Q_B = \frac{1-t_B}{3(1-t_B)-2(t_B-t_A)^2} \tag{5}$$

$$Q_B^* = \frac{(1-t_B)-(t_B-t_A)^2}{3(1-t_B)-2(t_B-t_A)^2} \tag{6}$$

$$q = \frac{(1-t_B)(t_B-t_A)}{3(1-t_B)-2(t_B-t_A)^2} \tag{7}$$

It is immediately seen that when taxes are equal ($t_A = t_B$), the choice variables take on the anticipated values, i.e. the transfer price will be set equal to the true price ($q = 0$) and $Q_B = Q_B^* = \frac{1}{3}$, the standard expressions for Cournot duopoly quantities.[12] However, when $t_A \neq t_B$, the tax-manipulation incentive enters. Starting from equal tax levels we can show that $\frac{dQ_B}{dt_B}\Big|_{t_A=t_B} < 0$ and $\frac{dq}{dt_B}\Big|_{t_A=t_B} > 0$, i.e. when taxes become higher in the foreign country (B), then the MNE will reduce sales in that country by overinvoicing in the internal transaction.

Evaluating total centralized profits $\Pi^C = (1-t_A)\Pi^A + (1-t_B)\Pi^B - \frac{1}{2}q^2$ at the equilibrium choices Q_A, Q_B, q gives:

$$\Pi^C = \frac{(1-t_A)}{4} + \frac{(1-t_B)^2\left[2(1-t_B)-(t_B-t_A)^2\right]}{2\left[3(1-t_B)-2\left(t_B-t_A\right)^2\right]^2} \tag{8}$$

For future reference notice that for $t_A = t_B = t$, we get $\Pi^C = (1-t)(\frac{1}{4}+\frac{1}{9})$.

[12] The intuition behind setting $q = 0$ is easy to grasp when one notices that the parent firm avoids double marginalization issues by charging the retailer a wholesale price equal to the marginal cost of production.

2.2 De-centralized choices

We now consider the case where the MNE chooses its transfer price centrally, but decentralizes output decisions to its entities. Here we assume that decentralization is implemented by a pre-commitment of the transfer price.[13]

To depict the benefits of transfer price pre-commitment, we solve backwards by considering output decisions given a fixed transfer price. From the maximization problems $\max_{Q_A} \Pi^A, \max_{Q_B} \Pi^B, \max_{Q_B^*} \Pi^{B^*}$, where the profits are defined in (1)-(3), we derive the standard monopoly, respectively Cournot duopoly sales choices: $Q_A = \frac{1}{2}, Q_B = \frac{1-2q}{3}, Q_B^* = \frac{1+q}{3}$. We see that a drop in the transfer price q will lead to an increase in the subsidiary's output and a fall in output of the competitor.

Moving to the choice of the transfer price q, the (headquarters of the) MNE maximizes $\Pi^{DC} = (1-t_A)\Pi^A + (1-t_B)\Pi^B - \frac{1}{2}q^2$ with respect to q, and gets:

$$q = \frac{4t_B - 3t_A - 1}{13 + 8t_B - 12t_A} \tag{9}$$

It is easy to see that in the absence of tax differentials, $t_A = t_B = t$, we have $q = \frac{t-1}{13-4t} < 0$, i.e. the strategic delegation effect alone leads to underinvocing. This is exactly what we should expect in our Stackelberg-Cournot equilibrium.[14] Setting a low transfer price makes the subsidiary sell a larger quantity. The competitor anticipates this and its best response is to limit its own sales.[15]

Calculating the de-centralized profits Π^{DC} using the above information gives:

$$\Pi^{DC} = \frac{1-t_A}{4} + \frac{1-t_B}{9} + \frac{(4t_B - 3t_A - 1)^2}{18\,(13 + 8t_B - 12t_A)} \tag{10}$$

[13] However, later on in section 3.1 we show that this may not be necessary.

[14] This strategic delegation effect is absent in the centralized case. Due to it, we expect the de-centralized transfer price to generally be lower than the centralized transfer price, even in the face of tax differences. This is indeed the case in our simulations below.

[15] By observing the low transfer price the local competitior anticipates the subsidiary's production decision and, thus, reduces its own quantity. Observability of the transfer price may seem like a strong assumption. However import prices, for example, are public information in many countries due to the calculation of duties and tariffs. Furthermore, the MNE has an incentive to make this type of information publicly available. Katz (1991) discusses observability issues in delegation.

For $t_B = t_A = t$, we get $\Pi^{DC} = (1-t)\left(\frac{1}{4}+\frac{1}{9}\right) + \frac{(t-1)^2}{18(13-4t)}$.

2.3 Comparing centralized and de-centralized profits

For equal taxes it is straightforward to see that the de-centralized global profits are always higher than centralized profits. In particular, $\Pi^{DC} - \Pi^{C} = \frac{(t-1)^2}{18(13-4t)} > 0$ for $t \in (0,1)$. This is exactly as expected: without any tax saving incentive, pre-commitment to a low transfer price provides a credible incentive to expand sales in the subsidiary's market, and thus win the market-share game in that country. Thus, in the absence of tax differences, pre-commitment of transfer prices under a de-centralized decision system is more profitable than a centralized decision system.[16]

However, for unequal taxes, the result of the comparison becomes ambiguous and a function of the specific tax levels in the two countries. The incentive to save tax payments may work against the strategic effect of transfer prices, in which case it is not obvious that the firm should make use of its delegation opportunity. A simple numerical example is sufficient for illustrating and providing the main intuition.

Setting $t_B = 0.3$ in (8) and (10) and allowing t_A ('tax' in the figure) to vary, we obtain the following picture:

[16] Clearly, this result rests on the fact that there is oligopolistic competition in the foreign country. Altering the competition assumption can certainly eliminate the result, making centralized decisions at least as profitable as de-centralized decisions.

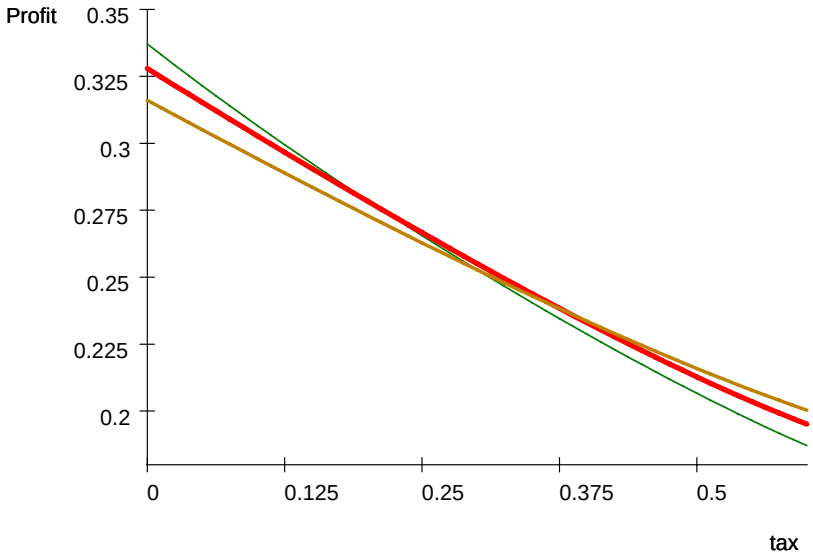

Figure 1: Centralized vs. de-centralized profits

In figure 1 there appear 3 curves, but initially we shall focus only on two of them namely the bold(/red) and the thin(/green) curve. The bold curve depicts the de-centralized profits, while the thin curve depicts the centralized profits. The two profit functions are equal for $t_A^* \simeq 0.208$. For $t_A < t_A^*$, centralized profits are higher than de-centralized profits, while the opposite holds for $t_A > t_A^*$.

To explain what is happening, note first that, as discussed above, equal taxes entail that the MNE always chooses a de-centralized decision structure. However, if the tax in the subsidiary's home country is higher than the tax in the parent's country, i.e. $t_B = 0.3 > t_A$, the MNE will want to overinvoice in order to save tax payments abroad. Thus, the tax saving incentive dictates a high transfer price, while the strategic delegation effect favors a low transfer price. As t_A falls, the desire to save tax payments strengthens; unfortunately, doing so interferes with the market-share game which the subsidiary is involved in. The result is that at some point it becomes unprofitable to use the transfer price as an instrument to implement de-centralized decisions. In our example, this point is reached at $t_A \simeq 0.208$. Below this tax level it is more profitable for the MNE to exclusively focus on saving tax payments, and the preferred way to

accomplish this is to eliminate the de-centralization option and instead choose sales in a centralized manner. In essence, the problem of the conflicting roles of the transfer price is resolved by moving all decisions to the central level.

3 Extensions of the model

Having presented our main point in the most direct way, we now examine the influence of some of our assumptions.

3.1 The non-commitment case

In describing the decentralized case we assumed that the MNE will pre-commit its transfer price, arguing that it is this pre-commitment that creates strategic delegation gains. In essence, we postulated the following sequence of events: (i) the MNE decides whether to decentralize or not; (ii) in case of decentralization, the parent chooses the transfer price; (iii) output levels are chosen.

However, choosing a decentralized structure does not necessarily imply pre-commitment to a transfer price. The company may prefer the choice of its transfer price to be its ultimate decision – or it may simply be unable to pre-commit to a transfer price at an earlier stage. In other words, the following sequence of events may be more relevant: (i) decision as to whether to decentralize or not; (ii) choice of output levels; (iii) (if relevant) selection of the transfer price. We label this case the non-commitment case. Clearly, not committing to a particular transfer price before decentralized units choose output levels can be defended by the relative ease with which MNEs can alter their transfer prices. More important, we will show that this non-commitment case can (for some tax differentials) also be time-consistent in the sense of being the most profitable strategy for a decentralized MNE.

Backward induction is again employed. The transfer price is set to maximize $\Pi^{DC} = (1-t_A)[(1-Q_A)Q_A + qQ_B] + (1-t_B)[(1-Q_B-Q_B^*)Q_B - qQ_B - \frac{1}{2}q^2]$ for given output choices. The result is $q = (t_B - t_A)\,Q_B$. Next, solving for the outputs and

taking into account how the transfer price subsequently will be set, yields:

$$Q_A = \frac{1}{2}, \qquad Q_B = \frac{1}{3+4(t_B - t_A)}, \qquad Q_B^* = \frac{1+2(t_B - t_A)}{3+4(t_B - t_A)}$$

which in turn gives:

$$q = \frac{t_B - t_A}{3+4(t_B - t_A)} \tag{11}$$

It is easy to see that in the absence of tax differentials the transfer price will be zero and the quantities will take the standard Cournot values (equal to a 1/3). This is exactly the same as in the centralized case analyzed above and thus the profits in the two cases (decentralization with no transfer-price commitment and centralization) will also be the same. Given our results in the previous section, we can thus conclude that when there are no tax differentials, the MNE benefits from pre-committing its transfer price, if possible.

However, in the presence of tax differentials things become less transparent. We calculate the decentralized profits in this non-commitment case,[17] and we plot the result in Figure 1 as the dashed(/brown) curve. Comparison reveals that there is an area of tax differences where it is in fact more profitable for the MNE not to commit to a transfer price, viz. when the tax manipulating effect is strong (due to a large tax differences) and supports the strategic delegation effect — in our example this will be the case when $t_A > 0.38$.

Thus, for the specific numerical example that we present, there are three strategies that the MNE can follow in pursuing profit maximization: (i) centralize all decisions (when the tax manipulation effect is strong and in conflict with the strategic delegation effect), (ii) decentralize its output decisions by pre-commiting to its transfer price (when the tax manipulation effect is weak), and (iii) decentralize its output decisions without any commitment of its transfer price (when the tax manipulation effect is strong and does not conflict with the strategic delegation effect)

[17] The form is

$$\Pi^{DC-NC} = \frac{13 - 16t_A^3 + 28t_B + 10t_B^2 + t_A^2(42+32t_B) - t_A(41+52t_B+16t_B^2)}{4\,(3+4t_B-4t_A)^2}$$

To understand why non-commitment of transfer prices can be advantageous, we plot the transfer prices for the above three cases, i.e. eq. (7), (9) and (11):

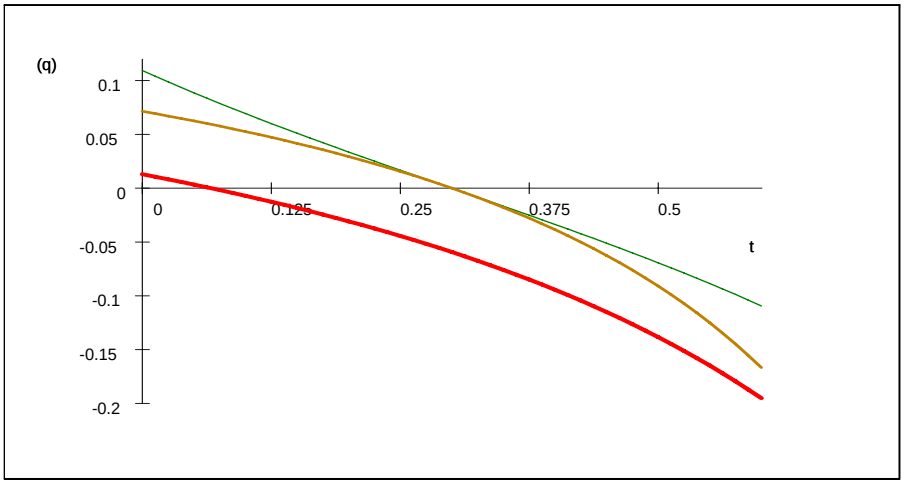

Figure 2: Centralized vs. de-centralized transfer prices

As expected, the pre-committed transfer price (bold/red curve) is always below the centralized transfer price (thin/green curve), indicating that de-centralization with pre-commitment helps the MNE to become aggressive in the market share game.[18] Moreover, the non-committed transfer price (the dashed/brown curve) lies in between the centralized and the pre-commited transfer price.[19] Thus, in general the non-committed transfer price is less aggressive than the committed transfer price. Apparently, when the tax manipulation effect is in the same direction as the strategic delegation effect, the non-committed transfer price may be superior at balancing the two effects as compared to the pre-committed transfer price (which mainly pursues the strategic delegation effect).

[18] Compare with our conjecture in fn. 13.

[19] As we have shown, the de-centralised not-committed transfer price is equal to the centralised transfer price when taxes are equal ($t_A = t_B = 0.3$).

3.2 On competition assumptions

Here we briefly explain how alternative assumptions with respect to the competition in the foreign country affect the above results.

First note that if the duopoly in the foreign country were characterized by Bertand competition and differentiated products, then the MNE would have an incentive to pre-commit to a high transfer price.[20] The intuition is that the Bertrand competition is too intense to start with, and a high transfer price enables a higher price for the subsidiary's product (as well as that of the competitor).[21] A high transfer price will not interfere with the tax saving incentive as long as the tax in the foreign country is higher than the tax in the parent's country. When namely $t_B > t_A$, the two concerns of the MNE are not in conflict with each other, and de-centralization is clearly to be preferred. The conflict, however, will arise if $t_B < t_A$, where tax saving calls for a low transfer price, while strategic delegation requires a high transfer price. Beyond a certain critical value of the tax differential, centralized decisions will become more profitable than decentralized decisions. A figure similar to figure 1 can also be drawn for this case. It will feature a profit curve for de-centralization which will lie above the profit curve for centralization for all values of t_A to the left of some intersection point at a value t_A^*, which itself lies to the right of $t_B = 0.3$.

Second, the number of competitors in the foreign market also has an intuitive effect on our results. Assuming a larger and fixed number of firms in country B, or a free entry and exit Cournot game, will reduce the profits that strategic delegation can provide to the MNE's subsidiary. Reducing these profits weakens the strategic delegation incentive, making it less worthwhile to use transfer prices for that purpose. Centralization, allowing a clear focus on tax manipulation, will therefore be preferred for a bigger range of tax differentials.[22]

[20] For brevity, the case of non-commitment is not analysed here.

[21] If the two companies' products were homogeneous, and they competed in Bertrand fashion, then there would of course be no scope for any strategic motive for setting the transfer price.

[22] Similar intuition can be applied to the case of asymetric production costs. Further, the importance of the strategic transfer price motive and thus the precise break-even point between centralization and

To sum up, de-centralization allows the MNE to aggressively pursue competition in the subsidiary's market, but only halfheartedly manipulate its tax payments. Centralization allows full devotion to tax manipulation, but does not enable strategic pre-commitment in the subsidiary's market. The size of tax differentials will determine how important it will be to pursue a tax saving strategy, and what will be the most appropriate decision structure of the MNE.

4 Conclusions

A MNE's choice of organization of its decision making is complex and depends on a host of considerations. The theoretical guidelines on this issue are laid out in the principal-agent theory of the firm, where it is widely recognized that de-centralization of decision-making offers a number of advantages to the firm (among these the strategic delegation argument). In this paper we focus on this de-centralization choice, but we draw attention to an additional issue, namely the exploitation of international tax differentials, which is specific to MNEs as they per definition operate in different tax jurisdictions.

We argue that tax differentials can have an important bearing on whether a MNE chooses to make all its decisions at the central level or not. By emphasizing the centralization vs. de-centralization decision as a choice that the MNE must make in its efforts to maximize profits, we show that while small tax differentials favor de-centralized decisions, large tax differentials may render centralized decision-making preferable. In modeling this issue, we choose to focus on the conflicting roles which transfer prices can have within a MNE, and on how centralizing decision-making can help overcome these dilemmas.

We acknowledge that two interpretations of decentralization are possible, viz. decentralization with commitment and without commitment regarding the transfer price. It turns out that pre-committing transfer prices is a very aggressive policy that

de-centralization obviously hinges on the exact demand conditions in country B.

mainly addresses the strategic delegation effect. Given that the MNE also desires to pursue tax manipulation, not committing to the transfer price can be more profitable to the MNE, if the gains from tax minimization are large (the tax differential is large). Thus, the MNE must decide not only whether to decentralize or not, but also when to determine the transfer price.[23]

Finally, whether or not MNEs in reality select their organizational structure in response to tax differentials is an empirical issue that is certainly worth pursuing. Our theoretical arguments (albeit based on a number of assumptions) entail that MNEs may be less likely to delegate decision-making to subsidiaries which are located in countries with either very high or very low tax rates, depending on the nature of competition for local market shares.

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[23]Presupposing that commitment of the transfer price is possible.

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