

Foreign direct investment: taxes, transfer pricing and inefficient ownership

Preliminary

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Abstract

We show that the effects on domestic tax revenues of entry by tax evading MNEs crucially depend on how entry into the domestic market takes place. In particular, when entry takes place by an acquisition of scarce domestic assets, it can increase the domestic tax revenues even though MNEs fully tax evade. The reason is that in the bidding competition between the MNEs over the scarce domestic assets, benefits from the acquisition, including the evaded taxes, are competed away and captured by the domestic seller. The domestic seller, in turn, cannot as easily evade taxes and will pay more taxes if the acquisition price is sufficiently high, as will be the case when the domestic assets are sufficiently scarce.

We also show that a double taxation tax system may induce inefficient ownership since profit taxes can be evaded by the domestic owner through the acquisition.

Keywords: Transfer pricing, Tax revenues, FDI, MNEs, M&As.

JEL classification: F23,

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1. Introduction

In recent years, there has been a growing concern about the impact of multinational enterprise (MNE) activity on government corporate tax revenues. The reason is that MNEs can reduce their overall tax burden by shifting profits toward low-tax countries, for example using transfer pricing techniques.¹ Moreover, tax authorities find it increasingly difficult to monitor the transfer pricing behavior of MNEs in an increasingly global economy. Another worry is that differences in tax rates might induce inefficient foreign takeovers of domestic firms. This could then lead to less efficient production in the host country, reducing consumer welfare and reducing the level of employment.

In this paper, we address these issues in a setting where equity-financed corporate investments are taxed twice: at the corporate level, a tax is levied on net profits and at the shareholder level, dividends and realized capital gains on shares are subject to personal income tax.² We will here use such a double taxation system. We show that the effects on domestic tax revenues of entry by tax evading MNEs crucially depend on how the entry into the domestic market takes place. More specifically, we show that when entry takes place by an acquisition of *scarce domestic assets*,³ entry by MNEs can increase the domestic tax revenues even though MNEs fully tax evade.

To understand this result, consider the following example where only acquisition entry is an option: a domestic-owned enterprise is initially located in the domestic market and several symmetric MNEs are located outside that market. In a first stage, the domestic firm's assets might be sold to one of the MNEs in an acquisition auction game, while in a

¹ See Caves (1996) and the references therein for theoretical contributions to this literature.

Bartelsman and Beetsma (2000) find evidence of tax differences having a significant impact on where incomes are declared. See also references in World Investment Report (WIR) 1998.

² In many countries, such as the United States and many European countries, income from equity-financed corporate investment is taxed twice: at the corporate level a tax is levied on net profits, and at the shareholder level, dividends and realized capital gains on shares are subject to personal income tax. See Sorensen (1995).

³ To our knowledge, the only empirical paper studying sector-specific assets is Ramey and Shapiro (2001), which finds capital to be very sector-specific.

second stage, the firm located in the market generates product market profits. A domestic owner pays an exogenous constant variable corporate tax on product market profits if keeping the firm and on the acquisition price, i.e. capital gains, if selling the firm.⁴ A foreign owner is assumed to be able to fully transfer profits to a low-tax country. The sales price of the domestic firm is a non-acquiring MNE's willingness to pay which, in turn, equals the profits minus the taxes paid in the low-tax country. Due to the bidding competition between MNEs, all benefits from the acquisition, including the evaded taxes, are competed away and captured by the domestic seller.⁵ The domestic seller, in turn, cannot evade capital gain taxes and will pay more taxes since the capital gain from selling is higher than the profit from keeping the assets; otherwise no acquisition would take place.⁶

In the full model, we show that there is a fundamental difference between foreign direct entry investment in scarce and non-scarce assets as concerns the effects on tax revenues. When entering by investing in non-scarce assets (greenfield entry), the foreign firm will pay a fixed entry cost only covering the opportunity cost in terms of factor inputs and creating no additional domestic capital gains.⁷ This implies that foreign entry in non-scarce assets will reduce tax revenues, since it reduces domestic firms' profits and does not create any domestic taxable capital gains. Consequently, the issue of tax evasion in the context of investment entry in scarce assets differs from investment entry in non-scarce assets, since in the former, but not in the latter, case the entry increases domestic taxable capital gains.

⁴ Thus, to highlight the mechanism identified, we here use a single taxation system, but the mechanism is also present in a double taxation system, as shown in the main analysis.

⁵ In the empirical event study literature on cross-border M&A performance, it has been shown that there is a takeover premium in cross-border M&As and that this premium differs between industries. See, for instance, Cebenoyan et al (1992), Dewenter (1995) and Harris and Ravenscraft (1991).

⁶ Kant (1990) shows that transfer pricing can increase an MNE's global tax payment in a setting where MNEs pay both profit and export taxes.

⁷ For instance, these investments could be new investments and the supply of inputs (labor and capital) used to create such assets consists of inputs used in many other industries in the economy, and the investor in a particular industry could then be seen as a price taker.

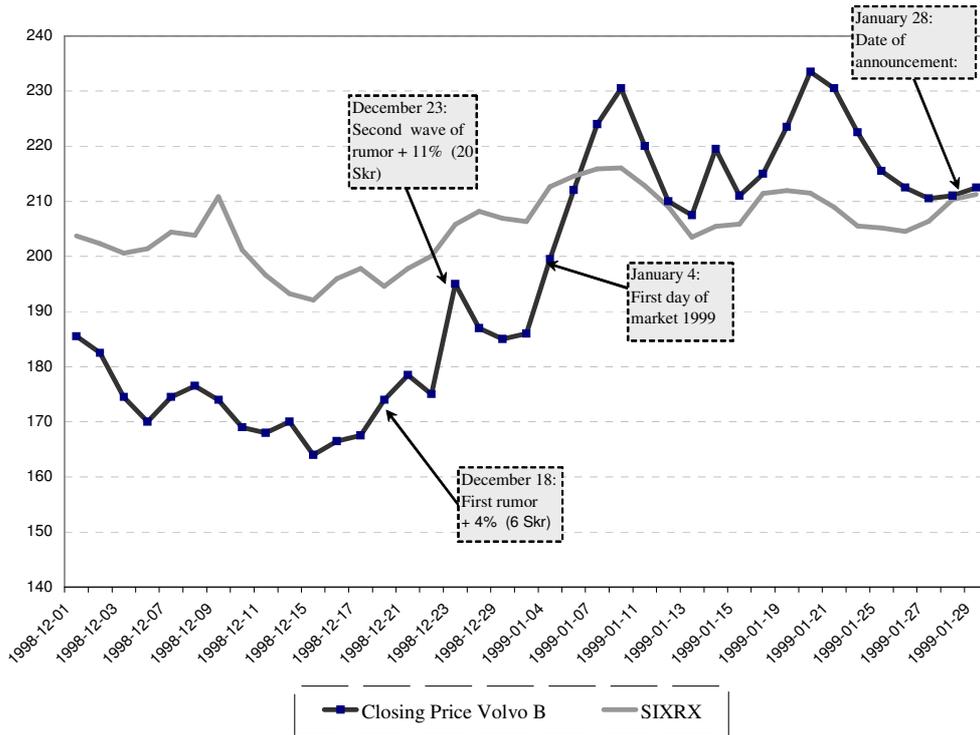


Figure 1.1: Stockmarket reactions to the acquisition of Volvo by Ford in January 28 1999.

If both types of foreign direct investment take place (are allowed by the government), the total tax revenues increase if and only if the domestic assets acquired by the MNE are sufficiently important for generating profits in the product market.

Finally, we show that a double taxation tax system may induce inefficient ownership since profit taxes can be evaded by the domestic owner through the acquisition. An acquisition is therefore a way for the domestic owner of avoiding double taxation, and only paying the capital gain tax. The foreign entrant, in turn, pays lower profit taxes than the selling domestic firm since it can deduct the acquisition cost. This, in turn, implies that an inefficient foreign firm can afford to acquire domestic assets from a more efficient domestic owner.

The acquisition of the Swedish car producer Volvo by FORD in 1999 indicates that the increase in tax revenues for the host country from foreign acquisitions might be substantial.

This is illustrated in Figure 1.1. From the time that the first serious rumor emerged on December 18 1998 (Dagens Industri, 1998 12 22.) to the date when the acquisition was announced, January 28 1999, Volvo's stock market value increased by 21 % more than the general index (SIXRX). (See Figure 1.1). Using that 56 % of the stocks in Volvo were owned by Swedes (Ägarna och Makten, Sundin och Sundqvist, 1998), future Swedish expected capital gain tax revenues were increased by 210 million Euro.⁸ In December 2002, Volvo Cars (former Personvagnar), now an affiliate of FORD, was ruled to pay an additional tax of 196 million Euro, since the claimed deduction of royalties to the mother company FORD was denied by the local tax office (Dagens Industri December 11, 2002). Even if these figures are just indicative, they suggest that the gains from "transfer pricing" were expected from the deal and therefore, at least to some extent, incorporated in the acquisition price.

The related theoretical literature on FDI and MNEs is surveyed in Markusen (1995). However, this literature does not explicitly address the tax effects of the different entry modes: greenfield, acquisition of assets already in the market or both⁹, in a situation where transfer pricing could take place. There is also a small theoretical literature addressing welfare aspects of cross-border mergers in international oligopoly markets.¹⁰ Our paper extends this literature by presenting a model where both the acquisition price and the size

⁸ Initially, it was unclear whether Volvo would pay capital gains tax on the capital gain, so-called double taxation of capital gains in Sweden. However, the Council for Advanced Tax Rulings gave an advance notification that no taxes should be paid and, as a result, the Volvo stock market value increased by 3% that day (Dagens Industri, April 8, 1999). This decision was later confirmed by the Swedish Supreme Administrative Court after an appeal by the National Tax Board (Dagen Industri, November 26, 1999).

⁹See, Görg (1997) and Norbäck and Persson (2003, 2004) for papers addressing the choice of entry mode. However, these papers abstract from the competition between MNEs, which is at focus in our study. Bjorvatn (2001) allows for competition between MNEs, but studies how the pattern and profitability of cross-border acquisitions depend on trade cost and greenfield cost.

¹⁰ This literature includes papers by, for example, Falvey (1998), Head and Reis (1997), Horn and Persson (2001a), Lommerud, Straume and Sorgard (2004), and Neary (2003) and Norbäck and Persson (2003, 2004).

of new investments are endogenously determined in a situation where taxes are included in the analysis.

The model is spelled out in Section 2. In Section 3.1, we derive the equilibrium ownership structure. Section 3 studies tax revenues under different entry modes. Section 4 concludes and discusses a number of possible extensions. Finally, most proofs appear in the Appendix.

2. The Model

Consider a host country, H , where the market has previously been served by a single domestic firm, denoted d , possessing one unit of domestic assets, denoted \bar{k} . This market will now be exposed to international competition by an investment liberalization.

We assume there to be M MNEs in the world market which do not initially have any assets in Country H, but might now invest. The interaction takes place in four stages and is illustrated in Figure 2.1. In stage 1, the government chooses among three types of policies towards FDI (or alternatively, nature chooses the availability of entry modes for FDI).¹¹ Under the first policy, referred to as the restrictive (R) policy, FDI is not allowed, and the domestic monopoly remains intact. Under the second policy, referred to as the discriminatory (D) policy, *only* greenfield FDI is allowed. Under the third policy, referred to as the laissez-faire (L) policy, *both* greenfield and acquisition FDI are allowed. In stage 2, the MNEs might acquire the domestic firm's assets under the non-discriminatory policy. In stage 3, firms can invest in new assets in country H. In stage 4, firms compete in oligopoly fashion in country H.¹² Finally, in stage 5, firms pay taxes on product market

¹¹ While our discussion assumes that government policy shapes the FDI pattern, we could also interpret these policies as situations where only certain types of entry modes are available. For instance, in some industries, no valuable targets might be present and a greenfield entry might be the only possible way of entering. An alternative interpretation is thus that nature chooses the type of industry in the first stage.

¹² The choice of timing between the acquisition and the greenfield investment is not obvious in a general setting. In this particular application, however, it seems natural for the acquisition

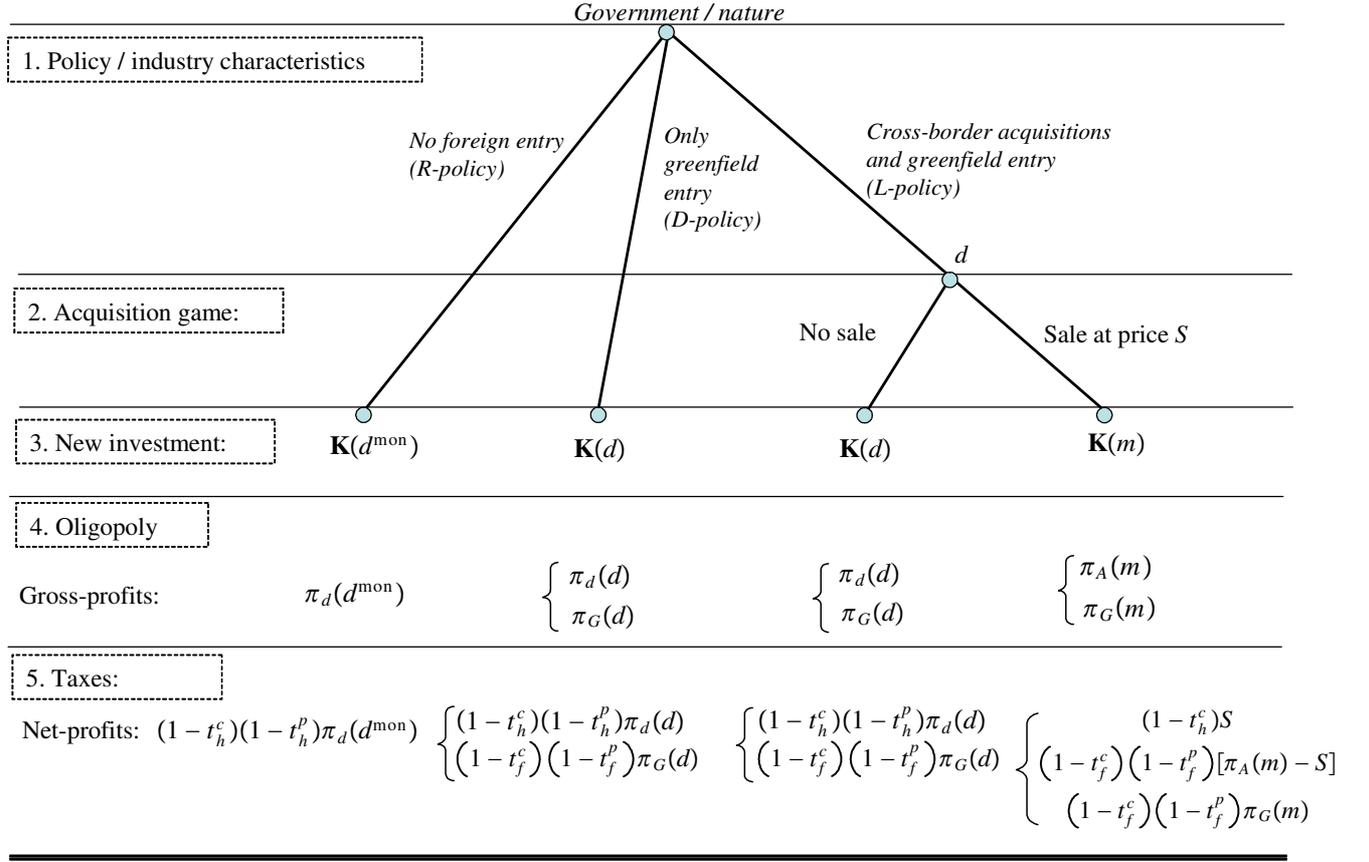


Figure 2.1: The structure of the game. Note that profits are expressed in reduced form.

profits net incurred costs.

The next sections describe the product market interaction, the greenfield investment game, the acquisition game and the governments policy choice where we will focus on the impact on tax revenues.

decision to be made before the greenfield decision, since the assets for sale already exist in the market and entering greenfield requires the construction of a new plant, which is usually time consuming.

2.1. Stage 5: tax collection

In this stage, firms will pay out their taxes. To depict these tax payments, we need some notations. The product market profits will depend on the distribution of asset ownership, given from the investment game in period 2, and the acquisition game in period 1. To capture this, we will work with the following notation: Let the set of firms in the industry be $i \in \mathcal{I}$, where $\mathcal{I} = \{d, 1, 2, ..M\}$ and the set of (potential) ownerships of the domestic assets, \bar{k} , be $l \in \mathcal{L}$, where $\mathcal{L} = \{d, 1, 2, ..M\}$. The asset ownership structure $\mathbf{K} = (k_d, k_{m_1}, \dots, k_{m_M})$ specifies the asset ownership of each firm. The first entry refers to firm d 's asset holdings, the second to MNE 1's assets holdings, etc.

Taxes are introduced as follows. In many countries, such as the United States and many European countries, income from equity-financed corporate investment is taxed twice: at the corporate level a tax is levied on net profits, and at the shareholder level, dividends and realized capital gains on shares are subject to personal income tax.¹³ We will here use such a double taxation system. More specifically, the formalization of the tax system used here corresponds to the Swedish tax law concerning limited liability companies.¹⁴

The net profit for the *domestic* firm is then:

$$\begin{cases} (1 - t_h^c)(1 - t_h^p) \pi_i(\mathbf{x}, \boldsymbol{\kappa}, l), & \text{for } i = d = l \\ (1 - t_h^c) S, & \text{for } d \neq l, \end{cases} \quad (2.1)$$

whereas the net profits for the *foreign* firms are:

$$\begin{cases} (1 - t_f^c)(1 - t_f^p) \pi_i(\mathbf{x}, \boldsymbol{\kappa}, l), & \text{for } i \neq d \neq l \\ (1 - t_f^c)(1 - t_f^p) [\pi_i(\mathbf{x}, \boldsymbol{\kappa}, l) - S], & \text{for } i = l, i \neq d. \end{cases} \quad (2.2)$$

In (2.1) and (2.2), $(1 - t_r^c)(1 - t_r^p) \pi_i(\mathbf{x}, \boldsymbol{\kappa}, l)$ denotes the product market profit of firm i net of taxes, where $\pi_i(\mathbf{x}, \boldsymbol{\kappa}, l)$ denotes the product market profit net the cost of new investments of firm i in stage 3, κ_i . More precisely, in $\pi_i(\mathbf{x}, \boldsymbol{\kappa}, l)$, $\mathbf{x} = (x_d, x_{m_1}, \dots, x_{m_M})$ is the vector of actions taken by firms in the product market interaction in stage 4, $\boldsymbol{\kappa} =$

¹³ See Sorensen (1995).

¹⁴ See Lodin et al 2001.

$(\kappa_d, \kappa_{m_1}, \dots, \kappa_{m_M})$ denotes the vector of investments in new assets from stage 3 and l denotes the ownership of the domestic assets, given from the acquisition game in stage 2, where S is the acquisition price if an acquisition has taken place.

Thus, a domestic owner keeping its assets pays a constant variable profit tax, t_h^p , on the net profits and then a constant variable capital gain tax, t_h^c on the remaining proceeds. When selling the assets, the domestic owner pays a constant variable capital gain tax, t_h^c on the sales price, S .

A foreign owner is assumed to be able to use transfer pricing to transfer all profits to a foreign tax haven by, for instance, using licence fees. Thereby, a foreign owner pays a constant variable foreign profit tax, t_f^p on its net profits (including deductions for the acquisition price S upon an acquisition). It is assumed that $t_f^p < t_h^p$, which ensures that MNEs pay no profit taxes in the host country. The foreign owner also pays a constant variable foreign capital gain tax, t_f^c , on profit net investment costs and net taxes when investing abroad, where we once more assume that $t_f^c < t_h^c$. Thus, we assume that the MNEs can fully evade taxes on any profits made in country H.

2.2. Stage 4: product market interaction

We are now set to describe optimal behavior in the product market interaction. Given the investments in period two, κ , and the ownership of the domestic assets given from period one, l , firm i chooses an action $x_i \in R^+$ to maximize its period-three product market profit, denoted $(1 - t_r^c)(1 - t_r^p) \pi_i(x_i, x_{-i} : \kappa, l)$, where x_{-i} is the set of actions taken by i 's rivals. We may consider the action x_i as setting a quantity or a price, as will be shown in later sections. Furthermore, we assume there to exist a unique Nash-Equilibrium, $\mathbf{x}^*(\kappa, l)$, defined as:

$$(1 - t_r^c)(1 - t_r^p) \pi_i(x_i^*, x_{-i}^* : \kappa, l) \geq (1 - t_r^c)(1 - t_r^p) \pi_i(x_i, x_{-i}^* : \kappa, l), \quad \forall x_i \in R^+, \quad (2.3)$$

since neither capital gains taxes t_r^c nor profit taxes t_r^p affect the firms' optimal actions \mathbf{x}^* in (2.3). Then, we can define a reduced-form product market profit for a firm i , taking

as given the ownership l of the domestic assets \bar{k} and the vector of new investments $\boldsymbol{\kappa}$, as $\pi_i(\boldsymbol{\kappa}, l) \equiv \pi_i(x_i^*(\boldsymbol{\kappa}, l), x_{-i}^*(\boldsymbol{\kappa}, l), \boldsymbol{\kappa}, l)$. The reduced-form profit net of taxes is then simply $(1 - t_r^c)(1 - t_r^p)\pi_i(\boldsymbol{\kappa}, l)$.

2.3. Stage 3: Investment in new assets

In stage two, firm i invests in new assets κ_i , given the ownership l of the domestic assets, \bar{k} , determined in the acquisition game in period one. This investment can be in capacity, R&D or marketing, for instance. Firm i makes its choice $\kappa_i \in R^+$ to maximize the reduced-form product market profit net of taxes, $(1 - t_r^c)(1 - t_r^p)\pi_i(\boldsymbol{\kappa}, l)$, which we rewrite as $(1 - t_r^c)(1 - t_r^p)\pi_i(\kappa_i, \kappa_{-i} : l)$, where κ_{-i} denotes investments in new assets by i 's rivals. All investment costs for κ_i are assumed to be *tax deductible*.

We assume there to exist a unique Nash-Equilibrium, $\boldsymbol{\kappa}^*(l)$, defined as:

$$(1 - t_r^c)(1 - t_r^p)\pi_i(\kappa_i^*, \kappa_{-i}^* : l) \geq (1 - t_r^c)(1 - t_r^p)\pi_i(\kappa_i, \kappa_{-i}^* : l), \quad \forall \kappa_i \in R^+. \quad (2.4)$$

Once more, since capital gains and profit taxes do not affect the firm's optimal actions $\boldsymbol{\kappa}^*$ defined in (2.3), this allows us to define $\pi_i(l) \equiv \pi_i(\boldsymbol{\kappa}^*(l), l) \equiv \pi_i(\mathbf{x}^*(\boldsymbol{\kappa}^*(l)), \boldsymbol{\kappa}^*(l), l)$ as a reduced-form gross profit function for firm i under ownership l , encompassing the firm's optimal actions in period three, \mathbf{x}^* , and optimal investments in new assets in period two, $\boldsymbol{\kappa}^*$. The reduced-form profit net of taxes is hence $(1 - t_r^c)(1 - t_r^p)\pi_i(l)$ ¹⁵

The assumption that MNEs 1, 2, .. M are symmetric before the acquisition takes place implies that we need only distinguish between two types of ownerships; *domestic* ownership ($l = d$) and *foreign (MNE)* ownership ($l = m$). A change from domestic to foreign ownership might imply a different use of the domestic assets, \bar{k} . We define $\gamma > 0$ as a measure of the *complementarity between the domestic assets \bar{k} and MNEs' firm-specific assets*, assuming the "effective size" under foreign ownership to be $\gamma\bar{k}$. MNEs are typically leading firms in their respective industries and possess firm-specific knowledge in terms of technology or know-how of organization of production and marketing (see Markusen

¹⁵ We here assume $\pi_i(l)$ to be strictly positive.

(1995) and Caves (1995)). It is likely that at least some of this knowledge is transferred under a change of ownership, thereby resulting in a more efficient use of the local assets, \bar{k} . This corresponds to a γ substantially larger than that in the model.¹⁶

As illustrated in Figure 2.1, we can then distinguish between three types of asset ownership structures: $\mathbf{K}(m)$, $\mathbf{K}(d)$ and $\mathbf{K}(d^{\text{mon}})$:

$$\mathbf{K}(m) = (0, \gamma\bar{k} + \kappa_A^*, \underbrace{\kappa_G^*, \dots, \kappa_G^*}_{M-1}), \quad \gamma > 0 \quad (2.5)$$

$$\mathbf{K}(d) = (\bar{k} + \kappa_d^*, \underbrace{\kappa_G^*, \dots, \kappa_G^*}_M) \quad (2.6)$$

$$\mathbf{K}(d^{\text{mon}}) = (\bar{k} + \kappa_d^*, \underbrace{0, \dots, 0}_M). \quad (2.7)$$

Note that there are three types of firms of which to keep track, $h = \{d, A, G\}$, i.e. the domestic firm (d), an acquiring MNE (A) and non-acquiring MNEs (G). Type G will be referred to as greenfield entrants (since they do not possess any acquired assets \bar{k} and *only* invest in new assets, κ_G^*). The first entry in $\mathbf{K}(l)$ shows the asset ownership of the domestic firm, d , the second entry is the asset ownership of the potentially acquiring MNE (MNE 1), and the remaining entries show the asset ownership of the symmetric non-acquiring MNEs, i.e. the greenfield entrants). Note that under domestic ownership without FDI, all MNEs have zero assets. Allowing for FDI, there are M MNEs investing greenfield under domestic ownership, whereas under MNE ownership, there is one acquiring MNE and $M - 1$ non-acquiring MNEs investing greenfield. Note also that firm d does not invest in new assets when selling its assets, \bar{k} .¹⁷

A change in ownership of existing domestic assets \bar{k} from domestic to foreign ownership is then assumed to affect the gross profit for a firm of type h , $\pi_h(l)$, as follows:

¹⁶ There are many studies confirming that technologies and knowledge are transferred to host-countries through FDI (see Caves 1995).

¹⁷ We take this assumption to highlight the effects of the domestic firm being eliminated from the competition in the market. However, allowing the domestic firm to also invest does not change the results, given that it is sufficiently less efficient in investing in new assets, which should be reasonable, given the firm-specific assets possessed by MNEs.

Assumption 1: $\frac{d\pi_A(m)}{d\gamma} > 0$, $\frac{d\pi_G(m)}{d\gamma} < 0$, $\frac{d\pi_h(d)}{d\gamma} \equiv 0$, $h = \{d, G\}$.

Assumption 2: $\pi_h(\cdot, N^l) > \pi_h(\cdot, N^l + 1)$, $h = \{A, G, d\}$.

Assumption 1 then states that an increase in the complementarity parameter, γ , increases the acquirer's profit, whereas the profit for a non-acquirer (i.e. greenfield investor) decreases. These profit effects may emerge from direct effects on productivity, or by indirectly affecting firms' optimal actions in the period-one product market game (\mathbf{x}^*), or affecting these actions by affecting firms' investment in new assets in period two ($\boldsymbol{\kappa}^*$). The size of these effects depends on the strength of the complementarities between MNEs' firm-specific assets and the domestic assets. For example, the combination of an MNE's strong brand name and the acquired firm's knowledge of the market or strength in distribution may provide the acquiring MNE with a strong market position. If the brand name of the domestic assets is locally very strong, the strategic value of the assets will also be high. Or, if the domestic assets are sold at an early stage, the acquirer may gain a strong first-mover advantage, thereby creating a dominant position in the product market.¹⁸ ¹⁹ Assumption 2 simply states that a firm's profit decreases in the number of firms on the market.

2.4. Stage 2: The acquisition game

The acquisition process is depicted as an auction where M MNEs simultaneously post bids and the domestic firm then either accepts or rejects these bids. Each MNE announces a

¹⁸ As a specific example, in the retail industry, MNEs acquire local retail chains and combine their advantages of global sourcing with the advantages of the established distribution network. As greenfield entry does not have this advantage, and it takes more time to build local assets, an acquiring MNE is at an advantage. While having the initial possession over the distribution network, a domestic firm lacks the advantage of global sourcing.

¹⁹ This set-up and these assumptions are compatible with several different investment and oligopoly models. For example, the model by Neary (2002) presented in Section 3.6 is compatible with this set-up. Another would be a Perry and Porter (1985) oligopoly game, preceded by an investment game into lumpy investment. These assumptions can also be shown to extend into Bertrand competition in differentiated goods.

bid, b_i , for the domestic firm. $\mathbf{b} = (b_{m1}, \dots, b_M) \in R^M$ is the vector of these bids. Following the announcement of \mathbf{b} , the domestic firm may be sold to one of the MNEs at the bid price, or remain in the ownership of firm d . If more than one bid is accepted, the bidder with the highest bid obtains the domestic assets. If there is more than one MNE with such a bid, each such MNE obtains the assets with equal probability. The acquisition is solved for Nash equilibria in undominated pure strategies. There is a smallest amount, ε , chosen such that all inequalities are preserved if ε is added or subtracted.

To depict the equilibrium of the domestic assets \bar{k} , it will be useful to make use of the *gross* valuation of obtaining the domestic assets \bar{k} , v_{ij} for $i, j \in \mathcal{I}$, i.e. valuations *before* taxes are paid and investment costs are deducted. There are three different gross valuations which need to be considered.

v_{mm} is the gross value for an MNE of obtaining \bar{k} when a rival MNE would otherwise obtain \bar{k}

$$v_{mm} = \pi_A(m) - \pi_G(m), \quad (2.8)$$

where we have used the symmetry among MNEs (i.e. $v_{m_i m_j} = v_{mm}$). The first term shows the (gross) profit when possessing \bar{k} and the second term shows the profit if a rival MNE obtains \bar{k} , in which case the MNE invests greenfield.

v_{md} is the gross value for an MNE of obtaining \bar{k} , when the domestic firm would otherwise keep them. The profit for an MNE of not obtaining assets \bar{k} is different in this case, due to the change of identity of the firm which would otherwise obtain the assets

$$v_{md} = \pi_A(m) - \pi_G(d). \quad (2.9)$$

v_d is the gross value for the domestic firm of keeping \bar{k} . By assumption, $\pi_d(m) = 0$

$$v_d = \pi_d(d). \quad (2.10)$$

To proceed, we now define the *net* gain for an MNE of acquiring the domestic firm's assets at a certain price S , making use of the firm's reduced net profits defined in section 2.3 and illustrated in Figure 2.1.

If the alternative is that a rival MNE would obtain \bar{k} , the net gain for an MNE of acquiring \bar{k} at a given price S is

$$\begin{aligned}\Delta_{mm}(S) &= \underbrace{(1 - t_f^c) (1 - t_f^p) [\pi_A(m) - S]}_{\text{Net profit from acquisition}} - \underbrace{(1 - t_f^c) (1 - t_f^p) \pi_G(m)}_{\text{Net profit from greenfield entry}} \\ &= (1 - t_f^c) (1 - t_f^p) [v_{mm} - S],\end{aligned}\tag{2.11}$$

where we assume that the acquisition price, S , is also tax deductible and that other overtaken deductible costs are then ruled out,²⁰ and where we have made use of the definition of the gross valuation $v_{mm} = \pi_A(m) - \pi_G(m)$ in (2.8). Recall that the foreign capital gain tax is normalized to zero.

If the alternative is that the domestic firm keeps its assets \bar{k} , the net gain for an MNE of acquiring \bar{k} a price S is

$$\begin{aligned}\Delta_{md}(S) &= \underbrace{(1 - t_f^c) (1 - t_f^p) [\pi_A(m) - S]}_{\text{Net profit from acquisition}} - \underbrace{(1 - t_f^c) (1 - t_f^p) \pi_G(d)}_{\text{Net profit from greenfield entry}}, \\ &= (1 - t_f^p) [v_{md} - S]\end{aligned}\tag{2.12}$$

using the definition of the gross valuation $v_{md} = \pi_A(m) - \pi_G(m)$ in (2.9).

Finally, the net gain for firm d of keeping its assets \bar{k} at a selling price S is

$$\begin{aligned}\Delta_d(S) &= \underbrace{(1 - t_h^c) (1 - t_h^p) \pi_d(d)}_{\text{Net profit from no sale}} - \underbrace{(1 - t_h^c) S}_{\text{Net profit from sale}} \\ &= (1 - t_h^c) [(1 - t_h^p) v_d - S],\end{aligned}\tag{2.13}$$

where $(1 - t_h^c) (1 - t_h^p) \pi_d(d)$ is d 's net profit from keeping its assets when greenfield entry takes place and $v_d = \pi_d(d)$ follows from (2.10).

We can then use these net gains to derive the equilibrium bidding behavior and the equilibrium ownership structures. It turns out that it is instructive to describe the equilibrium ownership structure by different orderings of the gross valuation in (2.8)-(2.10).

²⁰ It can be shown that the results derived here would also hold in the case where the "additional" cost associated with the acquisition was not deductible.

These gross valuations v_{mm} , v_{md} and v_d can be ordered in six different ways, as shown in table 2.1. We can then state the following lemma:

Lemma 1. (i) *The equilibrium ownership structure and the acquisition price under the L-policy (when both acquisition- and greenfield FDI are allowed) are given in table 2.1.*
(ii) *There is a $\tilde{\gamma}$ such that $\gamma > \tilde{\gamma}$ implies foreign ownership $\mathbf{K}(m)$. At $\gamma > \gamma^{**} \geq \tilde{\gamma}$, the acquisition price is $S = v_{mm}$.*

Proof. For part (i), we provide a proof sketch. A full proof is given in the Appendix. Under *I1* and *I3*, one of the MNEs acquiring the domestic assets \bar{k} at $S = v_{mm} - \varepsilon$ is the unique Nash-Equilibrium. To see this, first note that $S' \geq v_{mm}$ is a weakly dominated strategy. For any $S' < v_{mm} - \varepsilon$, $\Delta_{mm}(S') > 0$ and therefore a non-acquiring MNE has an incentive to increase the price by a small amount to obtain the assets. Then, note that $S = v_{mm} - \varepsilon$ implies that $\Delta_{mm}(S) = \varepsilon$ and no MNE has an incentive to deviate. Furthermore, we have $\Delta_d(S) > 0$ for $S = v_{mm} - \varepsilon$ since $v_{mm} > (1 - t_h^p)v_d$. Hence, no firm $i \in \mathcal{I}$ has an incentive to deviate.

Under *I2*, one MNE acquiring assets \bar{k} at $S = v_{mm} - \varepsilon$ is a Nash-Equilibrium. To see this, assume that the second highest bid is $S' = v_{mm} - 2\varepsilon$. The same arguments as above then apply. But no sale by firm d is also a Nash-Equilibrium here. To see this, assume that all MNE post bids at v_{md} , i.e. $S = v_{md}$ and firm d says no. No MNE has an incentive to deviate since $\Delta_{md}(S) < 0$ for any $S > v_{md}$. Moreover, $\Delta_d(S) > 0$ for $S = v_{md}$, since $(1 - t_h^p)v_d > v_{md}$ and thus, firm d has no incentive to deviate.

Under *I4*, one MNE acquiring at $S = (1 - t_h^p)v_d$ is the unique Nash-Equilibrium. First, note that the second highest bid is $S' < (1 - t_h^p)v_d$. The acquiring firm has no incentive to deviate since $\Delta_{md}(S) > 0$ for $S = (1 - t_h^p)v_d$, due to the fact that firm d will not sell if the acquirer reduces its bid. The non-acquiring MNEs have no incentive to deviate since $\Delta_{mm}(S) < 0$ for $S = (1 - t_h^p)v_d$. Finally, $\Delta_d(S) = 0$ for $S = (1 - t_h^p)v_d$ and thus, firm d has no incentive to deviate.

Finally, under *I5* and *I6*, no sale is the unique Nash-equilibrium. This follows from

the fact that $\Delta_d(S) > 0$ for $S \leq (1 - t_h^p)v_d$ and $\Delta_{mm}(S) < 0$ and $\Delta_{md}(S) < 0$ for all $S > (1 - t_h^p)v_d$. Hence, no firm $i \in \mathcal{I}$ has an incentive to deviate.

For part (ii) of the Lemma, first define:

$$\gamma^* = \begin{cases} 0 & \text{iff } v_{md} > (1 - t_h^p)v_d \\ > 0 & \text{iff } v_{md}(\gamma^*) = (1 - t_h^p)v_d \end{cases}, \quad \gamma^{**} = \begin{cases} 0 & \text{iff } v_{mm} > (1 - t_h^p)v_d \\ > 0 & \text{iff } v_{mm}(\gamma^{**}) = (1 - t_h^p)v_d \end{cases}. \quad (2.14)$$

Let $\tilde{\gamma} = \min\{\gamma^*, \gamma^{**}\}$. Then, we have that $\gamma > \tilde{\gamma}$ induces a foreign acquisition and the market structure m , which follows from the fact that $\frac{dv_{mm}}{d\gamma} > \frac{dv_{md}}{d\gamma} > \frac{(1-t_h^p)v_d}{d\gamma} = 0$ holds. To see this, note that $(1 - t_h^p)v_d = (1 - t_h^p)\pi_d(d)$ is not a function of γ . From Assumption A2, the first term in $v_{md} = \pi_A(m) - \pi_G(d)$ is increasing in γ , whereas the second term is independent of γ . In contrast, the first term in $v_{mm} = \pi_A(m) - \pi_G(m)$ is increasing in γ , while the second term is decreasing in γ . From table 2.1, we may also note that $v_{mm} > (1 - t_h^p)v_d$ holds in inequalities *I1*, *I2* or *I3*. Hence, it follows that $\gamma > \gamma^{**}$ implies a foreign acquisition at the sales price $S = v_{mm}$. From (2.14), it also follows that for any $\gamma \in [\gamma^*, \gamma^{**}]$, only inequality *I4* arises and a foreign acquisition occurs at $S = (1 - t_h^p)v_d$. ■

Table 2.1: The equilibrium ownership structure and the acquisition price under the L-policy.

Inequality:	Definition:	Ownership structure:	Acquisition price S :
<i>I1</i> :	$v_{mm} > v_{md} > (1 - t_h^p)v_d$	K(m)	v_{mm}
<i>I2</i> :	$v_{mm} > (1 - t_h^p)v_d > v_{md}$	K(m) or K(d)	v_{mm}
<i>I3</i> :	$v_{md} > v_{mm} > (1 - t_h^p)v_d$	K(m)	v_{mm}
<i>I4</i> :	$v_{md} > (1 - t_h^p)v_d > v_{mm}$	K(m)	$(1 - t_h^p)v_d$
<i>I5</i> :	$(1 - t_h^p)v_d > v_{mm} > v_{md}$	K(d)	.
<i>I6</i> :	$(1 - t_h^p)v_d > v_{md} > v_{mm}$	K(d)	.

Lemma 1 points at several noteworthy implications. *First*, when *I1*, *I2* or *I3* holds,

an MNE's willingness to pay is partly driven by its desire to prevent other MNEs from obtaining the assets, as illustrated by $v_{mm} > v_d$ being fulfilled. Such a case will emerge when there are strong complementarities between the domestic assets \bar{k} and MNEs' firm-specific assets, i.e. when γ is sufficiently high. Note that the equilibrium sales price is independent of taxes in this case, i.e. it equals the gross valuation for a foreign firm of obtaining the assets, v_{mm} . Intuitively, acquisition costs are deductible and therefore, no MNE can make a profit higher than a greenfield entrant in equilibrium and since taxes are equal for acquisition and greenfield entry, they become neutral between entry modes.

Second, turning to the case of *I4*, we may note that $v_{md} > (1 - t_h^p)v_d > v_{mm}$ which implies that negative externalities among MNEs are less important for the bidding competition and that other reasons such as increasing the concentration on the market are predominant when the domestic firm is acquired. In fact, $v_{md} > v_{mm}$ implies that an MNE benefits from removing firm d from the market but is also better off as a non-acquirer. This implies that the acquisition price is the reservation price of the domestic firm, i.e. $S = (1 - t_h^p)v_d = (1 - t_h^p)\pi_d(d)$. We may then note that the equilibrium sales price here depends on the domestic profit tax but not on the capital gains tax. Thus, we see that the domestic capital gains tax is neutral to the decision of whether to sell, since the rewards to selling/not selling will be taxed symmetrically.

3. FDI policy and Tax Revenues

As pointed out in the Introduction, it has been recognized that firms may employ transfer pricing techniques allowing them to shift profits to low-tax locations, and that this might lead to lower tax revenues. Here, we will study the effects on tax revenues of different types of policies (or entry modes, i.e. acquisition and greenfield entry) towards FDI.

3.1. FDI policy and the equilibrium market structure

In stage 1 in Figure 2.1, the government chooses among three types of policies towards FDI. Hence, under restrictive (R) policy, FDI is not allowed, and the domestic monopoly remains intact. The resulting market structure (where owner d keeps its assets and no greenfield entry takes place) is then $\mathbf{K}(d^{\text{mon}})$ defined in (2.7). Under the discriminatory (D) policy, *only* greenfield FDI is allowed. The resulting market structure (where owner d keeps its assets but where foreign firms enter greenfield) is then denoted $\mathbf{K}(d)$, defined in (2.6). Finally, under the the laissez-faire (L) policy, *both* greenfield and acquisition FDI are allowed. From Lemma 1, we know that one of the MNEs acquires the domestic firm's assets \bar{k} in a second stage at a price $S = (1 - t_h^p)\pi_d(d)$ under I4 and at a price $S = v_{mm}$ under I1, I2 or I3 and that the ownership structure is $K(m)$. Under I5 or I6, the domestic firm keeps its assets and the ownership structure is the same as under the discriminatory policy, $\mathbf{K}(d)$.

To summarize:

Lemma 2. *The equilibrium ownership structure under the R-policy is $\mathbf{K}(d^{\text{mon}})$ and $\mathbf{K}(d)$ under the D-policy. Under the L-policy, the equilibrium market structure is $\mathbf{K}(m)$ under inequalities I1, I2, I3 or I4 and $\mathbf{K}(d)$ under I5 or I6.*

We now turn to studying how FDI policy affects tax revenues. The collected taxes under the R-policy, the D-policy and the L-policy are then given in table 3.1.

3.2. Comparing tax revenues between the restrictive and the discriminatory FDI policy

Let us first compare the collected tax revenues under the D-policy (where only greenfield entry is allowed) to the collected taxes under the R-policy (where no FDI liberalization takes place and the domestic monopoly is maintained).

As illustrated in Figure 2.1, the tax revenues under the restrictive policy are $T^{\text{R}} = \mathbf{T}(d^{\text{mon}}) = t_h^p\pi_d(d^{\text{mon}}) + t_h^c(1 - t_h^p)\pi_d(d^{\text{mon}})$. Under the the discriminatory policy, tax

Table 3.1: Tax revenues and FDI policy.

FDI policy:	Tax revenues:	Market structure:
$T^R :$	$t_h^p \pi_d(d^{\text{mon}}) + t_h^c (1 - t_h^p) \pi_d(d^{\text{mon}})$	$\mathbf{K}(d^{\text{mon}})$
$T^D :$	$t_h^p \pi_d(d) + t_h^c (1 - t_h^p) \pi_d(d)$	$\mathbf{K}(d)$
$T^L :$	$\begin{cases} t_h^c v_{mm} \\ t_h^c (1 - t_h^p) \pi_d(d) \\ t_h^p \pi_d(d) + t_h^c (1 - t_h^p) \pi_d(d) \end{cases}$	$\begin{cases} \mathbf{K}(m) : I1, I2 \text{ or } I3 \\ \mathbf{K}(m) : I4 \\ \mathbf{K}(d) : I5, I6 \end{cases}$

revenues are $T^D = T(d) = t_h^p \pi_d(d) + t_h^c (1 - t_h^p) \pi_d(d)$, since $\pi_d(d)$ is the domestic firm's net profit under greenfield entry and since foreign firms fully evade taxes in the host country. From Assumption A1, we then have:

$$T^D - T^R = [t_h^c (1 - t_h^p) + t_h^p] \underbrace{[\pi_d(d) - \pi_d(d^{\text{mon}})]}_{(-)} < 0. \quad (3.1)$$

Consequently, we have the following result:

Proposition 1. *If MNEs can fully evade taxes and only enter greenfield, tax revenues will be lower under the D-policy than under the R-policy, i.e. maintaining the domestic monopoly provides higher tax revenues, i.e. $T^R > T^D$.*

Intuitively, when FDI only takes place through greenfield entry, tax revenues are reduced by shifting corporate tax generating profits from the domestic firm towards tax avoiding MNE affiliates. Thus, greenfield entry leads to a reduction in taxes, since the foreign entrants evade taxes and the domestic firm's taxable profit is reduced.

3.3. Comparing tax revenues between the restrictive and the laissez-faire FDI policy

Let us now turn to the case when policy also allows for FDI through acquisitions, i.e. the L-policy applies. There is a fundamental difference between foreign entry in the context of acquisition and greenfield investment, respectively. When entering greenfield, a foreign firm will pay a fixed entry cost F , only covering the opportunity cost in terms of factor inputs. However, when entry takes place by an acquisition, the bidding competition over the domestic target firm implies that domestic capital gains may be created.

Using Lemma 1, the acquisition price is $S = (1 - t_h^p)v_d = (1 - t_h^p)\pi_d(d)$ under inequality $I4$, since MNEs are better off as non-acquirers and the acquisition price is determined such that the domestic firm is indifferent between selling and not selling. The corresponding tax revenues in this case are $T^L = T(m) = t_h^c(1 - t_h^p)\pi_d(d)$. Under inequalities $I5$ or $I6$ where no sale occurs, the tax revenues are $T^L = T(d) = t_h^p\pi_d(d) + t_h^c(1 - t_h^p)\pi_d(d)$. In intervals $I1$ - $I3$, the acquisition price is driven up to $S = v_{mm} = \pi_A(m) - \pi_G(m)$ at which MNEs are indifferent between acquiring and not acquiring. The corresponding tax revenues in this case are $T^L = T(m) = t_h^c S = t_h^c v_{mm}$.

Hence, comparing tax revenues under laissez faire and restrictive policy, we have:

$$T^L - T^R = \begin{cases} \underbrace{t_h^c[v_{mm} - (1 - t_h^p)v_d]}_{(+)} - t_h^p\pi_d(d^{\text{mon}}) \stackrel{\leq}{\geq} 0 : & I1, I2, \text{ or } I3 \\ t_h^c(1 - t_h^p)\underbrace{[\pi_d(d) - \pi_d(d^{\text{mon}})]}_{(-)} - t_h^p\pi_d(d^{\text{mon}}) < 0 : & I4 \\ [t_h^c(1 - t_h^p) + t_h^p]\underbrace{[\pi_d(d) - \pi_d(d^{\text{mon}})]}_{(-)} < 0 : & I5, I6 \end{cases} \quad (3.2)$$

First, since no sale occurs in $I5$ or $I6$, the results are identical to Proposition 1 and the restrictive policy yields higher tax revenues. This is also the case under $I4$, since the foreign acquirer uses transfer pricing to avoid paying profit taxes in the host country. In addition, capital gains taxes are lower, due to the loss of the monopoly power. In contrast, under $I1$, $I2$ or $I3$ where the acquisition price is $S = v_{mm} = \pi_A(m) - \pi_G(m)$, tax revenues

under the L-policy may exceed the tax revenue under the R-policy. Note that, by necessity, a sale must imply a capital gain for the domestic seller, i.e. $v_{mm} > (1 - t_h^p)v_d$ for a sale to occur. In fact, the lost revenues from profit taxes can then be recouped by revenues from capital gains taxes arising from a change in ownership, if the domestic assets acquired are sufficiently important for generating profits in the product market. To see this, note from Assumption 1 that:

$$\begin{aligned} \frac{d(T^L - T^R)}{d\gamma} &= t_h^c \frac{dv_{mm}}{d\gamma} \\ &= t_h^c \left\{ \underbrace{\frac{d\pi_A(m)}{d\gamma}}_{(+)} - \underbrace{\frac{d\pi_G(m)}{d\gamma}}_{(-)} \right\} > t_h^c \frac{d\pi_A(m)}{d\gamma} > 0. \end{aligned} \quad (3.3)$$

Hence, given that domestic assets are sufficiently complementary to foreign firm-specific assets, (3.3) suggests that the positive *capital gain effect* (which increases in the complementarity parameter γ as MNEs bid for the benefits as the acquirer, but also to avoid a weak position as a non-acquirer) will dominate the negative *domestic profit effect* (generated by the loss of taxation of the monopoly profit $\pi_d(d^{\text{mon}})$).

We have the following result:

Proposition 2. *The L-policy generates higher tax revenues than the R-policy, if and only if the complementarity between foreign and domestic assets γ is sufficiently high. That is, there exists a $\hat{\gamma}^{LR}$ such that $\gamma > \hat{\gamma}^{LR} \geq \gamma^{**}$ implies that $T^L > T^R$ and $\gamma < \hat{\gamma}^{LR}$ implies that $T^L < T^R$.*

Proof. See the Appendix. ■

The proposition illustrates that the L-policy (allowing both types of entry) might generate higher tax revenues than the R-Policy. Due to the bidding competition between the MNEs over the target firm, all benefits from the acquisition – including the evaded taxes – are competed away and accrue to the domestic seller. Hence, by taxing the increased capital gains of the selling domestic owner, the lost profit taxes are compensated, and if the increase in capital gains for the domestic seller is sufficiently large, the tax revenues will be higher when the acquisition takes place.

3.4. Comparing tax revenues between the laissez-faire policy and the discriminatory FDI policy

For completeness, let us finally compare the L-policy to the D-policy. Remember that both policies allow for greenfield entry while only the L-policy allows for cross-border acquisitions. Once more, using Lemma 1, we have:

$$T^L - T^D = \begin{cases} \underbrace{t_h^e[v_{mm} - (1 - t_h^p)v_d]}_{(+)} - t_h^p\pi_d(d) \lesseqgtr 0 : & I1, I2 \text{ or } I3 \\ -t_h^p\pi_d(d) < 0 : & I4 \\ 0 : & I5 \text{ or } I6 \end{cases} . \quad (3.4)$$

Under *I5* or *I6*, tax revenues are identical since if firm d keeps its assets, \bar{k} occurs under the L-policy. Under *I4*, a sale occurs at the reservation price $S = (1 - t_h^p)v_d$. It then follows that capital gains taxes are identical under the two policies, but due to transfer pricing under foreign ownership of \bar{k} , no profit taxes are collected under the L-policy. Finally, under *I1, I2 or I3*, there is once more a trade-off between the loss of profit taxes and increased capital gains taxes since an acquisition leads to a capital gain, i.e. $v_{mm} > (1 - t_h^p)v_d$. The latter effect will once more dominate, given that the complementarities between MNEs' firm-specific assets and the domestic assets are sufficiently large.

Proposition 3. *The L-policy generates higher tax revenues than the D-policy, if and only if the complementarity between foreign and domestic assets γ is sufficiently high. That is, there exists a $\hat{\gamma}^{LD}$ such that $\gamma > \hat{\gamma}^{LD} > \gamma^{**}$ implies that $T^L > T^D$ and $\gamma < \hat{\gamma}^{LD}$ implies that $T^L < T^D$.*

Proof. See the Appendix. ■

3.5. Taxation and inefficient foreign acquisitions

We can also show that higher domestic profit taxes may induce inefficient foreign ownership.²¹ The reason is that the profit tax affects the domestic firm's reservation price d . To see that we may note from table 2.1 that I4 holds as long as $v_{md} > (1 - t_h^p)v_d$. Using γ^* from Lemma 1 where $v_{md}(\gamma^*) = (1 - t_h^p)v_d$ and differentiating in t_h^p and γ^* , we obtain:

$$\frac{d\gamma^*}{dt_h^p} = - \underbrace{\frac{\pi_d(d)}{d\pi_A(m)}}_{(+)} < 0.$$

Hence, higher domestic profit taxes t_h^p may induce inefficient foreign ownership (i.e. foreign acquisitions where $\gamma < 1$) by reducing the domestic firm's reservation price, $(1 - t_h^p)\pi_d(d)$. This will be explicitly shown in the next section.

We have the following proposition:

Proposition 4. *An increase in the domestic profit tax t_h^p can induce inefficient foreign ownership.*

3.6. Example: The linear quadratic Cournot model

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4. Concluding discussion

It is well known that foreign entry by MNEs may lead to rent shifts from domestic to foreign owners which, in turn, may reduce the tax revenues for the domestic country. However, it is shown in this paper that if foreign entry takes place through the acquisition of scarce domestic assets, domestic capital gains and thereby domestic tax revenues will increase. The reason is that in the bidding competition between the MNEs over the scarce

²¹Inefficient ownership may also occur for market power reasons since the domestic firm is removed from the market as competitor.

domestic assets, benefits from the acquisition, including the evaded taxes, are competed away and captured by the domestic seller. The domestic seller, in turn, cannot as easily evade taxes and will accordingly pay more taxes since the profit from selling the assets is higher than the profit from keeping them; otherwise no acquisition would take place. Consequently, the paper suggests that one important measure for mitigating the effects of tax evasion by MNEs is to ensure that there is competition between MNEs to enter the domestic market. Otherwise, a single strong foreign entrant may use its bargaining power to enter the domestic market, without creating rents for domestic scarce sector-specific assets. An implication for tax authorities is that the monitoring of capital gains acts as a substitute for the monitoring of profit shifting activities.

The model is highly stylized and naturally, it is interesting to study how robust our findings are. For instance, how restrictive is the assumption that all MNEs invest either in terms of greenfield investments or by acquiring the local firm? In general, assuming that not all MNEs can invest in the greenfield game would strengthen the competition between MNEs, which would tend to increase the acquisition price and hence, the increase in capital gain tax revenues.

Another restrictive assumption is that all sales take place on the domestic market in country H. In contrast, many markets generating tax revenues for the government are international. For instance, this is the case in the VOLVO-FORD acquisition discussed in the introduction, where VOLVO predominately sells cars to foreign markets. However, the model also applies to this setting. To see this, assume all sales, including the one by firm d , to take place abroad. Ownership structures $\mathbf{K}(d)$ and $\mathbf{K}(m)$ can then be interpreted as the ownership structure in the international oligopoly under home and foreign ownership of firm d , respectively. Maintaining in that there may be a complementarity between firm d 's assets and the firm-specific assets held by the M competing oligopoly firms, it then follows that the results derived in Proposition 3 apply. Hence, such an extended model can, to some extent, explain the potential gains in tax revenues resulting from the VOLVO-FORD example.

A related question is how the results would change if there were more than one domestic firm. First, this would lead to additional losses in domestic profit taxes under a foreign acquisition, given that the acquiring foreign firm would gain a strong position on the product market. However, to the extent that other domestic firms would also have access to scarce assets, additional acquisitions may then take place with similar potential capital gains. In particular, in the international oligopoly-setting discussed above, there would be few domestic firms on the international market with assets matching international competitors, at least in smaller countries.

What would happen if we abolished the assumption of double taxation of corporate income? This would strengthen our result that acquisition entry could increase tax revenues also when tax evasion takes place. To see this, consider a product market monopoly case and compare the equilibrium tax revenues under foreign and domestic ownership, respectively. When no foreign entry takes place, the tax revenues will be $T(d^{\text{mon}}) = t_h \pi_d(d^{\text{mon}})$. Turning to the sale of the domestic monopoly, it follows that all rents are competed away among the potential buyers and the equilibrium sales price is $S = \pi_A(m^{\text{mon}})$, which is a non-acquiring MNE's willingness to pay for the domestic firm and where m^{mon} indicates a foreign-owned monopoly, $\mathbf{K}(m^{\text{mon}})$. Consequently, we have that the tax revenues are $T(m^{\text{mon}}) = t_h \pi_A(m^{\text{mon}})$, since $\pi_A(m^{\text{mon}})$ is the domestic firm's capital gain when selling and the foreign firm pays no taxes in the domestic country. Moreover, it follows that the acquisition takes place iff $\pi_A(m^{\text{mon}}) > \pi_d(d^{\text{mon}})$. Hence, we have the following result: If there is single taxation of corporate income and MNEs can fully evade taxes and only enter by acquisition in a monopoly, then the tax revenues will be higher under foreign ownership. The difference between the single and the double taxation system is that in the double taxation system, the foreign acquisition implies that double taxation is avoided, which means that the capital gains must increase sufficiently to compensate for the avoidance of double taxation. In the single taxation system, no double taxation is avoided and for tax revenues to increase, it is sufficient that the product market profit is higher for the buyer than for the seller, which will be the case in equilibrium; otherwise no acquisition would

take place.

However, the result that an inefficient owner could acquire the domestic assets for tax reasons would disappear, since the seller would pay the same tax irrespective of whether it sells.

More generally, this paper treats taxes in a very simple way. Endogenizing taxes in this framework would probably lead to new interesting results on tax competition, among other things.²² A more detailed analysis of different taxes on corporate income and capital gains would also lead to new interesting results. Finally, addressing welfare issues in this framework would give further new interesting results. In a companion paper, Norbäck and Persson (2003), we study consumer surplus and producer surplus effects of foreign direct investments, but in an environment without taxation. That paper shows that welfare might increase from allowing cross-border acquisition due to the more efficient usage of scarce domestic resources as well as increased rents, generated by a shift to foreign ownership. Integrating taxation into that framework would show that allowing for cross-border acquisition may simultaneously enhance welfare and increase tax-revenues, if the domestic assets are sufficiently important in the product market. However, for less complementary assets, the level of taxation would affect the reservation price which could, in principle, generate less efficient cross-border acquisitions. These issues are, however, left to future research.

²² There is a recent literature studying tax competition in environments where MNEs can use transfer pricing. See, for instance, Haufler and Schjelderup (2000) and Raimondos-Moller and Scharf (2002). However, to our knowledge, no paper in that literature allows foreign entry to affect domestic asset prices.

A. Appendix:

A.1. Proof of Lemma 1 [Notation to be changed]

First, note that $b_i \geq \max v_{ml}$, $l = \{d, m\}$ is a weakly dominated strategy, since no MNE will post a bid equal to or above its maximum gross valuation of obtaining the assets and that firm d will accept a bid in stage 2, iff $b_i > (1 - t_h^p)v_d$.

Inequality I1 Consider the equilibrium candidate $\mathbf{b}^* = (b_1^*, b_2^*, \dots, yes)$. Let us assume that MNE $w \neq d$ is the MNE that has posted the highest bid and obtains the assets and firm $s \neq d$ the MNE with the second highest bid.

Recall that $b_w^* \geq v_{mm}$ is a weakly dominated strategy. $b_w^* < v_{mm} - \varepsilon$ is not an equilibrium, since firm $j \neq w, d$ then benefits from deviating to $b_j = b_w^* + \varepsilon$, since it will then obtain the assets and its net gain will be $\pi_A(\mathbf{k}^{mg*}) - (\pi_A(\mathbf{k}^{mg*}) - S)t_f^p - (1 - t_f^p)(\pi_G(\mathbf{k}^{mg*}) - F) > 0$ if $S < v_{mm}$. To see this, note that $\pi_A(\mathbf{k}^{mg*}) - (\pi_A(\mathbf{k}^{mg*}) - S)t_f^p - [(1 - t_f^p)(\pi_G(\mathbf{k}^{mg*}) - F) - S] = 0$ has a unique solution: $S = \pi_A(\mathbf{k}^{mg*}) - [\pi_G(\mathbf{k}^{mg*}) - F]$ and that $\pi_A(\mathbf{k}^{mg*}) - (\pi_A(\mathbf{k}^{mg*}) - S)t_f^p - [(1 - t_f^p)(\pi_G(\mathbf{k}^{mg*}) - F) - S]$ decrease in S . Let $b_w^* = v_{mm} - \varepsilon$, and $b_s^* \in [v_{mm} - \varepsilon, v_{mm} - 2\varepsilon]$, it then follows directly that no MNE has an incentive to deviate. By deviating to *no*, firm d foregoes a selling price that would make its net gain of selling positive since $S = v_{mm} - \varepsilon > (1 - t_h^p)v_d$. Accordingly, firm d has no incentive to deviate and thus, \mathbf{b}^* is a Nash equilibrium.

Let $\mathbf{b} = (b_1, \dots, b_m, no)$ be a Nash equilibrium. Let MNE h be the MNE with the highest bid. Recall that firm d will say *no* iff $b_h \leq (1 - t_h^p)v_d$. But MNE $j \neq d$ will then have the incentive to deviate to $b' = (1 - t_h^p)v_d + \varepsilon$, it will then obtain the assets and its net gain would then be $\pi_A(\mathbf{k}^{mg*}) - (\pi_A(\mathbf{k}^{mg*}) - S)t_f^p - (1 - t_f^p)(\pi_G(\mathbf{k}^{mg*}) - F) > 0$ due to the fact that $S = b' = (1 - t_h^p)v_d + \varepsilon < v_{mm}$ as shown above. Moreover, firm d would then accept the bid, which contradicts the assumption that \mathbf{b} is a Nash equilibrium.

Inequality I2 Consider the equilibrium candidate $\mathbf{b}^* = (b_1^*, b_2^*, \dots, yes)$. The same reasoning as under I1 then applies: $b_w^* \geq v_{mm}$ is a weakly dominated strategy. $b_w^* < v_{mm} - \varepsilon$ is not an equilibrium since firm $j \neq w, d$ then benefits from deviating to $b_j = b_w^* + \varepsilon$. If $b_w^* = v_{mm} - \varepsilon$, and $b_s^* \in [v_{mm} - \varepsilon, v_{mm} - 2\varepsilon]$, then neither firm d nor any MNE has an incentive to deviate. Thus, \mathbf{b}^* is a Nash equilibrium.

Consider the equilibrium candidate $\mathbf{b}^{**} = (b_1^{**}, b_2^{**}, \dots, no)$. Recall that firm d will say *no* iff $b_h \leq (1 - t_h^p)v_d$. Then, $b_w^{**} \geq (1 - t_h^p)v_d$ is not an equilibrium since firm d would then benefit by deviating to *yes*. If $b_w^{**} \leq (1 - t_h^p)v_d$, then no MNE has an incentive to deviate since the net gain $\Delta_{md}(S > (1 - t_h^p)v_d) < 0$. By deviating to *yes*, firm d loses since it then sells its assets at such a low a price that its net gain of keeping the assets would be positive. Thus, \mathbf{b}^{**} is a Nash equilibrium.

Inequality I3 Consider the equilibrium candidate $\mathbf{b}^* = (b_1^*, b_2^*, \dots, yes)$. The same reasoning as under I1 then applies: $b_w^* \geq v_{mm}$ is a weakly dominated strategy. $b_w^* < v_{mm} - \varepsilon$ is not an equilibrium, since firm $j \neq w, d$ then benefits from deviating to $b_j = b_w^* + \varepsilon$. If $b_w^* = v_{mm} - \varepsilon$, and $b_s^* \in [v_{mm} - \varepsilon, v_{mm} - 2\varepsilon]$, then neither firm d nor any MNE has an incentive to deviate. Thus, \mathbf{b}^* is a Nash equilibrium.

Let $\mathbf{b} = (b_1, b_2, \dots, no)$ be a Nash equilibrium. Recall that firm d will say *no* iff $b_h \leq (1 - t_h^p)v_d$. But MNE $j \neq d$ will then have the incentive to deviate to $b'_j = (1 - t_h^p)v_d + \varepsilon$, which contradicts the assumption that \mathbf{b} is a Nash equilibrium.

Inequality I4 Consider the equilibrium candidate $\mathbf{b}^* = (b_1^*, b_2^*, \dots, yes)$. Then, $b_w^* > (1 - t_h^p)v_d$ is not an equilibrium since firm w would then benefit from deviating to $b_w = (1 - t_h^p)v_d$. $b_w^* < (1 - t_h^p)v_d$ is not an equilibrium, since firm d would then not accept the bid. If $b_w^* = (1 - t_h^p)v_d$, then firm w has no incentive to deviate. By deviating to $b'_j \leq b_w^*$, firm j 's, $j \neq w, d$, payoff does not change. By deviating to $b'_j > b_w^*$, firm j loses, since it must pay such a high price that its net gain of obtaining the assets becomes negative since $\Delta_{mm}(S > (1 - t_h^p)v_d) < 0$. Accordingly, firm j has no incentive to deviate. By deviating

to no , firm d 's payoff loses since it foregoes such a high a selling price that its net gain of keeping the assets will become negative. Accordingly, firm d has no incentive to deviate and thus, \mathbf{b}^* is a Nash equilibrium.

Let $\mathbf{b} = (b_1, \dots, b_m, no)$ be a Nash equilibrium. Recall that firm d will then say no iff $b_h \leq (1 - t_h^p)v_d$. But MNE $j \neq d$ will have the incentive to deviate to $b' = (1 - t_h^p)v_d + \varepsilon$, since $\Delta_{md}(S = (1 - t_h^p)v_d + \varepsilon) > 0$, which contradicts the assumption that \mathbf{b} is a Nash equilibrium.

Inequalities I5 or I6 Consider the equilibrium candidate $\mathbf{b}^* = (b_1^*, b_2^*, \dots, no)$, where $b_i^* < (1 - t_h^p)v_d \forall i \in M$. It then directly follows that no firm has an incentive to deviate and thus, b^* is a Nash equilibrium.

Then, note that firm d will accept a bid iff $b_i \geq (1 - t_h^p)v_d$. But $b_i \geq (1 - t_h^p)v_d$ are weakly dominated strategies in these intervals, since $(1 - t_h^p)v_d > \max\{v_{mm}, v_{md}\}$. Thus, the assets will not be sold in these intervals.

A.2. Proof of Lemma 2 fixa

There exists a γ^* such that $T^{\text{mg}^*} = t_h^c (\pi_A(\mathbf{k}^{\text{mg}^*}) - (\pi_G(\mathbf{k}^{\text{mg}^*} - F))) = t_h^p \pi_d(\mathbf{k}^{\text{d}^*}) + t_h^c (1 - t_h^p) \pi_d(\mathbf{k}^{\text{d}^*}) = T^{\text{d}^*}$ since $\pi_A(\mathbf{k}^{\text{mg}^*}) - (\pi_G(\mathbf{k}^{\text{mg}^*}) - F)$ is increasing in γ , and all other terms independent of γ . It then follows that $T^{\text{mg}^*} > T^{\text{d}^*}$ for $\gamma = \gamma^* + \varepsilon$ and $T^{\text{mg}^*} < T^{\text{d}^*}$ for $\gamma = \gamma^* - \varepsilon$.

A.3. Proofs of statements concerning the Linear Cournot Model

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