

## ATTRACTING MULTINATIONAL FIRMS AND TRANSFER PRICING

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This paper demonstrates that by providing favourable corporate tax rates, developing countries create incentives for corporate tax evasion. We will demonstrate further that the subsequent tightening of penalties to prevent such evasions has no effect. When corporate tax rates are lower in the country of production than they are in the country of sale, multinational firms possess an incentive to conduct illegal transfer pricing. Furthermore, attempts to strengthen penalties imposed on illegal transfer pricing, within the country of either production or sale, proves counterproductive. As a result, we argue that the governments of developing countries should take into consideration the issue of tax evasion by means of transfer pricing and should provide in-kind services rather than favourable tax rates to attract multinational firms.

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### 1. Introduction

Governments in developing economies often attempt to attract multinational firms into the country to promote economic growth. These multinational firms manufacture products within a developing country, which they then sell in more highly developed countries. Because the corporate tax rate in these developing countries are often low as a result of policy measures designed to attract multinational firms, these multinational firms may potentially transfer to the developing country revenue they earn in the country of sale to evade corporate taxes (in other words, conducting transfer pricing). As a result, lowering corporate taxes as a strategy for attracting multinational firms carries the possibility of providing these firms with an incentive as well as a mechanism to evade taxes.

Copithorne (1971) and Horst (1973) conducted pioneering research on the topic of tax evasion by multinational firms, inspiring the later research of Bloch and Lefebvre (1999), who discussed a two-country model of tax competition that is capable of including corporate income taxes and export income taxes. Similarly, Gangopadhyay (2007) discussed a game-theoretical model in which two multinational firms are able to decide transfer prices on

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the basis of a common probability of detecting illegal transfer pricing and penalties that are different between two countries. These studies concluded that transfer pricing by multinational firms could not be prevented.

As far as developing countries offer tax reductions favourable to multinational firms, thus, providing incentives for tax evasion in practice, abusive transfer pricing cannot be prevented, regardless of whether countries cooperate to prevent it.

Our model in this paper is related closely to that of Gangopadhyay (2007). Gangopadhyay (2007) considered the effectiveness of legal enforcement to prevent transfer pricing using a game-theoretical model involving two countries and two multinational firms. That paper argues that no full-disclosure equilibrium (i.e. a Nash equilibria where all firms transfer prices become zero) is stable.

This conclusion relies on the assumption that the level of penalty imposed by both countries is a quadratic function of the transfer price chosen by each firm. This assumption implies there is no limit to the level of penalty that countries can impose. However, for most countries, a limit to the level of penalties does in fact exist. In this paper, we will assume a ceiling penalty that countries can impose.

In a Nash equilibrium, because governments increase the level of penalty, transfer prices chosen by multinational firms also rise. However, when corporate tax rates in both country of production and country of sale coincide, a full-disclosure equilibrium appears. Thus, we argue that in-kind services can act as an appropriate method by which developing countries may attract multinational firms.

This paper is organised as follows. In Section 2, we will establish our model, and in Section 3, we will derive the Nash equilibrium. Finally, in Section 4, we will provide our conclusion and its interpretations.

## 2. The Model

Consider an economy consisting of two countries and two multinational firms. Among these countries and multinational firms, we assume that information is structured asymmetrically as follows: both multinational firms privately know that consumer goods are produced in one (home) country and sold in the other. Consequently, the government of the country in which the multinational firms produce goods does not know that the multinational firms are not earning revenue within the home country, and the government of other country, i.e. the country in which the multinational firms sell their goods does not know how much revenue the firms are earning within their home country.

In the following discussion, let there be two countries, referred to as the ‘country of production’ and the ‘country of sale’, respectively. Additionally, let there be two multinational firms, referred to as firm  $i$ , where  $i = 1, 2$ .

Let the corporate tax rates in the country of production and the country of sale be  $t_P < t_P$  and  $t_S$ , respectively.

Let us assume that  $t_P < t_S$ . This assumption reflects the fact that the country of production has lowered its corporate tax rate as a strategic policy measure. Furthermore, both firms take this pair of corporate tax rates as given.

## 2.1 Behaviour of the Multinational Firms

Firm  $i$  decides how much of the revenues earned in the country of sale will transfer to the country of production. For simplicity, put the market price in the country of sale to 1. Denote firm  $i$ 's profits as  $\pi_i$  and define the profit function of firm  $i$  as

$$\pi_i(\varphi_i) = (1 - t_P)(\varphi_i x_i - C_i) + (1 - t_S)(x_i - \varphi_i x_i), i = 1, 2 \quad (1)$$

where  $\varphi_i$  and  $x_i$  refer to the transfer price and quantity of the product chosen by firm  $i$ , respectively, and  $C_i$  refers to firm  $i$ 's production costs.

Because  $\pi_i$  is an increasing function of  $\varphi_i$  as far as  $t_P < t_S$ , we can establish the following lemma:

*Lemma 1:* Under *laissez-faire*, both firms possess an incentive to carry out transfer pricing.

In this situation, what might firm  $i$ 's true profits be? A firm's true profits are the profits that result when it transfers no profits from the country of sale to the country of production. Following this, we define  $\pi_i^0$  to be profit when  $\varphi_i = 0$ , yielding

$$\pi_i^0 = (1 - t_S)x_i - (1 - t_P)C_i \quad (2)$$

Solving for  $t_S$ , after having arbitrarily fixed the left side of this equation, we are able to ascertain that as long as  $x_i > C_i$ , an international taxation structure [in other words, a set of  $(t_P, t_S)$ ] emerges in which  $t_P < t_S$  and  $\pi_i^0 > 0$ . Thus, under *laissez-faire* conditions, every firm can earn income greater than  $\pi_i^0$  by an increase in the transfer price. In other words, true profits are the minimum profits possible under *laissez-faire* conditions.

## 2.2 Law Enforcement

How effective is law enforcement intended to prevent transfer pricing?

In this paper, enforcement shall consist of international inspections and penalties. The country of sale and country of production collaborate to conduct inspections of multinational firms. In these inspections, we denote the probability of demonstrating the existence of abusive transfer pricing practices as  $\rho$ . After being discovered, a firm that practised abusive transfer pricing is forced to pay a penalty defined as  $T_i$  imposed on true profits. In this paper, we will assume that the enforcement described above is common knowledge in our model.

In this paper, we set the penalty imposed upon firms guilty of abusive transfer pricing by the collaborating governments of the country of sale and country of production as equal to the product of the transfer prices of the two firms.

$$\rho = \varphi_1 \varphi_2 \quad (3)$$

The fine is defined as  $T_i$  imposed on true profits  $\pi_i^0$ . However, let us assume that to ensure that firms do not go bankrupt,  $T_i$  has been set at a sufficiently low level (namely  $T_i < (1 - \rho)\pi_i / \rho\pi_i^0$ ).

## 3. Nash Equilibrium

Firm  $i$  has a probability  $1 - \rho$  of conducting transfer pricing without being caught. On the other hand, the government has a probability  $\rho$  of verifying the firm's true profit and

uncovering transfer pricing, thereby imposing a fine. Thus, firm  $i$ 's expected profit is

$$E(\pi_i) = (1 - \rho)\pi_i - \rho T_i \pi_i^0, i = 1, 2 \quad (4)$$

It is assumed further here that both firms interactively determine the transfer price  $\varphi_i^*$  that maximises the firm's own expected profit. Following this, we find that each firm's best response function is

$$BR_i = (1 + T_i)\pi_i^0 / 2(t_S - t_P)x_i, i = 1, 2 \quad (5)$$

Because this function does not depend on the other firm's choices (i.e.,  $\varphi_j, j = 1, 2, j \neq i$ ), the Nash equilibrium in this game is the dominant strategy equilibrium. Thus, the following proposition immediately holds:

*Proposition 1.*  $\varphi_i^*$  is an increasing function of  $T_i$ .

This proposition means that regardless of the strength of the penalty imposed by both country of sale and country of origin, the effect is counterproductive. In this model, law enforcement designed to prevent abusive transfer pricing is a failure. On the other hand, the following corollary can be stated:

*Corollary 1.* If  $t_S = t_P$  holds, then  $\varphi_1^* = \varphi_2^*$ .

From the aim of preventing tax evasion, this corollary suggests that the appropriate measure available to developing countries to attract multinational firms without providing a mechanism for tax evasion such as occurs by offering tax incentives is to offer an in-kind services provision.

#### 4. Conclusion

This paper has demonstrated that by providing favourable corporate tax rates to attract multinational firms and stimulate economic growth, developing economies create incentives for firms to conduct abusive transfer pricing. Furthermore, we have demonstrated that no matter their severity, the imposed penalties possess no efficacy as long as they can be paid.

The policy implication that can be derived from our model is as follows: provision of in-kind services, such as maintenance of infrastructure or simplification of administrative procedures, are a more appropriate method of attracting multinational firms in the interest of economic growth.

#### References

- Bloch, F., and E. Lefebvre.** 1999. "Corporate tax competition, tariffs and multinational firms." *Economics Letters* 65(2): 221–225.
- Copithorne, L.** 1971. "International corporate transfer prices and government policy." *Canadian Journal of Economics* 4:324–341.
- Gangopadhyay, P.** 2007. "Competitive tax evasion and transfer prices." *International Game Theory Review* 9(2): 347–351.
- Horst, T.** 1973. "The theory of the multinational firm: optimal behavior under different tariff and tax rates." *Journal of Political Economy* 79: 1059–1072.