

## **An Appraisal of Unified Enterprise Income Tax Policy in China**

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This paper explores how the increase in income taxes in relation to foreign-funded enterprises affects the social welfare of China. The theoretical analysis indicates that increasing the income taxes levied on the foreign-funded firm tends to be beneficial to the social welfare of China. However, this tax policy may be detrimental to the social welfare of China only if the marginal cost of the domestic firm is higher than that of the foreign-funded firm, and this cost differential effect outweighs both the direct and strategic effects.

### **INTRODUCTION**

Since China embarked on its economic reforms in 1978, the Chinese government has provided considerable tax incentives in order to promote economic development, encourage foreign investment, and introduce advanced technologies and equipment from overseas. China has implemented a dual corporate tax policy under which foreign and domestic enterprises (defined by the identities of the capital providers) are treated differently. The Income Tax of Enterprises with Foreign Investment and Foreign Enterprises introduced in 1991 is the legal basis for corporate income taxes levied on foreign-funded enterprises, while the Provisional Regulations of the People's Republic of China on Enterprise Income Tax that took effect in 1993 serves as the legal basis for corporate income taxes levied on local enterprises. Although nominal tax rates are the same for both local and foreign-funded enterprises at 33%, there are huge differences in incentives and pre-

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tax allowances. The tax bases are different so that the actual tax burdens vary quite significantly.

In the past, tax incentives offered to foreign-funded enterprises were based on locations and industries. The main tax incentive scheme, i.e., "2-Year Free and 3-Year Half" Tax Incentives, is provided to high-tech or new technology foreign manufacturers. This scheme gives tax holidays for the first and second profitable years and 50% tax discounts from the third to the fifth profitable years. By contrast, the tax incentives offered to local enterprises start from the year of operations rather than the years in black. Local enterprises have a shorter tax holiday than foreign-funded enterprises.

In terms of location incentives, the Chinese government provided additional 15% corporate tax discounts for an extra three years to foreign-funded enterprises in central and western China after the expiry of the tax holiday. Moreover, foreign-funded enterprises defined as those with advanced technologies or with over 70% of production values consisting of exports are granted an additional 50% corporate income tax discount with the floor fixed at 10%.

To sum up, the tax incentives granted to local enterprises are based on the industries, while the tax incentives offered to foreign-funded enterprises are based on the identities of the capital providers and the locations of the investments. The average tax rate for foreign-funded enterprises was approximately 15%.

In fact, domestic enterprises are subject to high corporate income tax rates and need to compete with foreign-funded enterprises that pay much lower rates, which have resulted in unfair market competition. Foreign-funded enterprises enjoy super-national treatment in China that is not in compliance with the national treatment principle set out by the World Trade Organization (WTO). The regional tax incentives further widen the gap in regional development and are detrimental to the improvement of industrial structures.

Some foreign-funded enterprises shut down their original operations and start elsewhere after their original tax incentives expire in the special zones, so that they can benefit from a new set of tax incentives. In addition, some domestic enterprises try to convert themselves into foreign ones in order to obtain the tax incentives granted to foreign enterprises. Their methods include pseudo joint-ventures with foreign enterprises (foreign enterprises do not invest, or invest with capital provided by Chinese parties), and joint investments where foreign capital accounts for only a small portion. Once the capital is validated by the competent authorities, it is

transferred to other locations for other joint-investment programs. Many joint-ventures are created with limited capital in different places in China for tax benefits and high profits. These types of false foreign capital ventures have resulted in a huge loss of tax income for the Chinese government, as well as capital flight.

As the dual tax system has caused many problems, the Chinese government has for long been seeking to reform its tax policy. In the middle of March 2007, the 10th National People's Congress finally passed a bill stating that the 33% corporate tax rate on domestic enterprises and the 15% tax rate on foreign-funded enterprises both were changed to 25% in 2008. This new tax system offers a five-year grace period. Tax rates of 18% to 25% are granted to some small foreign-funded enterprises or certain foreign-funded enterprises in specific locations or industries during the grace period. The 2-Year Free and 3-Year Half Tax Incentives originally granted to foreign-funded enterprises are canceled. Foreign-funded enterprises that are export-oriented unable to enjoy the additional 50% income tax discounts.

However, in order to encourage R&D, both domestic and foreign-funded enterprises in high-tech or new technology industries enjoy a 15% corporate income tax rate, with the corresponding tax on micro enterprises being levied at 20%. The greatest beneficiaries of the uniform tax regime are the financial institutions, as well as the telecommunications and energy industries. As the vast majority of them are state-owned enterprises, the corporate income tax rate was reduced to 25% from 33%.

Taxation has always played a pivotal role in international trade and in imperfectly competitive markets. Both the taxation policies devised by the governments and changes in tax rates to underpin the decisions of production behavior carry important economic implications. The relevant literature includes Brander (1981), Brander and Spencer (1984a, 1984b, 1985), Mai and Hwang (1989), Hwang and Mai (1991), Chao *et al.* (2001), Chen *et al.* (2006), Wu and Yue (2009), Xing and Li (2011), Li and Whalley (2012) and Huang *et al.* (2013). In recent years, outward foreign direct investment has become an important issue. In addition to exports to other markets, manufacturers can also manufacture products in other countries by setting up factories overseas, which are known as foreign direct investment. On such occasions, host countries levy enterprise taxes on foreign-funded enterprises.

The theoretical model of corporate income tax includes two variables: a corporate income tax rate and tax incentives on corporate

costs. The tax incentives on corporate costs are to avoid the double taxation of direct outward investors who are taxed in the host countries on their profits and taxed again by their home governments on their repatriated profits. Home governments tend to provide subsidies in the form of tax incentives on outward investors' factories (Bond and Samuelson, 1989; Janeba, 1995, 1996). In particular, Janeba (1996) introduces corporate taxation and double taxation relief into a model with imperfect competition and foreign direct investment. He shows that under Cournot quantity competition the application of a full tax credit can lead to an optimal home corporate tax rate lower than the host corporate tax rate. To the best of our knowledge, there has been surprisingly little research on the unified enterprises tax system in China. In an interesting article, Lin (2004) develops theoretically an equilibrium model of overlapping generations with a dual capital tax system to examine the effects of China's capital tax reform. He finds that an increase in the tax rate on foreign capital increases the domestic interest rate and decreases the capital – labor ratio, the output – labor rate, and domestic capital; it may also reduce foreign capital and the trade surplus. Nevertheless, the article does not go further to explore the impact of an increase in income tax on foreign-funded enterprises on social welfare in China.

In a related study, Whalley and Wang (2007) apply the worker control model and find that a reduction in the income tax on domestic enterprises will result in approximately a welfare loss of 0.256% of GDP. In a static computable general equilibrium (CGE), Deng *et al.* (2012) find out that abolishing dual enterprise income tax system leads to weaker foreign direct investment spillovers in the short term. The empirical results of An (2012) show that foreign-funded firms are responding to the unified enterprise income tax system by decreasing their investment in China. Ji *et al.* (2013) develop a model of general equilibrium for production economies. They suggest that globally optimal enterprise tax rates in China are 33.11%, 18.17%, and 18.06% for state-owned enterprises, foreign-funded enterprises and other private enterprises, respectively.

As China has canceled its tax incentives for foreign-funded enterprises and adopted a unified enterprise tax system for both domestic and foreign-funded enterprises, it is important to conduct a rigorous analysis to investigate the impacts of a unified enterprise income tax policy. The purpose of this paper is to develop a Cournot quantity competition model to examine the effect of an increase in income tax rates on foreign-funded enterprises in China as well as on

the social welfare of China, with the aim of filling some of the gaps left by the aforementioned studies.

The remainder of this paper is organized as follows. Section 2 establishes a Cournot duopoly model in which there is a foreign-funded firm and a domestic firm, in order to analyze the influence of a rise in corporate income tax rates on the social welfare of China. The paper closes by outlining the conclusion drawn from this study.

## A THEORETICAL MODEL

### The Cancellation of Corporate Income Tax Incentives for Foreign-funded Firm in Host Country (China)

In a seminar paper, Brander and Spencer (1985) incorporated an international Cournot duopoly into a "third market" model in which one domestic firm and one foreign firm produce a homogeneous product and compete in a third country market. In light of arguments by Janeba (1996) and Brander and Spencer (1985), we adopt a simple Cournot quantity competition model with two firms. One is a foreign-funded firm that invests outward from its home country to the host country (i.e., China). Foreign-funded firm only produces goods in the host country (China), and not in the home country. The parent firm (a multinational firm) located in the home country does not produce, while acquires the profits from its subsidiary (foreign-funded firm). The other is a domestic firm located in the host country (China). Both the domestic and foreign-funded firms manufacture homogeneous products and ship all their products to a third country market. The host country levies a corporate income tax of  $t$  on the domestic firm, with  $0 \leq t \leq 1$ , while the host country levies a corporate income tax of  $t^*$  on the foreign-funded firm with  $0 \leq t^* \leq 1$ . It is assumed that the host country offers a lower tax rate to the foreign-funded firm in order to attract foreign direct investments, that is,  $t > t^*$ . As this paper explores the impact of the changes in the foreign-funded firm taxes on the social welfare of the host country, it is assumed that the corporate income tax rate levied on the domestic firm is exogenously determined. When the foreign-funded firm repatriates profits back to the home country, the home country provides tax allowance incentives at the rate  $a^*$ , and  $0 \leq a^* \leq 1$ , in order to prevent the foreign-funded firm from being double-taxed by the home government and ending up with too heavy a tax burden. To simplify the analysis the reverse demand function in the third country market is assumed to be in the linear form:

$$P = P(Q); P_Q < 0 \quad (1)$$

where  $P$  represents the market price of the third country market; and  $Q = q + q^*$  represents the total output of the two firms; and  $q(q^*)$  denotes the output of the domestic (foreign-funded) firm.

In addition, the profit functions of the two firms can be expressed, respectively, as follows:

$$\Pi = (1 - t)(Pq - C(q)) \quad (2)$$

$$\Pi^* = (1 - t^*)(Pq^* - (1 - a^*t^*)C^*(q^*)) \quad (3)$$

where  $\Pi(\Pi^*)$  are the profit function of the domestic (foreign-funded) firm;  $C(C^*)$  is total production cost of the domestic (foreign-funded) firm, and is the second-order differentiable function of  $q(q^*)$ .

Under the assumptions mentioned above, we are now in a position to analyze the impact of a rise in corporate income taxes of the foreign-funded firm on the social welfare of China.

### The Analysis of a Unified Enterprise Income Tax Policy

This section firstly derives the optimal outputs of the domestic and foreign-funded firms. The first-order conditions for profit maximization can be derived by using equations (2) and (3):

$$\Pi_q = \frac{\partial \Pi}{\partial q} = (1 - t)(P_Q q + P - C_q) = 0 \quad (4)$$

$$\Pi_{q^*}^* = \frac{\partial \Pi^*}{\partial q^*} = (1 - t^*)(P_Q q^* + P) - (1 - a^*t^*)C_{q^*}^* = 0 \quad (5)$$

where  $C_q$  and  $C_{q^*}^*$  represent the marginal costs of the domestic and foreign-funded firms, respectively.

The second-order conditions require:

$$\Pi_{qq} = (1 - t)(P_{QQ}q + 2P_Q - C_{qq}) < 0 \quad (6)$$

$$\Pi_{q^*q^*}^* = (1 - t^*)(P_{QQ}q^* + 2P_Q) - (1 - a^*t^*)C_{q^*q^*}^* < 0 \quad (7)$$

Moreover, we can derive the following stability conditions:

$$\Pi_{qq^*} = (1 - t)(P_{QQ}q + P_Q) < 0, \Pi_{q^*q}^* = (1 - t^*)(P_{QQ}q^* + P_Q) < 0 \quad (8)$$

$$\Pi_{qq} < \Pi_{qq^*}^*, \Pi_{q^*q^*}^* < \Pi_{q^*q}^* \quad (9)$$

$$D = \Pi_{qq} \Pi_{q^*q^*}^* - \Pi_{qq^*} \Pi_{q^*q}^* > 0 \tag{10}$$

Equation (8) indicates that the marginal profit of one firm declines along with the increase in output by the other (as the competitor). In other words, the decision regarding the outputs for the two firms is that they are strategic substitutes (see Brander and Spencer, 1985). Equation (9) represents that the own effects of output on marginal profit dominate the cross effects. In addition, equation (10) indicates that  $D$  is negative-definite and also the Routh-Hurwitz condition for reaction function stability (see Dixit, 1986).

When the second-order conditions and the stability conditions are met, there is a unique solution for the equilibrium. The total differentiation of equations (4) and (5) leads to the following comparative static matrix:

$$\begin{bmatrix} \Pi_{qq} & \Pi_{qq^*} \\ \Pi_{q^*q}^* & \Pi_{q^*q^*}^* \end{bmatrix} \begin{bmatrix} dq \\ dq^* \end{bmatrix} = \begin{bmatrix} -\Pi_{qt^*} \\ -\Pi_{q^*t^*}^* \end{bmatrix} dt^* \tag{11}$$

where

$$\Pi_{qt^*} = \frac{\partial^2 \Pi}{\partial q \partial t^*} = 0 \tag{12}$$

$$\Pi_{q^*t^*}^* = \frac{\partial^2 \Pi^*}{\partial q^* \partial t^*} = -(P_Q q^* + P - a^* C_{q^*}^*) = -\frac{(1 - a^*) C_{q^*}^*}{1 - t^*} < 0 \tag{13}$$

According to equation (12), the changes in the income tax rate for the foreign-funded firm do not influence the marginal profit of the domestic firm. Equation (13) shows that when the income tax rate for the foreign-funded firm goes up, the marginal profit of the foreign-funded firm goes down.

Applying Cramer's rule to equation (11), the following comparative static results can be derived:

$$q_t^* = \frac{\Pi_{qq^*} \Pi_{q^*t^*}^*}{D} > 0 \tag{14}$$

$$q_t^* = -\frac{\Pi_{qq} \Pi_{q^*t^*}^*}{D} < 0 \tag{15}$$

Based on equations (14) and (15), we can establish the following proposition:

**Proposition 1.** Given  $t > t^*$ , when the host country (China) increases the corporate income tax rate on foreign-funded firm (i.e., an increase in  $t^*$ ), a reduction in the output of the foreign-funded firm and an increase in the output of the domestic firm will result.

Under the determined corporate income tax rate levied on the foreign-funded firm,  $\Pi^*$  is a function of  $q, q^*(t^*)$  and  $t^*$ ; in other words,  $\Pi^* = \Pi^*(q, q^*(t^*), t^*)$ . Then, total differentiation of  $\Pi^*$  with respect to  $t^*$  yields the influence of corporate income tax rates on the profits of the foreign-funded firm as follows:

$$\frac{d\Pi^*}{dt^*} = \frac{\partial \Pi^*}{\partial q^*} \frac{\partial q^*}{\partial t^*} + \frac{\partial \Pi^*}{\partial q} \frac{\partial q}{\partial t^*} + \frac{\partial \Pi^*}{\partial t^*} = (1 - t^*)P_Q q^* q_{t^*} - (Pq^* - a^* C^*) < 0 \quad (16)$$

The above finding shows that when the corporate income tax rate on the foreign-funded firm increases, it will bring about a negative impact on the profit of the foreign-funded firm.

Similarly, for the domestic firm,  $\Pi$  is a function of  $q$  and  $q^*(t^*)$ , that is,  $\Pi = \Pi(q, q^*(t^*))$ . Again, total differentiation of  $\Pi$  with respect to  $t^*$  yields:

$$\frac{d\Pi}{dt^*} = \frac{\partial \Pi}{\partial q} \frac{\partial q}{\partial t^*} + \frac{\partial \Pi}{\partial q^*} \frac{\partial q^*}{\partial t^*} = (1 - t)P_Q q q_{t^*} > 0 \quad (17)$$

Equation (17) shows that when the tax rate on the foreign-funded firm goes up, the effect on the profit of the domestic firm is positive. According to the above analysis, we have:

**Proposition 2.** Given  $t > t^*$ , when the host country (China) increases the corporate income tax rates on foreign-funded firm, the profit of the foreign-funded firm will be reduced and the profit of the domestic firm will be increased.

According to Proposition 2, the host country can increase the corporate tax rate of the foreign-funded firm in order to transfer some of the foreign-funded firm's profit to the domestic firm. This is what is known as the profit-shifting effect.

Let us turn to examine the impact of an increase in the corporate taxes of the foreign-funded firm on the social welfare of the host country (China). As the model assumes that all the goods are shipped to the



third country, the social welfare of the host country consists of only the producer's surplus (i.e., the profit of the domestic firm) and the income tax levied by the host country on both the domestic and foreign-funded firms:

$$W(t^*) = \Pi + t^*[P(Q)q^* - a^*C^*(q^*)] + t[P(Q)q - C(q)] \quad (18)$$

The key question is: what is the effect on social welfare when the host country (China) decides to raise the income tax rate for foreign-funded firm? To answer this question, totally differentiating equation (18) with respect to  $t^*$  yields:

$$\frac{dW(t^*)}{dt^*} = -\Pi_{t^*}^* + P_Q q^* (q_{t^*}^* + t^* q_{t^*}^*) + (C_q - C_{q^*}^*) q_{t^*}^* \quad (19)$$

The first term in the right-hand side of equation (19) represents the direct effect of the corporate income tax on foreign-funded firm, which is positive; the second term reflects the strategic effect of the tax, which is also positive;<sup>1</sup> but noting  $q_{t^*}^* < 0$ , the third term may be called the cost differential effect of the tax, which is ambiguous depending upon the relative strength of the marginal costs of the domestic and foreign-funded firms. Clearly, an increase in the income tax rates of the foreign-funded firm may be detrimental to the social welfare of the host country (China), only if the marginal cost of the domestic firm is higher than that of the foreign-funded firm (i.e.,  $C_q - C_{q^*}^* > 0$ ) in such a way that this negative cost differential effect is sufficiently strong to outweigh both the direct and strategic effects above. Otherwise, the increase in the income tax on the foreign-funded firm is beneficial to the social welfare of the host country (China).

As a result, we can establish:

**Proposition 3:** *Given  $t > t^*$ , an increase in the income tax rates of the foreign-funded firm tends to be beneficial to the social welfare of the host country (China). However, this tax policy may be detrimental to the social welfare of the host country only if the marginal cost of the domestic firm is higher than that of the foreign-funded firm, and this cost differential effect outweighs both the direct and strategic effects.*

Proposition 3 indicates that, in general, implementing a unified enterprise income tax policy tends to be beneficial to the social welfare of China. Our above findings provide a theoretical foundation for the unified enterprises income tax policy in China.

### CONCLUDING REMARKS

As China has gradually abolished the tax incentives that it provides to foreign-funded enterprises, this paper explores how the increases in income taxes levied on foreign-funded enterprises affect China's social welfare. The theoretical analysis indicates that increasing the corporate taxes that are levied on the foreign-funded firm tends to be beneficial to the social welfare of China. While a hike in income taxes levied on foreign-funded enterprises will reduce their profitability and lower their willingness to invest. Therefore, our theoretical findings do support the unified enterprises income tax policy in China. Whenever appropriate quantitative data are available, empirical analysis for testing the theoretical propositions can be performed in the future research.

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### Notes

1. The second item of equation (19) can be inferred by equations (14) and (15):

$$P_Q q^* (q_t^* + t^* q_t) P_Q q^* (q_t^* + t^* q_t) = P_Q q^* \left( -\Pi_{qi} + t \Pi_{qi} \right) \frac{\Pi_{q_t^*}^*}{D}.$$

According to the results of equation (9), this item is turned out to be positive.

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