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Competing back for foreign direct investment ☆

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ABSTRACT

This paper studies policy competition for foreign direct investment between host and home countries. Three results have been obtained. First, policy competition does not change the attractiveness of any country as a location for investment. Second, as a result, policy competition does not change regional welfare. Lastly, the equilibrium policy could be either a subsidy or a tax.

1. Introduction

After the financial crisis of 2008, the United States established the "SelectUSA" initiative, to support private-sector job creation and enhance economic growth. The initiative aims to attract foreign direct investment (FDI) and encourage United States investors abroad to relocate their business operations back home (UNCTAD, 2012). In addition, each state and territory of the United States offers its own unique set of tax incentives for business investment.[1]

During the last decade, the wage rate in China has increased rapidly. The wage rate of employees in cities was US$1127 in 2000 and US$5398 in 2009, an increase of a factor of 4.78.[2] The ratio of the average Chinese wage rate to the average U.S. wage rate increased from 2.7% to 8.9% from 2000 to 2009.[3]

With the rising wage rate in China and the presence of investment incentives in the United States, some U.S. multinational firms have relocated their business operations back home. For example, GE and NCR Corporation opened new manufacturing facilities in the U.S. to produce goods that had previously been imported from China.[4]

To study the reshoring phenomenon and the competition for FDI between host and home countries, this paper sets up a two-country model in which a multinational firm faces policy competition and decides whether to continue to locate its business in a host country or to relocate back home. When the multinational firm is located in one country, it can export its product to the other country by incurring a unit transportation cost. It is assumed that the wage rates in the two countries are different. If the firm continues to locate its business in the former host country (the developing country), it produces with a low marginal cost. If the firm relocates its operations back home (the developed country), it has to produce with a higher marginal cost.[5]

This paper is closely related to the literature that studies policy competition for FDI from a third country. Barros and Cabral (2000) consider two factors that affect investment incentives, relative country size and employment gains. They show that subsidy competition induces the outside investor to locate in a smaller country with higher unemployment rate. Aggregate welfare may be greater with subsidy competition than without subsidy competition. Bjorvatn and Eckel (2006) consider the effect of both market size and market

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[1] http://selectusa.commerce.gov/.

[2] http://www.stats.gov.cn/tjsj/ndsj/2011/indexch.htm.

[3] In the United States, per capita income after tax was 41,532 dollars in 2000 and 60,753 dollars in 2009. The data were obtained from http://www.bls.gov/cex/csxshare.htm#2009.

[4] http://www.genewscenter.com/News/GE-Opens-First-New-Manufacturing-Operation-in-Louisville-Ky-in-Over-50-Years-364f.aspx. http://www.ncr.com/newsroom/resources/ncr-announces-investment-to-create-jobs-drive-innovation-and-develop-talent.

[5] The developing country and the developed country are also referred to as South country and North country respectively.

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structure on the location choice of foreign direct investment. They find that policy competition increases the attractiveness of the smaller country with weak competition. Policy competition leads to higher aggregate welfare. Fumagalli (2003) studies the impact of technology spillover on the location choice of FDI. She shows that subsidies, by inducing location switching between different countries, may increase aggregate welfare.

The previous papers focus on policy competition for FDI from a third country by two potential host countries. In contrast, none of these studies investigate competition between the host and home countries. Therefore, the reshoring phenomenon cannot be explained well. Our analysis aims to close this gap. The current model bears similarities to the framework in Bjorvatn and Eckel (2006) but differs from theirs in three ways. First, we study policy competition between home and host countries, whereas they study competition between two host countries. Second, they assume that the production cost is identical in both countries, whereas we assume that the production cost is different. Third, our focus is not the effect of market structure on the location choice of FDI; thus, we assume away local firms.

Our results differ critically from those established in the previous literature. First, policy competition does not change the attractiveness of any country as the location for business operations. Second, as a result, policy competition does not change regional welfare. Intuitively, both countries have the same willingness to pay for the firm, so neither country can change its attractiveness as the location for business operations. Policy competition does not change the location of the firm and therefore does not change the efficiency. The only impact is a transfer of funds between the countries and the firm. However, both competing countries and the firm are in the same region. As a result, policy competition does not affect regional welfare.

This paper is also related to the literature that analyzes North–South trade and FDI. The Vernon (1966) product cycle model remains the dominant explanation of North–South trade and FDI patterns. Krugman (1979) developed a general-equilibrium model to formalize some ideas contained in Veron's seminal article. Chin and Grossman (1990) analyzed North–South trade in two extreme intellectual property rights (IPR) regimes: full patent protection and no patent protection. Žigić (1998) extends and complements Chin and Grossman's model by allowing different levels of the strength of IPR protection. Žigić (2000) further analyzed the optimal tariff in the framework of North–South trade and in the presence of IPR violation. The present paper studies a North multinational firm that must choose between relocating its FDI from the South back to the North and staying in the South. Regardless of in which country the firm locates its business operations, it exports its goods to the other countries.

The rest of this paper is organized as follows. Section 2 describes the basic model. Section 3 studies the location choice of the firm in two settings: with and without policy competition. We analyze equilibrium policy and welfare implications. Section 4 concludes this paper.

2. The basic model

There are two countries, A and B, in a region. We assume that country A is a developing country and country B is a developed country. There is only one firm in the market, which belongs to country B and is located in country A. The firm now plans to establish a new plant to manufacture a new product and must decide whether to continue to locate in country A, or to relocate back home. The firm closes the old plant after setting up the new one. Using a monopoly model enables us to focus on strategic interactions between governments and avoid additional strategic considerations between firms (see, for example, Barros and Cabral, 2000; Haufler and Wooton, 1999). Another explanation of the monopoly model is that the monopolist may have a patent on a particular process for producing goods, and the R&D investment to discover an alternative technology may be sufficiently high to block market entry.

The firm produces the good in one country and serves the demands of both country A and country B. By exporting to the other countries, the firm must incur a per unit transportation cost t, $t > 0$. The investment cost is assumed to be the same in each country. Thus, the fixed cost of setting up production facility does not affect the firm's location. Labor is the single input, and one unit of labor produces one unit of output; thus, the marginal cost is equal to the wage rate. To reflect the labor cost difference between the developing and the developed country, we assume that the labor cost in country A is smaller than that in country B, i.e., $\gamma_A < \gamma_B$, where γ_i is the wage rate of country i, $i = A$, B. To simplify our calculation, and without loss of generality, we assume that $\gamma_A = 0$ and $\gamma_B = \gamma > 0$.

The demand in country A is given by

$$Q_A = \alpha(1-P_A), \tag{1}$$

and that in B is given by

$$Q_B = 1-P_B, \tag{2}$$

where Q_i is the aggregate demand in country i, P_i is the market price, and α measures the market size of A relative to B. Thus, if $\alpha > 1$, market A is greater since for a given price, the firm sells more in country A than in country B.

The timing of the game is as follows. First, the multinational firm chooses the country in which to locate. Second, both countries simultaneously set the levels of subsidies or taxes in the case of policy competition. Third, the multinational firm chooses its optimal output.

If the firm decides to operate in country A and exports to B, its profit can be written as

$$\pi_A = P_A Q_A + (P_B - t)Q_B. \tag{3}$$

Profit-maximizing by the firm yields

$$\pi_A = \frac{1}{4}\alpha + \frac{1}{4}(1-t)^2. \tag{4}$$

Similarly, if the firm decides to operate in country B and exports to A, its profit becomes

$$\pi_B = (P_A - \gamma - t)Q_A + (P_B - \gamma)Q_B. \tag{5}$$

Profit-maximizing by the firm yields

$$\pi_B = \frac{1}{4}\alpha(1-t-\gamma)^2 + \frac{1}{4}(1-\gamma)^2. \tag{6}$$

For country A, the welfare only consists of consumer surplus. However, for country B, the welfare includes both the profit of the firm and the consumer surplus. If the firm decides to operate in country A, the consumer surpluses in A and B are, respectively

$$\sigma_A^A = \frac{1}{8}\alpha, \quad \sigma_B^A = \frac{1}{8}(1-t)^2. \tag{7}$$

If the firm decides to operate in country B, the consumer surpluses in A and B are, respectively,

$$\sigma_A^B = \frac{1}{8}\alpha(1-t-\gamma)^2, \quad \sigma_B^B = \frac{1}{8}(1-\gamma)^2. \tag{8}$$