

# A Multilateral Agreement on Investment in Regulating FDI Incentive Programs

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## ABSTRACT

*Since 1990s, developing countries have tried to attract more foreign direct investment (FDI) to overcome a shortage of domestic capital stock and investment by providing various incentives. In a real world, however, most developing countries, interested in FDI, are using very similar policy tools and in a race to the bottom, likely leading them to be actually worse off. MNCs mostly from developed countries have different concerns in this field. To protect commercial interests of MNCs from any irrational policy of host countries, developed countries emphasize needs of setting multilaterally agreed disciplines on FDI-related measures. Developing countries argue that a multilateral agreement on investment will harm autonomy and sovereignty of developing countries in tailoring its own system to meet its own demands of economic development. Therefore, the main objective of this paper is to explore strategic relationships among developing countries and MNEs and to analyze how an MAI changes these strategic relationships. In addition, using a game-theoretical setup, we will check if an MAI generates global optimum by maximizing the global welfare. This paper focuses on a race of incentive programs among host countries, explores strategic relationships among host countries and MNCs, and analyzes how the MAI changes these strategic relationships and if it can lead to global optimum.*

**KEYWORDS:** *foreign direct investment; tax incentives; multilateral agreement on investment, strategic investment policy*

**JEL CLASSIFICATION:** *F12; F13; L11; L12*

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## I. Introduction

As the world economy has been globalized and capital transaction among countries has been getting much easier due to development of information and communication technology and deregulation, developing countries have tried to attract more foreign direct investment (FDI) to overcome a shortage of domestic capital stock and investment. To attract more FDI, governments of developing countries have aggressively provided various incentive programs, such as tax credits and subsidies. It turns out theoretically and empirically that these kinds of policy tools have been effective in attracting more FDI.

It is also well known that knowledge spillover from multinational corporations (MNCs) to local companies in host countries plays an important role in having positive impacts of policy tools on FDI performance. It explains why most developing countries are eager to attract more FDI, even though activities of MNEs can increase the risk of reducing market shares of local companies in markets of host countries. According to previous literature on this field, such as Aitken *et al.* (1997), Pack and Saggi (2001), Blalock and Gertler (2005), Axaraloglou and Pournarakis (2007), Kang (2010), FDI would have positive impacts on host countries' economies when it generates knowledge spillover and technology diffusion from MNEs to local companies.

In a real world, however, most developing countries are actively using these policy tools to attract more FDI and hence it makes them difficult to show positive performance. In other words, since most developing countries, interested in FDI, are using very similar policy tools and in a race to the bottom by providing subsidies and reducing tax rates, likely leading them to be actually worse off.

However, MNCs mostly from developed countries have different concerns in this field. To protect commercial interests of MNCs from any irrational policy of host countries, developed countries emphasize needs of setting multilaterally agreed disciplines on FDI-related measures. Even though developing countries admit needs of multilaterally agreed rules on FDI-related measures to solve negative effects from the race to the bottom, they argue that a multilateral agreement on investment will harm autonomy and sovereignty of developing countries in tailoring its own system to meet its own demands of economic development. Putting more emphasis on the latter, developing countries have been against the move of regulating disciplines on investment-related measures in the global society. An example of this negative position is the failure of the Multilateral Agreement on Investment (MAI) in the

Organization of Economic Cooperation and Development (OECD) in 1998. Some developed countries tried to negotiate disciplines on investment-related measures under the OECD, but developing countries and NGOs expressed very negative views on this kind of negotiations. Another example is the failure of the ministerial conference of the World Trade Organization (WTO) at Cancun, Mexico, in 2003. Investment was one of key issues in the Doha Development Agenda (DDA), the current and 9th multilateral trade negotiation of the multilateral trading system, but due to opposition of developing countries, the WTO made a decision not to discuss investment-related issues in the DDA negotiation.

Having understood this series of activities in the world of international trade, one feels keenly the necessity of a theoretical analysis on the multilateral agreement on investment. Is it possible to set the MAI in a way of enhancing the global welfare? Therefore, the main objective of this paper is to explore strategic relationships among developing countries and MNCs and to analyze how an MAI changes these strategic relationships. In addition, using a game-theoretical setup, we will check if an MAI generates global optimum by maximizing the global welfare.

Previous literature on an MAI has been conducted from various fields. From a perspective of industrial economics, Polk (2002) analyzed market structure and competition policy under an MAI regime. Nunnenkamp and Pant (2003) evaluated the MAI under the OECD from a perspective of economic development, while Urban (2006) explored the MAI from a perspective of political economy. Some papers focused on changes in welfares of key players in an MAI and interestingly Turrini and Urban (2008) showed that MNCs will receive less incentive from host countries, but the MAI will increase FDI in the world. Che and Willmann (2009) focused on the role of the MAI in regulating expropriation and then explored how the MAI affects MNCs, developed countries, developing countries and least-developed countries (LDCs). Mash (2000) was concerned with bargaining powers of host countries and foreign investors and analyzed how the MAI changes welfare of key players, given their bargaining powers.

This paper focuses on a race of FDI incentive programs among host countries, explores strategic relationships among host countries and MNCs, and analyzes how the MAI changes these strategic relationships and if it can lead to global optimum. In Section 2, we develop a standard model to analyze strategic relationships between host countries and MNCs. Section 3 explores an economic background on a multilateral agreement on investment and discusses various cases. And then Section 4 concludes.

## 2. Standard Model

### 2-1. Basic Setup

This paper establishes a standard model for the analysis of strategic aspects of policies designed to attract FDI, extending the model of Kang (2010, 2012). There have been a bunch of theoretical models with FDI, given key characteristics of FDI, such as Helpman (1984, horizontal FDI), Markusen (1984, vertical FDI), and Markusen and Venables (1998, 2000, mixed FDI). However, these models had not been used for analytical research, but for simulations plugging numbers to key parameters. Therefore, these models are not appropriate for analyses on strategic relationships between countries in a race of attracting FDI and on a multilateral agreement on investment.

This paper extends a model of Kang (2010, 2012), based on a two-country and one-commodity model of Dixit (1984), into one with an MNC. In this new model, there will be two host countries, A and B, in a race of incentive programs to attract more FDI. These countries differ in the market size and cost advantages for the MNC. For simplicity, we assume that there is no local firm in these countries, but we relax this assumption in Section 3. Basically, this model has a three-stage game, where an MNC and governments of host countries play together.

#### Basic Game

First Stage: Governments of potential host countries, A and B, decide their level of subsidies to attract FDI  $(s^A, s^B)$ .

Second Stage: After observing incentive programs of potential host countries  $(s^A, s^B)$ , an MNC decides which country it will be located in.

Third Stage: After making a locational decision, the MNC maximizes its profits by choosing how much will be produced in the host country, say, country  $i$ , and exported to the other country, say, country  $j$ ,  $[Q_m^i(MNC = i), Q_m^j(MNC = i)]$ .

Set  $Q^i$  to represent the quantity of the homogenous good and  $P^i$  to be the price of the homogenous good in Country  $i$ . Let the inverse demand function be  $P^i$  and assume that it is linear:

$$P^i = \alpha^i - Q^i, \quad (1)$$

where  $i = A$  or  $B$  and  $\alpha^i > 1$  is describing the size of the market in Country  $i$ .

## 2-2. Case without Any MNC in Developing Countries

When a multinational corporation does not establish its subsidiaries in any potential host country in a region, it will produce goods in its home country and export them to those developing countries. Assuming that there is no local firm in each developing country, the MNC can enjoy a monopolistic power in each country, but it needs to bear an additional cost of exporting its goods to each country. The profit maximization problem for the MNC in Country  $i$  will be given as follows:

$$\max_{Q_m^i} \pi_m^i(MNC = Home) = (\alpha^i - Q_m^i)Q_m^i - (c_m + t^i)Q_m^i, \quad (2)$$

Where  $i = A$  or  $B$ ,  $Q_m^i$  is the sales of the MNC in Country  $i$ ,  $c_m$  is the marginal cost of the MNC when it produces at home, and  $t^i$  is the cost of exporting goods to the market in Country  $i$ . Solving this maximization problem for the quantity,  $Q_m^i$ , one can have the following results:

$$Q_m^i(MNC = Home) = \frac{\alpha^i - c_m - t^i}{2}; \quad (3)$$

$$P^i(MNC = Home) = \frac{\alpha^i + c_m + t^i}{2}; \text{ and} \quad (4)$$

$$\pi_m^i(MNC = Home) = \frac{(\alpha^i - c_m - t^i)^2}{4}. \quad (5)$$

The domestic welfare of Country  $i$  is the sum of consumer surplus and its tariff revenue as follows:

$$W^i(MNC = Home) = CS^i + TR^i = \frac{(\alpha^i - c_m - t^i)(\alpha^i - c_m + 3t^i)}{8}. \quad (6)$$

In the case without any MNC in developing countries, the MNC can produce goods in the home country and export them to two developing countries and hence its profits will be given as follows:

$$\pi_m(MNC = Home) = \pi_m^A + \pi_m^B = \frac{[(\alpha^A - c_m - t^A)^2 + (\alpha^B - c_m - t^B)^2]}{4}. \quad (7)$$

Therefore, the MNC produces its goods in the home country and exports them to these two developing countries in the region.

### 2-3. Case with an MNC in a Developing Country

Now let us consider a case where the MNC locates in a developing country in this region and it produces and sells its goods in Country  $i$ , and also exports them to Country  $j$  ( $i \neq j$ ). In addition, the government of Country  $i$  provides subsidies to attract the MNC to Country  $i$ . Then the profit maximization problem for the MNC in Country  $i$  will be given as follows:

$$\max_{Q_m^i} \pi_m^i(MNC = i) = (\alpha^i - Q_m^i)Q_m^i - (c_m^i - s^i)Q_m^i, \quad (8)$$

where  $i = A$  or  $B$ ,  $c_m^i$  is the marginal cost of the MNC when it produces in Country  $i$  and is smaller than the marginal cost when it produces at home ( $c_m > c_m^i$ ), and  $s^i$  is the subsidy incentives to attract the MNC to Country  $i$ . Solving this maximization problem for the quantity,  $Q_m^i$ , one can have the following results:

$$Q_m^i(MNC = i) = \frac{\alpha^i - c_m^i + s^i}{2}; \quad (9)$$

$$P^i(MNC = i) = \frac{\alpha^i + c_m^i - s^i}{2}; \text{ and} \quad (10)$$

$$\pi_m^i(MNC = i) = \frac{(\alpha^i - c_m^i + s^i)^2}{4}. \quad (11)$$

However, the MNC, located in Country  $i$ , will export its goods to Country  $j$ , a non-host country in the region, after producing them in Country  $i$ . Therefore, its profit maximization problem in Country  $j$  will be given as follows:

$$\max_{Q_m^j} \pi_m^j(MNC = i) = (\alpha^j - Q_m^j)Q_m^j - (c_m^i + t^j)Q_m^j. \quad (12)$$

Notice that the marginal cost of the MNC in this profit maximization problem is still  $c_m^i$  because it produces goods in Country  $i$ , and it faces the trade cost,  $t^j$ , because it exports them to Country  $j$ . Solving this maximization problem for the quantity,  $Q_m^j$ , one can have the following results:

$$Q_m^j(MNC = i) = \frac{\alpha^j - c_m^i - t^j}{2}; \quad (13)$$

$$P^j(MNC = i) = \frac{\alpha^j + c_m^i + t^j}{2}; \text{ and} \quad (14)$$

$$\pi_m^j(MNC = i) = \frac{(\alpha^j - c_m^i - t^j)^2}{4}. \quad (15)$$

The domestic welfare of Country  $j$  is the sum of consumer surplus and its tariff revenue as follows:

$$W^j(MNC = i) = CS^j + TR^j = \frac{(\alpha^j - c_m^i - t^j)(\alpha^j - c_m^i + 3t^j)}{8}. \quad (16)$$

However, the domestic welfare of Country  $i$  is different from the one in the case with no MNC in potential host countries. The consumer surplus must be included as in the previous case without any MNC in potential host countries. When the MNC locates in Country  $i$ , it produces goods using production factors in Country  $i$  and hence its cost of producing goods will be income of production factors in Country  $i$ . In addition, the domestic welfare needs to subtract the cost of subsidies to attract the MNC to Country  $i$ . Interestingly, the subsidy is subject to the quantity supplied to the market of Country  $i$ , excluding the quantity exported to Country  $j$  simply because export subsidies are prohibited under the Agreement on Subsidies and Countervailing Measures (SCM) of the World Trade Organization (WTO).<sup>1</sup> Then the domestic welfare of Country  $i$  will be given as follows:

$$\begin{aligned} W^i(MNC = i) &= CS^i + c_m^i(Q_m^i + Q_m^j) - s^i Q_m^i \\ &= \frac{(\alpha^i - c_m^i + s^i)(\alpha^i + 3c_m^i - 3s^i)}{8} + \frac{c_m^i(\alpha^j - c_m^i - t^j)}{2}. \end{aligned} \quad (17)$$

And the MNC, operating its production subsidiary in Country  $i$  and supplying two markets of the host and non-host countries, has the following profits:

$$\pi_m(MNC = i) = \pi_m^i(MNC = i) + \pi_m^j(MNC = i) = \frac{[(\alpha^i - c_m^i + s^i)^2 + (\alpha^j - c_m^i - t^j)^2]}{4}. \quad (18)$$

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<sup>1</sup> Article 3.1 of the SCM Agreement regulates that *the following subsidies ... shall be prohibited: (a) subsidies contingent, in law or in fact ... upon export performance*. When the government of Country  $i$  provides subsidies to the MNC contingent export performance in Country  $j$ , it can be considered as export subsidies which are prohibited.

Comparing the profits in three different cases such as  $\pi_m(MNC = A)$ ,  $\pi_m(MNC = B)$ , and  $\pi_m(MNC = Home)$ , the MNC will make a locational decision over three countries, Country A, Country B, and the home country. From (7) and (18), one can argue that the locational decision of the MNC depends on the market sizes  $(\alpha^A, \alpha^B)$ , the cost advantages  $(c_m, c_m^A, c_m^B)$ , trade costs or barriers  $(t^A, t^B)$ , and FDI incentives that will be given to the MNC  $(s^A, s^B)$ , as very well known from previous literature [to be stated later].

Now let us consider the optimal FDI subsidy level under a non-cooperative game. The government of a potential host country will choose an optimal FDI subsidy to maximize its domestic welfare as follows:

$$\max_{s^i} W^i(MNC = i) = \frac{(\alpha^i - c_m^i + s^i)(\alpha^i + 3c_m^i - 3s^i)}{8} + \frac{c_m^i(\alpha^j - c_m^i - t^j)}{2}. \quad (19)$$

Solving this maximization problem for the subsidy level, one can find the following Nash equilibrium level of FDI incentives:

$$s^i(Nash) = c_m^i - \frac{\alpha^i}{3}. \quad (20)$$

Since the sign of the optimal FDI incentives depends on the cost and the market size, it could be subsidies  $[s^i(Nash) > 0]$  if  $c_m^i > \frac{\alpha^i}{3}$ , but otherwise taxes  $[s^i(Nash) < 0]$ . In addition, one can have the following implications:

**Proposition 1: Optimal FDI Incentives**

*Countries with a smaller market size and a weaker cost advantage are likely to raise FDI incentives to attract multinational corporations.*

**Proof:** One can show that  $\frac{ds^i}{d\alpha^i} < 0$  and  $\frac{ds^i}{dc_m^i} > 0$ . (Q.E.D.)

This proposition implies that countries with disadvantages of their domestic market size and weaker cost advantages have policy motivation to attract multinational corporations, understanding what factors would determine locations of their subsidiaries. It also means that countries with a larger domestic market and strong cost advantages are likely to have less motivation to provide FDI incentive programs



because multinational corporations will invest their money in those countries without any FDI incentive.

### 3. Multilateral Agreement on Investment

#### 3-1. Cooperative Game

In this section, we analyze economic backgrounds of a multilateral agreement on investment (MAI) in regulating FDI incentives, using the basic model developed in the previous section. Presumably, multilaterally-agreed disciplines on FDI incentives are assumed to maximize the global welfare, including welfares of the host and non-host countries and the MNC as follows:

$$\max_{s^{MAI}} W^i(MNC = i) + W^j(MNC = i) + \pi_m(MNC = i). \quad (21)$$

Using (16), (17), and (18), and solving this maximization problem for the subsidy level under the MAI, one can have the following result:

$$s^{MAI} = \alpha^i + c_m^i > 0. \quad (22)$$

Comparing this level under the MAI, maximizing the global welfare, with one in a non-cooperative game, one can find the following result:

#### **Proposition 2: Fallacy of Multilateral Agreement on Investment in Regulating FDI Incentives**

*The globally optimal FDI subsidy level, maximizing the global welfare, is greater than the Nash equilibrium level of FDI incentives under a non-cooperative game. It implies that a multilateral agreement on investment, maximizing the global welfare, is ineffective in regulating FDI incentives.*

**Proof:** Using (21) and (23), one can show that:

$$s^{MAI} - s^i(Nash) = \alpha^i + c_m^i - c_m^i + \frac{\alpha^i}{3} = \frac{4}{3}\alpha^i > 0. \text{ (Q.E.D.)}$$

This proposition implies that when the MAI, designed to regulate FDI incentives of host countries, would fail to accomplish its objectives under practical circumstances when countries are using those FDI incentives to overcome their disadvantages of

the market size and cost competitiveness. Therefore, the MAI, regulating FDI incentives, is not able to solve problems generated by a race to the bottom.

Interestingly, the commercial interests of the non-host developing country in this region were not considered, even though it has been included in the global welfare. This is because the domestic welfare of the non-host country is not a function of the subsidy due to the prohibition of export subsidies under the WTO's SCM Agreements as discussed before. When countries are allowed to subsidize the MNC's export performance, the MAI needs to consider domestic welfares of non-host countries. It will be discussed later.

Comparing quantity levels in various cases, one can provide the following results:

**Proposition 3: The MNC's Production under the MAI**

*The Multilateral Agreement on Investment (MAI), maximizing the global welfare, raises the MNC's production.*

**Proof:** Plugging (20) and (22) into (3) and (9), one can show that

$$Q_m^i(MNC = i; s^{MAI}) - Q_m^i(MNC = i; s^i(Nash)) = \frac{\alpha^i - c_m^i + s^{MAI}}{2} - \frac{\alpha^i - c_m^i + s^i(Nash)}{2} = \frac{2}{3} \alpha^i > 0$$

$$\text{and } Q_m^i(MNC = i; s^i(Nash)) - Q_m^i(MNC = Home) = \frac{\alpha^i - c_m^i + s^i(Nash)}{2} - \frac{\alpha^i - c_m - t^i}{2} \geq 0 \text{ if}$$

$t^i \geq \frac{\alpha^i - 3c_m}{3}$ . In addition, one can show that

$$Q_m^j(MNC = Home) - Q_m^j(MNC = i) = \frac{\alpha^j - c_m - t^j}{2} - \frac{\alpha^j - c_m^i - t^j}{2} = -\frac{c_m - c_m^i}{2} < 0, \text{ using (3), (13), and the assumption of } (c_m > c_m^i) \text{ as we made previously. (Q.E.D.)}$$

It implies that the MNC has enjoyed its monopolistic profits in this region, but the MAI, maximizing the global welfare, can encourage the MNC to produce more by providing more FDI incentives to the MNC.

**3-2. Case of Supports to the MNC's Export Performance**

Now suppose that countries are allowed to support the MNC's export performance, ignoring the WTO disciplines on subsidies. It will raise the MNC's export to the non-host country as follows:

$$Q_m^j(MNC = i) = \frac{\alpha^j - c_m^i - t^j + s^i}{2}; \tag{23}$$

However, this support is financially quite burdensome to the host country because they need to spend more money to support all production activities of the MNC in the host country as follows:

$$\begin{aligned}
W^i(MNC = i) &= CS^i + c_m^i(Q_m^i + Q_m^j) - s^i(Q_m^i + Q_m^j) \\
&= \frac{(\alpha^i - c_m^i + s^i)(\alpha^i + 7c_m^i - 7s^i)}{8} - \frac{t^j(c_m^i - s^i)}{2}. \quad (24)
\end{aligned}$$

The MNC will be better off because they can enjoy greater supports from the government of the host country as follows:

$$\pi_m(MNC = i) = \pi_m^i(MNC = i) + \pi_m^j(MNC = i) = \frac{[(\alpha^i - c_m^i + s^i)^2 + (\alpha^j - c_m^i - t^j + s^i)^2]}{4}. \quad (25)$$

Solving the welfare maximization problem of Country  $i$  for the non-cooperative Nash subsidy level, one can find the following result:

$$s^i(Nash; ExpSubsidies) = \frac{-3\alpha^i + 7c_m^i + 2t^j}{7}. \quad (26)$$

This level is much greater than (20), the optimal FDI incentives when export subsidies are prohibited, because the host country needs to spend more money to support the MNC's export performance. In addition, the globally optimal FDI incentive level, maximizing the global welfare, will be given as follows:

$$s^{MAI}(ExpSubsidies) = \alpha^i + c_m^i + \frac{t^j}{2} > s^{MAI} > 0. \quad (27)$$

This global optimum is greater than the optimal level in a non-cooperative game, implying that the previous conclusion on the MAI is not sensitive to the existence of export subsidies, even though this allowance of export subsidies raises FDI incentives.

## 4. Conclusion

Since 1990s, developing countries have tried to attract more foreign direct investment (FDI) to overcome a shortage of domestic capital stock and investment by providing various incentives. In a real world, however, most developing countries, interested in FDI, are using very similar policy tools and in a race to the bottom, likely leading them to be actually worse off. MNCs mostly from developed countries have different concerns in this field. To protect commercial interests of MNCs from any irrational policy of host countries, developed countries emphasize needs of setting multilaterally agreed disciplines on FDI-related measures.

Developing countries argue that a multilateral agreement on investment will harm autonomy and sovereignty of developing countries in tailoring its own system to meet its own demands of economic development. Therefore, this paper explored strategic relationships among developing countries and MNEs and analyzed how an MAI changes these strategic relationships. In addition, using a game-theoretical setup, we checked if an MAI generates global optimum by maximizing the global welfare. This paper focused on a race of incentive programs among host countries, explored strategic relationships among host countries and MNCs, and analyzed how the MAI changes these strategic relationships and if it can lead to global optimum.

This paper found that countries with disadvantages of their domestic market size and weaker cost advantages have policy motivation to attract multinational corporations, understanding what factors would determine locations of their subsidiaries. It also means that countries with a larger domestic market and strong cost advantages are likely to have less motivation to provide FDI incentive programs because multinational corporations will invest their money in those countries without any FDI incentive.

We also found that the globally optimal FDI subsidy level, maximizing the global welfare, is greater than the Nash equilibrium level of FDI incentives under a non-cooperative game. It implies that a multilateral agreement on investment, maximizing the global welfare, is ineffective in regulating FDI incentives. When the MAI, designed to regulate FDI incentives of host countries, would fail to accomplish its objectives under practical circumstances where countries are using those FDI incentives to overcome their disadvantages of the market size and cost competitiveness. Therefore, the MAI, regulating FDI incentives, is not able to solve problems generated by a race to the bottom.

This paper also found that the Multilateral Agreement on Investment (MAI), maximizing the global welfare, raises the MNC's production, implying that the MNC has enjoyed its monopolistic profits in this region, but the MAI, maximizing the global welfare, can encourage the MNC to produce more by providing more FDI incentives to the MNC.

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