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# Location factors of export-platform foreign direct investment: Evidence from Vietnam

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## Abstract

The purpose of this paper is to examine the export-platform foreign direct investment as a strategic behavior of multinational firms. First, we use a three-country model to identify the main location factors of this investment. These factors are relative labor cost between the host country and the home country and/or the third country, technological transfer cost of host country, intra-regional transport cost and the market size of third country. Particularly, this kind of investment is preferred rather than other entry modes, if and only if, the third market size is high enough. Second, the model is tested for export oriented industries in Vietnam. The integration of the Vietnamese economy into regional or international markets has a positive impact on the choice of export-platform foreign direct investment strategy. In particular, in this country, the first motivation is to access to large markets (ASEAN, U.S., European Union). Other motivations concern low cost of technological transfer and real exchange rate. JEL codes: F15, F16, F23

*Keywords:* Export-platform foreign direct investment, location factors, three-country model, multinational firm, Vietnam.

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## 1. Introduction

For a long time, foreign direct investment (FDI) has been a well-known strategic behavior by multinational firms (MNFs). The development of the MNFs since the end of the nineteenth century shows the existence of various strategies. The first American and European multinationals emerged from 1880 onwards mainly had supply strategies (Chandler, 1980). The subsidiaries were built near natural resources in the developing countries to supply the parent company.

Market-seeking strategies (horizontal FDI), which appeared in the twentieth century, are motivated by the access to a large local market for production of final goods. The reasons lead MNFs to establish themselves near customers are numerous and have various motivations (Buckley and Casson, 1981; Brainard, 1993; Markusen and Venables, 1998). The vertical FDI strategies implemented in the 1960s were used in order to improve the

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ratio competitiveness-price by searching for a decrease in the production costs (Helpman, 1984; Markusen et al., 1996). That strategy is often associated with MNFs which establish the stages of their productions most intensive in less-skilled labor in the countries with low labor costs (Markusen, 1995).

As Andreff (2003) underlines it, various strategies have emerged since the 1980s: the merger of horizontal and vertical strategies (Yeaple, 2003; Grosman et al., 2006); the technical-financial conglomerate strategy (Dunning, 1993) and the alliances between MNFs which practice a global strategic integration of production (Levitt, 1983; Porter, 1986). At the same time, the oligopolistic competition pushes the MNFs to follow their rivals abroad in order to maintain their share of the world market but also in order to limit the advantages of the first mover (Hymer, 1976).

This short historical reminder shows a growing sophistication around the strategic behaviour of the MNFs. Yeaple (2003) underlines that MNFs often engage in complex integration strategies, including vertical or horizontal integration, depending on host countries. Baltagi et al. (2007) talk about a vertical complex FDI when a MNF builds a vertical production chain across multiple countries. Other authors, such as Egger and Pfaffermayr (2004), Grossman et al. (2006) and Ekholm et al. (2007) have underlined the existence of complex or hybrid MNFs. If Neary (2008) acknowledges that horizontal FDI is more frequent than vertical FDI, he identifies an empirical puzzle and solves it with two solutions: the existence of hubs or export platforms for FDI and the cross-border mergers and acquisitions.

With the development of regional economic integrations during the last decade of the twentieth century<sup>1</sup>, a new kind of overseas investment, export-platform FDI (EPFDI), has appeared. In a precursory work analysing the relation between forming new free trade areas and FDI Motta and Norman (1996) laid out the foundations of the EPFDI. For these authors, the strategy of a MNF in a free trade area can go from an export orientation to an establishment orientation in only one of the member countries while exporting the output to the other ones. The authors suggest that the size of the market is not a major specific of the location choice. The accessibility that the creation of a common market allows is the aspect that determines the choice between exporting and FDI for a MNF. Consequently, the size of the integrated market and the high costs of the extra-regional trade become key factors in the strategic choice of choosing the EPFDI. When those conditions are met, the implementation is done in the country that offers the best localisation advantages, not taking into account the size of its local market. That is why MNFs, in particular the American and the Japanese ones, have implemented subsidiaries in European countries that represent an exporting platform toward other countries of the European Union (Dunning, 1993; Kumar, 1998; Ruane and Uğur, 2006; Blonigen et al., 2007; Neary, 2008). It is also the case with the MNFs that are implemented in Mexico that could use that country as a base for exporting toward the North American market

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<sup>1</sup>Among 211 agreements in use nowadays, more than 85% are concluded between 1990 and 2010 (WTO, database 2011)

after the setting up of NAFTA (Hanson et al., 2001; Markusen, 2004).

For Ekholm et al. (2007), the creation of a North-South free trade area encourages outsider northern multinational firms to establish their subsidiaries in the southern member country. These authors suggest a typology according to which the exporting platform toward third countries is different from the one toward the country of origin. In the first case, the MNF establishes itself in a country in order to export its production toward third countries. In the second case, that implementation is done in order to export toward its country of origin. Those authors talk about a “global exportation platform” when the production is destined not only toward third countries but also toward the country of origin.

For Neary (2002), the abolition of intra-regional customs duties leaves the MNF with two options: either tariff-jumping or EPFDI. For the outsider firm, tariff-jumping involves establishing a subsidiary in all the countries that have received its exports in the past. Conversely, EPFDI means producing in one only country and exporting the output to the other members of the area. Neary (2002) shows that tariff-jumping is the preferred option when the extra-regional trade is regulated by significant tariff barriers and when the permanent costs of implementing are low. On the contrary, EPFDI is the more favourable option when those permanent costs are high and if the extra-regional trade is relatively low. It would also be preferable as there are various countries at different levels of development in a region. In this case, the MNF tends to invest in the country where the labor cost is lowest (Montout and Zitouna, 2005; Ekholm et al., 2007).

These theoretical and empirical studies about the EPFDI are also interesting because they take into account third countries and allow us to better understand the basic facts about FDI (Garretsen and Peeters, 2009). The two-country standard models about FDI are unsuitable when it comes to analysing the complex strategies used by the MNFs (Yeaple 2003; Baltagi et al., 2007; Neary, 2008). Blonigen et al. (2007) accordingly underline that the reasons behind the use of EPFDI imply that FDI decisions are multilateral by nature and therefore cannot be captured in a two-country model.

The first objective of this paper is to find an answer to this question: what are the location factors of the EPFDI in the case of a three-country model? Our theoretical model is inspired by the models developed in the literature (Motta and Norman, 1996; Neary, 2002; Montout and Zitouna, 2005; Ekholm et al., 2007). These game-theoretical models suit our perspective, which is listed in the bypass of the tariff barriers strategies typical of the EPFDI in the case of the creation of free-trade areas. However, our model distinguishes itself by the fact that we take into account the role played by the development level of the host country, which we measure with the cost of the technological transfer, which is mainly calculated with the cost of training the labor force. Furthermore, these models are based on the hypothesis that foreign firms implement themselves in industries where local firms are not present. These models assume a competition between the third-country MNFs and the MNFs from the country of origin, which leads to a Cournot-Nash symmetrical equilibrium. In our model, local firms are in competition with the MNFs from the country of origin, which leads to a Cournot-Nash asymmetrical equilibrium. Our paper tries to

enhance these studies on two levels. The first one focuses on the development level of the host country. The second one is the assumption of a competition between outsider MNFs and local firms.

The second objective is to verify the conclusions of our theoretical model with the case of Vietnamese export-oriented industries. The choice of including this country in our study is interesting for quite a few reasons. There are very few empirical studies that aim to identify the determinants of the EPFDI in developing and transition countries. With the exception of the studies concerning Mexico (Hanson et al., 2001; Markusen, 2004; Ekholm et al., 2007) and Poland (Ulff-Moller Nielsen and Pawlik, 2007), empirical models are mainly about developed countries. Moreover, Vietnam is an economy in transition where a reform process has taken place since the mid-1980s. Vietnam's "Renovation" (Doi Moi) reforms, initiated in 1986 to liberalise foreign trade and open up the economy, have generated a massive input of FDI that represented close to 10% of the GDP in 2007 compared to 6.3% during the 1990-94 period (Menon, 2009).

This increase in FDI is linked with Vietnam's willingness to integrate the world and the regional economy. This country became a member of the ASEAN (Association of South East Asian Nations) in 1995, the AFTA (ASEAN Free Trade Area) and the ASEM (Asia-Europe Meeting) in 1996 as well as of the APEC (Asia-Pacific Economic Cooperation) in 1998. It also became the 150th member of the WTO in January 2007. At the same time, Vietnam signed various trade agreements in the 2000s, in particular with the United States (2001) and with the European Union (2003). These integration efforts led to the development of foreign trade, with the exports of goods to GDP ratio increasing from 30.8% in 1990 to 69.2% in 2008. Foreign firms have played a major role in the trade growth; their share in total manufacturing exports increased from about 20% in 1991 to over 50% in 2006. As Athukorala notes, this pattern suggests that the participation of MNFs has unequivocally been creating exports.

Taking into account those two objectives, we base our argument on the following assumptions:

**Assumption 1** *The location of the EPFDI is motivated by the integration of the host country into the regional and international markets.*

**Assumption 2** *A larger size of the integrated market leads to this location's being more favourable.*

The paper is organised as follows. In the second section, we will suggest a three-country model that shows that the formation of a free trade area can lead to the emergence of EPFDI. From that theoretical model, in the third section we will examine, with the help of an empirical model, the specifics of EPFDI in the case of Vietnam. In the final section, we will take a look at the main results of this study.

## 2. Export-platform foreign direct investment as a strategic behaviour of multinational firms: a simple model

Our model includes three countries (third country, home country and host country) and is divided into two stages. The first is carried out within a traditional export regime. The second happens following the creation of a free trade area between the third country and the host country and implies an export-platform regime.

### 2.1. The three-country model

There are three countries: country A (the third country), country J (the home country) and country V (the host country). A and J are more developed than V. Countries A and V can form a free trade area and/or sign bilateral trade agreement. The existence of a free trade area or of a bilateral agreement decreases the exchange costs between A and V.

We focus on a final good that will be consumed in country A. However, it is only produced by firms from V (the domestic firms) and firms from J (multinational firms). Whereas domestic firms can only serve country A through export, several possibilities allow MNFs to penetrate this market: exporting, tariff-jumping (by siting a plant directly in country A) or EPFDI (by having a plant in V while exporting the output to A). Exporting includes extra-regional costs (transport cost,  $\tau_m$  and customs duty imposed by country A,  $\tau$ ). Inversely, tariff-jumping requires an implantation fixed cost,  $F_a$  whereas EPFDI calls for an implantation fixed cost,  $F_v$  (so  $F_v > F_a$ ) and a technological transfer cost,  $g$  and an intra-regional export cost,  $\tau_l$ .

The demand in market A is as follows:

$$p_A = S_A - Q_A$$

where  $p_A$ ,  $S_A$ ,  $Q_A$  are respectively the price, the market size and the quantity of final goods supplied in this market.

There is one domestic firm (firm l) and one multinational firm (firm m). Consequently, the inverse demand function can be rewritten as follows:

$$p_A = S_A - q_{i,l}^R - q_{i,m}^R$$

where  $q_{i,l}^R$  and  $q_{i,m}^R$  are respectively quantities of final good supported by domestic and multinational firms in regime  $R$  and when the MNF adopts strategy  $i$ .

The production of final good requires capital and labor. However, the cost of those factors varies, depending on the country. Compared to country J, the capital in country V is more expensive, and labor there is cheaper. To make it simple, we assume that the capital cost in J and labor cost in V are zero. We call  $c_l$  the capital cost in V and  $w_m$

the labor cost in J. Therefore,  $c_l$  and  $w_m$  imply relative capital and labor costs between these two countries.

The model has two stages. At first, countries A and V do not yet form a free trade area. In this situation, we assume that the intra-regional export cost is high enough to make an export strategy a credible option. Consequently, the multinational firm prefers to export to other entry modes. It is thus an export regime. Then, a free trade area is created between these two countries which cancels the customs duty. It becomes an export-platform regime. The entry mode of firm m depends on the extra-regional export cost, on the intra-regional one and on the fixed cost of location in V and A as well as on the technological transfer cost.

## 2.2. Export regime

In this regime, the local firm and the multinational firm develop an export strategy. The customs tariff imposed by country A is noted as  $\tau$ . Moreover, the intra and extra-regional export costs are denoted as  $\tau_l$  and  $\tau_m$ , respectively. Therefore, the access costs of each firm are  $(w_m + \tau + \tau_m)$  for firm m and  $(c_l + \tau + \tau_l)$  for the domestic one. Therefore, the profit function of each firm is

$$\begin{aligned}\pi_{Exp, m}^{Exp} &= \left( S_A - q_{Exp, l}^{Exp} - q_{Exp, m}^{Exp} \right) q_{Exp, m}^{Exp} - (w_m + \tau + \tau_m) q_{Exp, m}^{Exp} \\ \pi_{Exp, l}^{Exp} &= \left( S_A - q_{Exp, l}^{Exp} - q_{Exp, m}^{Exp} \right) q_{Exp, l}^{Exp} - (c_l + \tau + \tau_l) q_{Exp, l}^{Exp}\end{aligned}\quad (1)$$

where  $q_{Exp, l}^{Exp}$  is the quantity of final good supplied by firm l and  $q_{Exp, m}^{Exp}$  is the quantity of final good supplied by firm m.

These firms compete with each other over quantity. Here is the asymmetric Cournot-Nash equilibrium:

$$\begin{aligned}q_{Exp, m}^{Exp} &= \frac{S_A - 2(w_m + \tau + \tau_m) + (c_l + \tau + \tau_l)}{3} \\ q_{Exp, l}^{Exp} &= \frac{S_A - 2(c_l + \tau + \tau_l) + (w_m + \tau + \tau_m)}{3}\end{aligned}\quad (2)$$

Therefore, the export profit of each firm is

$$\begin{aligned}\pi_{Exp, m}^{Exp} &= \left( q_{Exp, m}^{Exp} \right)^2 = \left( \frac{S_A - 2(w_m + \tau + \tau_m) + (c_l + \tau + \tau_l)}{3} \right)^2 \\ \pi_{Exp, l}^{Exp} &= \left( q_{Exp, l}^{Exp} \right)^2 = \left( \frac{S_A - 2(c_l + \tau + \tau_l) + (w_m + \tau + \tau_m)}{3} \right)^2\end{aligned}\quad (3)$$

Otherwise, we note that  $\frac{\partial q_{Exp, m}^{Exp}}{\partial \tau} < 0$  and  $\frac{\partial q_{Exp, l}^{Exp}}{\partial \tau} < 0$ , which means that a higher customs duty imposed by country A leads to more limited foreign trade and hence a smaller profit for each firm.

On the other hand,  $\frac{\partial \pi_{Exp, m}^{Exp}}{\partial (c_l + \tau + \tau_l)} > 0$  and  $\frac{\partial \pi_{Exp, l}^{Exp}}{\partial (w_m + \tau + \tau_m)} > 0$ . Therefore, higher access costs to a market for a given firm leads to a greater profit earned by its rival. In other words, the profit of a domestic firm is an increasing function of costs' access to the market of a multinational firm and vice-versa.

### 2.3. Export-platform regime

As soon as A and V form a free trade area or sign a bilateral trade, customs tariffs disappear and we assume that the export costs of the domestic firm in this regime become  $\tau_l$ . Market equilibrium depends on the strategy adopted by the MNF.

The asymmetric Cournot-Nash equilibrium of an export strategy will be

$$\begin{aligned} q_{Exp, m}^{EP} &= \frac{S_A - 2(w_m + \tau + \tau_m) + (c_l + \tau_l)}{3} \\ q_{Exp, l}^{EP} &= \frac{S_A - 2(c_l + \tau_l) + (w_m + \tau + \tau_m)}{3} \end{aligned} \quad (4)$$

Therefore, the profit of each firm is

$$\begin{aligned} \pi_{Exp, m}^{EP} &= (q_{Exp, m}^{EP})^2 = \left( \frac{S_A - 2(w_m + \tau + \tau_m) + (c_l + \tau_l)}{3} \right)^2 \\ \pi_{Exp, l}^{EP} &= (q_{Exp, l}^{EP})^2 = \left( \frac{S_A - 2(c_l + \tau_l) + (w_m + \tau + \tau_m)}{3} \right)^2 \end{aligned} \quad (5)$$

Inversely, the asymmetric Cournot-Nash equilibrium of a tariff-jumping strategy can be expressed as follows:

$$\begin{aligned} q_{TJ, m}^{EP} &= \frac{S_A - 2w_m + (c_l + \tau_l)}{3} \\ q_{TJ, l}^{EP} &= \frac{S_A - 2(c_l + \tau_l) + w_m}{3} \end{aligned} \quad (6)$$

Thus, the profit of these firms is

$$\begin{aligned} \pi_{TJ, m}^{EP} &= (q_{TJ, m}^{EP})^2 - F_a = \left( \frac{S_A - 2w_m + (c_l + \tau_l)}{3} \right)^2 - F_a \\ \pi_{TJ, l}^{EP} &= (q_{TJ, l}^{EP})^2 = \left( \frac{S_A - 2(c_l + \tau_l) + w_m}{3} \right)^2 \end{aligned} \quad (7)$$

Finally, the asymmetric Cournot-Nash equilibrium of an EPFDI strategy can be represented by

$$\begin{aligned} q_{EPFDI, m}^{EP} &= \frac{S_A - 2(g + \tau_l) + (c_l + \tau_l)}{3} \\ q_{EPFDI, l}^{EP} &= \frac{S_A - 2(c_l + \tau_l) + (g + \tau_l)}{3} \end{aligned} \quad (8)$$



Whereas the profit of each firm is

$$\begin{aligned}\pi_{EPFDI, m}^{EP} &= (q_{EPFDI, m}^{EP})^2 - F_v = \left( \frac{S_A - 2(g + \tau_l) + (c_l + \tau_l)}{3} \right)^2 - F_v \quad (9) \\ \pi_{EPFDI, l}^{EP} &= (q_{EPFDI, l}^{EP})^2 = \left( \frac{S_A - 2(c_l + \tau_l) + (g + \tau_l)}{3} \right)^2\end{aligned}$$

Now, we determine the conditions for a given equilibrium in market A under the new regime.

### 2.3.1. Export-platform foreign direct investment versus tariff-jumping and exporting

Firm m chooses an EPFDI strategy whenever the profit of this investment is higher than the one generated by exporting and tariff-jumping. More precisely, the following conditions must be fulfilled:

$$\begin{aligned}\left( \frac{S_A - 2(g + \tau_l) + (c_l + \tau_l)}{3} \right)^2 - F_v &> \left( \frac{S_A - 2w_m + (c_l + \tau_l)}{3} \right)^2 - F_a \quad (10) \\ \left( \frac{S_A - 2(g + \tau_l) + (c_l + \tau_l)}{3} \right)^2 - F_v &> \left( \frac{S_A - 2(w_m + \tau + \tau_m) + (c_l + \tau_l)}{3} \right)^2\end{aligned}$$

The first condition allows a higher EPFDI profit than the tariff-jumping one and the second leads to a greater EPFDI profit than the exporting one. These conditions can be represented as follows:

#### Condition 1

$$\begin{aligned}F_1(c_l + \tau_l) &= \frac{4}{9} [w_m - (g + \tau_l)] (c_l + \tau_l) \quad (11) \\ &+ \frac{4}{9} [w_m - (g + \tau_l)] [S_A - (w_m + g + \tau_l)] + F_a - F_v > 0\end{aligned}$$

#### Condition 2

$$\begin{aligned}F_1(c_l + \tau_l) &= \frac{4}{9} [(w_m + \tau + \tau_m) - (g + \tau_l)] (c_l + \tau_l) \quad (12) \\ &+ \frac{4}{9} [(w_m + \tau + \tau_m) - (g + \tau_l)] [S_A - (w_m + \tau + \tau_m + g + \tau_l)] - F_v > 0\end{aligned}$$

When condition 11 is fulfilled, firm m prefers an EPFDI to a tariff-jumping strategy, and when condition 12 is materialised, this firm prefers an EPFDI strategy to exporting.

**Condition 3** *Given that  $F_a - F_v < 0$ , the condition 11 is satisfied if and only if  $w_m > (g + \tau_l)$ .*

Indeed, if  $w_m < (g + \tau_l)$ , that means  $w_m - (g + \tau_l) < 0$ . Otherwise,  $(c_l + \tau_l) > 0$  and  $S_A - (w_m + g + \tau_l) > 0$ . Thus,  $[w_m - (g + \tau_l)] (c_l + \tau_l) < 0$  and  $[w_m - (g + \tau_l)] [S_A - (w_m + g + \tau_l)] < 0$ . Therefore, condition 11 is not fulfilled. ■

### 2.3.2. Tariff-jumping versus exporting

Firm m chooses tariff-jumping instead of exporting when the profit of this investment is higher than the one generated by exporting. That means

$$\left(\frac{S_A - 2w_m + (c_l + \tau_l)}{3}\right)^2 - F_a > \left(\frac{S_A - 2(w_m + \tau + \tau_m) + (c_l + \tau_l)}{3}\right)^2$$

In other words, the following condition must be fulfilled:

#### Condition 4

$$F_2(c_l + \tau_l) = \frac{4}{9}(\tau + \tau_m)(c_l + \tau_l) + \frac{4}{9}(\tau + \tau_m)[S_A - (2w_m + \tau + \tau_m)] - F_a > 0 \quad (13)$$

### 2.3.3. Equilibrium determinants

Figure 1 represents the conditions 11, 12 and 13 mentioned above. The linear curve  $F_1(c_l + \tau_l)$  shows all the situations in which firm m is indifferent between EPFDI and tariff-jumping. Above this curve, the firm prefers EPFDI as its entry mode in the third country. Inversely, below this curve, it chooses tariff-jumping as its penetration mode in this third market. Furthermore, the straight line  $F_3(c_l + \tau_l)$  shows all the cases in which the MNF is indifferent between EPFDI and exporting. Above this line, this firm chooses the first strategy, and below it, the firm chooses to export. Finally, the linear line  $F_2(c_l + \tau_l)$  implies all the possibilities when the MNF is indifferent between exporting and tariff-jumping. Below this line, the firm prefers to export rather than tariff-jumping, and vice-versa.

Depending on the interaction of these three curves, we will have an EPFDI area, an exporting area or a tariff-jumping one.

Figure 1: Different possibilities of market equilibriums in the export-platform regime

Insert figure 1 here

**Proposition 1** When  $S_A = S_1 = \frac{9}{4} \frac{F_v - F_a}{w_m - (g + \tau_l)} + [(w_m + g + \tau_l) - (c_l + \tau_l)]$ , firm m is indifferent between EPFDI and tariff-jumping. On the other hand, if  $S_A = S_2 = \frac{9}{4} \frac{F_v}{(w_m + \tau + \tau_m) - (g + \tau_l)} + [(w_m + \tau + \tau_m + g + \tau_l) - (c_l + \tau_l)]$ , it is indifferent between EPFDI and exporting.

When  $S_A > \max(S_1, S_2)$ , the MNF prefers EPFDI to other entry modes in the third market. This gives us an EPFDI area.

Moreover, we note that  $\frac{\partial F_1(c_l + \tau_l)}{\partial S_A} > 0$  and  $\frac{\partial F_3(c_l + \tau_l)}{\partial S_A} > 0$ , which means that an increase of the third country market size leads to a switch of  $F_1(c_l + \tau_l)$  and  $F_3(c_l + \tau_l)$  to the right and thus enables a greater EPFDI area. In other words, the market size of the third country is one of the determinants of the EPFDI decision. As the size of this market increases, EPFDI is favoured to a greater degree. The result appears to be consistent

with Motta and Norman (1996), as they argue that economic integration, by improving market accessibility, can lead foreign firms to invest in the integrated regional bloc.

**Proposition 2** *If  $\tau_l = \tau_1 = w_m - g + \frac{9}{4} \frac{F_a - F_v}{S_A - (w_m + g) + c_l}$ , firm  $m$  is indifferent between EPFDI and tariff-jumping. In addition, if  $\tau_l = \tau_2 = (w_m + \tau + \tau_m) - g + \frac{9}{4} \frac{F_a - F_v}{S_A - (w_m + \tau + \tau_m + g) + c_l}$ , this firm is indifferent between exporting and EPFDI.*

Consequently, EPFDI will be the entry mode of this firm whenever the intra-regional transport cost is low enough,  $\tau_l < \min(\tau_1, \tau_2)$ . Moreover,  $\frac{\partial F_1(c_l + \tau_l)}{\partial \tau_l} < 0$  and  $\frac{\partial F_3(c_l + \tau_l)}{\partial \tau_l} < 0$ , so a decrease of the intra-regional transport cost leads to a movement to the right of the  $F_1(c_l + \tau_l)$  and  $F_3(c_l + \tau_l)$  curves. As a consequence, the EPFDI area will be larger. Then, the intra-regional transport cost is also a factor in EPFDI location decisions. As this cost increases, firm  $m$  will be less inclined to implement an EPFDI strategy the firm  $m$  will be. This result confirms the analysis done by Neary (2008) where he argues that horizontal FDI in trading blocs is encouraged by intra-bloc trade liberalisation because foreign firms establish plants in one country as export platforms to serve the bloc as a whole.

**Proposition 3** *If  $g = g_1 = \frac{1}{2} (S_A - \tau_l + c_l - \sqrt{\Delta_1})$ , firm  $m$  is indifferent between EPFDI and tariff-jumping. Otherwise, if  $g = g_2 = \frac{1}{2} (S_A - \tau_l + c_l - \sqrt{\Delta_2})$ , this firm will be indifferent between exporting and EPFDI.*

Where

$$\begin{aligned}\Delta_1 &= (S_A - \tau_l + c_l)^2 - 4(S_A - w_m + c_l)(w_m - \tau_l) - 9(F_a - F_v) \\ \Delta_2 &= (S_A - \tau_l + c_l)^2 - 4[S_A - (w_m + \tau + \tau_m) + c_l](w_m + \tau + \tau_m - \tau_l) - 9F_v\end{aligned}$$

Therefore, firm  $m$  will adopt an EPFDI strategy if and only if the technological transfer cost is small enough,  $g < \min(g_1, g_2)$ . Hence, EPFDI is more beneficial than the other two strategies whenever the technological transfer cost of the host country is low.

On the other hand, given that  $\frac{\partial F_1(c_l + \tau_l)}{\partial g} = \frac{\partial F_3(c_l + \tau_l)}{\partial g} = -[S_A - 2(g + \tau_l) + (c_l + g)] < 0$ , a reduction of this cost will lead to a larger EPFDI area. In other words, a greater technological gap between the host country and the home country leads to a lower likelihood that a MNF will choose this investment as its entry mode in the third country.

**Proposition 4** *If  $w_m = w_1 = \frac{1}{2} (S_A + \tau_l + c_l - \sqrt{\Delta_3})$  then the MNF is indifferent between tariff-jumping and EPFDI. In addition, if  $w_m = w_2 = \frac{S_A - (\tau + \tau_m) + (c_l + \tau_l)}{2} - \frac{\sqrt{\Delta_4}}{2}$  then this firm is indifferent between exporting and EPFDI.*

Where

$$\begin{aligned}\Delta_3 &= (S_A + \tau_l + c_l)^2 - 4(S_A - g + c_l)(c_l + \tau_l) - 9(F_a - F_v) \\ \Delta_4 &= [S_A - 2(\tau + \tau_m) + (c_l + \tau_l)]^2 \\ &\quad + 4[S_A - (\tau + \tau_m + g) + c_l][(\tau + \tau_m) - (g + \tau_l)] - 9F_v\end{aligned}$$

So whenever the relative labor cost is high enough,  $w_m > \max(w_1, w_2)$  firm m will choose an EPFDI as an entry mode.

Moreover, given that  $\frac{\partial F_1(c_l + \tau_l)}{\partial w_m} > 0$  and  $\frac{\partial F_3(c_l + \tau_l)}{\partial w_m} > 0$ , we can say that as the relative labor cost becomes more expensive, the EPFDI area increases, and an EPFDI strategy becomes more beneficial. These results confirm the ones reached by Montout and Zitouna (2005) as well as Ekholm et al. (2007), which show that the MNFs that achieve EPFDIs prefer to invest in the country where the labor cost is the lowest.

**Conclusion:** *The main factors of an EPFDI location are the relative labor cost between the host country and the home country and/or the third country, the technological transfer cost of the host country and the intra-regional transport cost, as well as the size of the third-country market.*

### 3. Location factors in the case of Vietnam

In this section, we develop an empirical model explaining the power of different factors' location, as mentioned in the three-country model. First, we present a brief discussion of FDI trends in Vietnam as well as its determinants. Then, we will discuss the data set and explanatory variables. The section concludes with the econometric specifications and their estimation results.

#### 3.1. Foreign direct investment in Vietnam and its determinants

MNFs started to invest in Vietnam in 1988, following its "Doi moi" law (Renovation) initiated in 1986. Since these first entries, FDI inflows in this country have fluctuated. The evolution of FDI inflows between 1990 and 2008 can be divided into three sub-periods (figure 2). First, we can identify an upward fluctuation trend (from 180 million USD in 1990 to 2587.3 million USD in 1997). The Asian economic crisis in the late 1990s had a negative impact on the flow of foreign investment in this country, which decreased from 2.6 billion USD in 1997 to 1.2 billion USD in 2002. After these crises, this flow has risen continuously, especially over the past three years, and it reached a record of 8.05 billion USD in 2008. This historical record in 2008 contrasts with a 14% decrease in worldwide FDI inflows for that same year (UNCTAD, 2009). In spite of the economic and financial crisis, emergent countries remained a preferred FDI destination, at least until 2008. Therefore, in 2008 the growth of FDI inflows was 27% in Africa, 17% in Asia and 13% in Latin America, whereas in developed countries, it fell by 27%.

Figure 2: The evolution of FDI flow in Vietnam between 1990 and 2008  
(in millions of US dollars)

Insert figure 2 here

According to UNCTAD (2007, 2008), the major assets of this country are the availability of low-cost skilled labor, followed by market factors (market growth and the size of the regional and local markets). In fact, the biggest factor is the availability of cheap labor.

Among the foreign investors who answered to the UNCTAD surveys (2007, 2008), 21% are attracted by this availability. This factor is followed by the growth of the market (including the regional and local ones) with 19% of the replies, and the availability of skilled labor with 15%. These investors are also influenced by a large international/regional market that they can access by investing in this country (9% of replies). Next, 8% of them invest in Vietnam because of the desire to follow their competitors or because of the availability of incentives. Finally, other factors that have a positive impact on the location of FDI in this country are the existence of suppliers (6%), access to natural resources (4%) and government effectiveness (2%).

### 3.2. *The dataset*

As there is not any database on the flow of EPFDI in Vietnam, we use foreign investments in export-oriented industries as a proxy for EPFDI (see appendix A for the list of these 28 industries). In Vietnam, the law of foreign investment (July 2000) considers that an industry is an export-oriented one if at least the half of its production is reserved for export. The output of these investments is intended for export and would thus be considered as EPFDI. The data used indicates information about the capital stock of foreign firms in industries in Vietnam. Even if, it is not a direct measure of the flows of EPFDI, it is a good proxy to identify the industries in which foreign firms are present and export all or part of their production. Export-oriented industries benefit from the export-promotion policies of the Vietnamese government such as the creation of Export Processing Zones (EPZs), subsidies and tax incentives (Menon, 2009). Figure 3 shows the evolution between 2000 and 2008 of exports of manufactured goods and of all merchandise made in Vietnam. We notice that the growth of the first curve is significantly faster than the second one because the percentage of manufactured goods within all Vietnamese exports increased slightly from 57% in 2000 to 63% in 2008.

Figure 3: The evolution of Vietnamese exports between 2000 and 2008  
(in millions of US dollars)

Insert figure 3 here

We use the Statistical Yearbook of Vietnam (from 2000 to 2007), published by the GSO. This is an annual publication covering aggregate economic and social overviews of Vietnam for each year. From these statistical yearbooks, we select the export value of each export-oriented industry, the real exchange rate between USD and Vietnam dong (VND), and GDP figures for the United States, ASEAN and the European Union.

We also use annual data on Vietnamese firms collected by the General Statistics Office (GSO) of Vietnam through its enterprise survey from 2000 to 2007. This survey is conducted every year by the General Statistics Office of Vietnam (GSO) and its branch offices (Provincial Statistics Offices) to collect information on enterprises' productive factors (labor, capital and other assets) in different industries and economic sectors. The survey also collects necessary information for aggregate indicators such as the number of enter-

prises, the number of employees, production value, etc., and is also used to construct an enterprise database.

After examining the raw data, we removed the firms for with missing or incomplete key information and those which do not locate in the 28 selected industries. After this treatment, we obtained a database with 2670 foreign firms (n) for which we identified 6420 observations (N) over the period studied. This data covers total labor, capital stock, wage and production information for each industry, broken down by domestic producers and foreign producers. Unfortunately, the GSO does not collect data about sales by foreign affiliates of MNFs based in Vietnam, broken down into local sales in the Vietnamese market, export sales back to the home market, and export sales to third markets. Similarly, it does not give information about the home country of foreign firms. Hence, we can not test the role of relative labor cost proposed in the analytical model.

### *3.3. Location factors of export-platform foreign direct investment: variables explanation*

According to UNCTAD's surveys (2007, 2008) on favoured factors of FDI, we can identify location factors for EPFDI in terms of three groups: market factors, labor factors and other factors.

#### *3.3.1. Market factors*

Foreign investments in export-oriented industries are made to export to third markets. Therefore, ease of access to these markets and market size will have an influence on the location of these investments. Investing in Vietnam, foreign investors can then easily have market access to ASEAN, the United States (since 2001) and the European Union (since 2003).

First, we use the GDP to measure the market size. Therefore  $asean\_gdp_t$ ,  $usa\_gdp_t$  and  $eu\_gdp_t$  represent the GDP of ASEAN, the United States and the European Union, respectively, in the year  $t$ .

The following variables are used to capture accessibility to regional or international markets:

- $Vn\_usa_t$ , which indicates the bilateral trade agreement between Vietnam and United States.  $Vn\_usa_t = 1$  if  $t \geq 2001$  and  $Vn\_usa_t = 0$  elsewhere;
- $Vn\_eu_t$ , which indicates the cooperation agreement between Vietnam and European Union.  $Vn\_eu_t = 1$  if  $t \geq 2003$  and  $Vn\_eu_t = 0$  elsewhere;
- $Vn\_wto_t$ , which indicates that Vietnam becomes member of the WTO.  $Vn\_wto_t = 1$  if  $t \geq 2007$  and  $Vn\_wto_t = 0$  elsewhere.

In fact, we can use the export value of each industry as an index of access to third markets. However, in our empirical study, this variable cannot be used because our dependent variable is the foreign capital stock of each industry and using the export value of each industry as an explicative variable can generate an endogenous problem. Indeed,

if the export value of a given industry increases, it can lead to an increase of foreign investment in this same industry and therefore, foreign capital stock will go up. At the same time, if foreign capital stock of an industry raises, foreign production will also grow up, and that will conduct to a growth of export value of this industry. As a conclusion, the export value of a given industry and its foreign capital stock is interdependent.

### 3.3.2. Labor factors

Labor wage is used to indicate how skilled labor is (Liu et al., 2000; Todo et al., 2009). Higher levels of the former indicate more highly skilled labor. This variable can also be represented as a proxy for the technological transfer cost in our three-country model, as a higher level of labor qualification leads to lower cost. This variable is calculated as follows:

$$W_{i,t} = \frac{\sum W_{ki,t}}{\sum L_{ki,t}}$$

where

- $W_{i,t}$  indicates the labor productivity of industry  $i$  in the year  $t$ ;
- $W_{ki,t}$  signifies the production of firm  $k$  in industry  $i$  during year  $t$ ;
- $L_{ki,t}$  signifies labor used by firm in industry during year .

### 3.3.3. Other factors

Other factors that can have an influence on the location of foreign firms in Vietnam are the real exchange rates (TC) and the desire to follow competitors. The first variable involves the real exchange rate between the USD and the VND (Vietnamese dong). Otherwise, we use the number of MNF (NbMNF) in each industry to explain foreign presence in this industry.

## 3.4. Econometric specifications methodology and results

In this sub-section we propose some econometric specifications followed by a methodological development. Finally, we discuss about the estimation results.

### 3.4.1. Econometric specifications

We examine the impact of the independent variables mentioned above on the location of EPFDI. The latter is measured by the capital stock of a foreign firm at the end of the year in a given industry:

$$cap_{ki,t} = \text{Capital stock of foreign firm } k \text{ in industry } i \text{ during year } t$$

First, we test the impact of the accessibility to the regional/international markets on the location of EPFDI:

$$\begin{aligned} \ln cap_{ki,t} = & \beta_0 + \beta_1 \ln W_{i,t} + \beta_2 \ln NbFMN_{i,t} \\ & + \beta_3 vn\_usa_t + \beta_4 vn\_eu_t + \beta_5 vn\_wto_t + \beta_6 \ln TC_t + \epsilon_{i,t} \end{aligned} \quad (14)$$

Second, we test the impact of the market size on the location of this investment. As for the impact of ASEAN's market size, we have

$$\begin{aligned} \ln cap_{ki,t} = & \beta_0 + \beta_1 \ln W_{i,t} + \beta_2 \ln NbFMN_{i,t} \\ & + \beta_3 \ln asean\_gdp_{i,t} + \beta_4 wto\_asean\_gdp + \beta_5 \ln TC_t + \epsilon_{i,t} \end{aligned} \quad (15)$$

où  $wto\_asean\_gdp = vn\_wto * \ln gdp\_asean$

To test the impact of the American market size, we have

$$\begin{aligned} \ln cap_{ki,t} = & \beta_0 + \beta_1 \ln W_{i,t} + \beta_2 \ln NbFMN_{i,t} \\ & + \beta_3 \ln usa\_gdp_{i,t} + \beta_4 wto\_usa\_gdp + \beta_5 \ln TC_t + \epsilon_{i,t} \end{aligned} \quad (16)$$

où  $wto\_usa\_gdp = vn\_wto * \ln gdp\_usa$ .

Finally, for the influence of the European Union's market size, we have

$$\begin{aligned} \ln cap_{ki,t} = & \beta_0 + \beta_1 \ln W_{i,t} + \beta_2 \ln NbFMN_{i,t} \\ & + \beta_3 \ln eu\_gdp_{i,t} + \beta_4 wto\_eu\_gdp + \beta_5 \ln TC_t + \epsilon_{i,t} \end{aligned} \quad (17)$$

où  $wto\_eu\_gdp = vn\_wto * \ln gdp\_eu$ .

We use a simple econometric analysis of panel data: a fixed effects (FE) model and a random effects (RE) model (Baltagi, 2001). Using panel data benefits several advantages, as it gives more informative data, less colinearity among variables, and in particular, it controls individual heterogeneity (Hsiao, 1985; Klevmarken, 1989).

### 3.4.2. Estimation results

Now we discuss the results of the two models. Firstly we examine the role of the access to the markets and secondly the question of the size of the third markets.

#### **The access to the markets**

The follow is based on fixed effects and random effects models. The estimates are based on the data collected in 24 export-oriented industries between 2000 and 2007.

The W variable (average labor wage), representing the labor qualification, is positive and statistically significant in both models. It confirms the prediction in our three-country analytical model: the localization of the EPFDI is positively affected by the labor qualification as it can reduce the technological transfer cost. NbMNF, the number of foreign firms, is affected by a negative sign. It is significant both for the fixed effects model and for the random effects one. Therefore, the localization of that investment in Vietnam does not have as an objective to follow the competitors.

The variables that explain the regional integration (vn\_eu; vn\_wto) have a positive sign and are all significant to the critical 10% threshold. It means that the integration of the Vietnamese economy into the regional and global economy has an impact on the



Table 1: Export-platform FDI and access to the third markets

Variable	Random effects		Fixes effects	
	Coefficient		Coefficient	
	Robust	Stand. Div.	Robust	Stand. Div.
Labour qualification (W)	0.74***		0.64***	
Desire to follow the competitors (NbMNF)	0.07		0.1	
	(NbMNF) -0.08***		-0.04 <sup>ns</sup>	
Access to US market (vn_usa)	0.02		0.03	
	0.05 <sup>ns</sup>		0.05 <sup>ns</sup>	
Access to EU market (vn_eu)	0.03		0.03	
	0.13***		0.15***	
Accession to WTO (vn_wto)	0.02		0.03	
	0.26**		0.42 <sup>+</sup>	
Real exchange rate (TC)	0.08		0.23	
	0.03 <sup>+</sup>		0.04*	
Constant	0.01		0.014	
	8.03***		8.22***	
	0.18		0.23	
N	6420		6420	
n	2670		2670	
R <sup>2d</sup> :	0.0523		0.1442	
LM	7657***			
F			52.56***	
W			4.82 <sup>ns</sup>	

Level Significant : <sup>ns</sup>: non significantf    +: p|0,1    \* : p|0.05    \*\* : p| 0.01    \*\*\* : p|0.001  
<sup>d</sup>: We use R<sup>2</sup> within for the fixed effects model and R<sup>2</sup> between random effects model

localization of the EPFDI in that country. This result confirms one of our original hypotheses: the access to third markets is a key motivation of the localization (Motta and Norman, 1996; Neary, 2002; Ekholm et al., 2007). However, it is paradoxical that the implementation of the bilateral trade agreement between Vietnam and the US has no significant effect on the investment decision.

The real exchange rate (TC) has a favorable impact on the localization. That is a logical result since an increase in the exchange rate generates an appreciation of the USD compared to the VND. As a result, the value of the Vietnamese exports increase, which is an incentive for firms to localize in that country.

The estimation gives a ratio F that is statistically significant to the threshold of 0.1%. It implies that the individual effects are justified and the fixed effects model is more efficient than the grouped regression one. Case n°1 also underlines that the Lagrange multiplier is vastly superior to the chi-square at a 3.84 degree of freedom. Therefore, the random effects model is more effective than the classic regression model. However, the 4.82 ratio of the Hausman test is not significant. Thus the random effects model is more appropriate for case n°1. Hence when the labor qualification of an industry improves by 1%, the stock of EPFDIs will increase by 0.74%. The same way, if the number of MNF in the industry increases by 10%, that investment will decrease by 0.8%. Furthermore, while the implementation of a cooperation agreement between Vietnam and the EU leads to an increase of this investment by 13%, Vietnam becoming a member of the WTO has

generated a remarkable 26% rise.

### EPFDI and the size of the markets

When it comes to the size of the ASEAN countries on the decision regarding the EPFDI, the estimation is shown in table 2.

Table 2: Export-platform FDI and size of the ASEAN countries

Variable	Random effects		Fixes effects	
	Coefficient		Coefficient	
	Robust	Stand. Div.	Robust	Stand. Div.
Labor qualification (W)	0.52***		0.29 <sup>+</sup>	
	0.09		0.16	
Desire to follow competitors (NbMNF)	-0.09***		-0.05*	
	0.02		0.03	
ASEAN GDP (asean_gdp)	1.11***		1.42***	
	0.17		0.26	
WTO and ASEAN GDP (wto_asean_gdp)	0.006*		0.012 <sup>ns</sup>	
	0.003		0.008	
Real exchange rate (TC)	0.007 <sup>ns</sup>		0.017 <sup>ns</sup>	
	0.012		0.014	
Constant	-21,32***		-29,32***	
	4.33		6.67	
N	6 420		6 420	
n	2 670		2 670	
R <sup>2d</sup> :	0.0462		0.1569	
LM	7 653***			
F			78.07***	
W			5.60 <sup>ns</sup>	

Level Significant : <sup>ns</sup>: non significantf    <sup>+</sup>: p;0,1    \* : p;0.05    \*\* : p; 0.01    \*\*\* : p;0.001  
<sup>d</sup>: We use R<sup>2</sup> within for the fixed effects model and R<sup>2</sup> between random effects model

We observe that LM and F are significant and W is not. Therefore, the random effects model is the more relevant. The result shows that the asean\_gdp variable (size of the market of the Southeast Asian countries), is positively and statistically significant with a relatively important scope in both models. Obviously, the size of the ASEAN countries plays an important role in the localization decision for the EPFDI. Our prediction in the three-country model is therefore justified. More precisely, if the GDP of the Southeast Asian countries increases by 1%, the EPFDI stock will rise by 1.11%. Moreover, wto\_asean\_gdp is statistically significant, hence the third market size (ASEAN) will be more determinant as the access to this market is facilitated.

Table 3 shows that the eu\_gdp variable, (size of the EU market), has a positive sign and is statistically significant for both kinds of models to a 0.1% threshold. Like in the previous case, the size of the EU market has a favorable influence on the localization of firms. However, the magnitude of this influence is inferior to that of the size of the ASEAN countries. Furthermore, the ratios F, LM and W show that it is more adequate to choose the random effects model in this case. Thus, a 1% increase in the GDP of

the European countries will generate a 0.5% raise in the amount of EPFDI in Vietnam. Furthermore, `wto_eu_gdp` has a positive sign and is also significant. That means that the EU market will be more determinant as the access to this market is facilitated.

Table 3: Export-platform FDI and size of the EU countries

Variable	Random effects		Fixes effects	
	Coefficient		Coefficient	
	Robust	Stand. Div.	Robust	Stand. Div.
Labour qualification (W)	0.54***		0.33*	
	0.09		0.15	
Desire to follow competitors (NbMNF)	-0.09***		-0.05*	
	0.02		0.03	
EU GDP ( <code>eu_gdp</code> )	0.50***		0.61***	
	0.08		0.11	
WTO and EU GDP ( <code>wto_eu_gdp</code> )	0.006*		0.011 <sup>ns</sup>	
	0.003		0.008	
Real exchange rate (TC)	0.047**		0.067***	
	0.014		0.017	
Constant	-6.37**		-9.57**	
	2.01		2.95	
N	6 420		6 420	
n	2 670		2 670	
R <sup>2d</sup> :	0.0469		0.1567	
LM	7 651***			
F			78.97***	
W			5.48 <sup>ns</sup>	

Significant level: <sup>ns</sup>: non significant; +: p|0,1 \* : p|0.05 \*\* : p|0.01 \*\*\* : p|0.001  
<sup>d</sup>: We use R<sup>2</sup> within for the fixed effects model and R<sup>2</sup> between random effects model

The estimates of equation (16), that underline the role of the American market size (table 4), show that the `usa_gdp` variable has a positive sign and is statistically significant. The scope of this variable is relatively important in both models. It means that the size of that market plays a key role in the localization process of the MNFs. Moreover, the TC variable (real exchange rate) is not significant in this case for either model. In reality, it does not mean that the variation of the exchange rate of the USD comparing with the VND does not affect the localization of those firms. Since the ratios F, LM are all significant and W is not, the random effects model is more efficient in case n°2. Thus, we notice that a 1% growth of the American GDP will generate a 1.09% increase in the EPFDI stocks in Vietnam. Finally, `wto_usa_gdp` is positively and statistically significant. Therefore, the accession of the country to WTO (2007) makes the American market size that much important.

As a conclusion, we can say that those different results show that the access to big markets is the main motivation for the localization of EPFDI in Vietnam. In reverse order, it is the ASEAN market followed by the American market and then the European market. Variables like the labor qualification or the real exchange rate all play an important role but it is much less significant than the access to third markets.

Table 4: Export-platform FDI and size of the US market

Variable	Random effects		Fixes effects	
	Coefficient		Coefficient	
	Robust	Stand. Div.	Robust	Stand. Div.
Labour qualification (W)	0.53***		0.30 <sup>+</sup>	
	0.09		0.16	
Desire to follow competitors (NbMNF)	-0.09***		-0.05 <sup>+</sup>	
	0.02		0.03	
US GDP (usa_gdp)	1.09***		1.41***	
	0.17		0.26	
WTO and US GDP (wto_usa_gdp)	0.006*		0.012 <sup>ns</sup>	
	0.003		0.008	
Real exchange rate (TC)	0.021 <sup>ns</sup>		0.011 <sup>ns</sup>	
	0.012		0.014	
Constant	-24.02***		-33.01**	
	4.86		7.49	
N	6 420		6 420	
n	2 670		2 670	
R <sup>2d</sup> :	0.0464		0.1559%	
LM	7 653***			
F			77.18***	
W			5.63 <sup>ns</sup>	

Significant level: <sup>ns</sup>: non significant; <sup>+</sup>: p<0,1 \* : p<0,05 \*\* : p<0,01 \*\*\* : p<0,001  
<sup>d</sup>: We use R<sup>2</sup> within for the fixed effects model and R<sup>2</sup> between random effects model

#### 4. Concluding remarks

With the development of regional integration agreements, EPFDI became a major element of MNFs strategies. This paper represents a continuation of research where the role of a third country is underlined. The model is in the tradition of game-theoretical models developed in the literature. Nevertheless, the two-country models are not helpful in investigating the effects of economic integration on the strategic decisions of MNFs. Therefore, a three-country model could allow us to examine these behaviours. From this point of view, the model is similar to the models developed in the literature (Motta and Norman, 1996; Neary, 2002; Montout and Zitouna, 2005; Ekholm et al., 2007). However, unlike these models, our model takes into account the technological transfer cost of the host country and the nature of competition between firms.

Concerning the entry modes, our theoretical model suggests four results. First, the MNF prefers an EPFDI rather than the other entry modes if the third country's size is large enough. Otherwise, as the size of this market increases, EPFDI becomes more favoured. Second, EPFDI will be the entry mode of the MNF whenever the intra-regional transport cost is low enough. As this cost increases, the firm will be less inclined to implement an EPFDI strategy. Third, whenever the relative labor cost is high enough, firms will choose an EPFDI as the entry mode. As the relative labor cost becomes more expensive, an EPFDI strategy will be more beneficial. Four, firms will adopt an EPFDI strategy if, and only if, the technological transfer cost is small enough. Furthermore, as this cost increases, the profit from EPFDI will decrease. In a nutshell, the four main

factors explaining the location of EPFDI are the relative labor cost between the host country and the home country and/or the third country; the technological transfer cost of the host country, the intra-regional transport cost and the size of the market in the third country.

Our numerical simulation results in the case of the Vietnamese export-oriented industries between 2000 and 2007 confirm some of those theoretical anticipations (related to the limits of database used) . We find that the main motivation behind the location of EPFDI in these industries is to access ASEAN as well as American and European Union markets. On the other hand, the accession of Vietnam to WTO in 2007 makes the size of these markets that much more important. Furthermore, other important factors are the availability of skilled labor as well as the real exchange rate. These results confirm our statement in the three-country model regarding the most important factors behind the target of EPFDI.

Taking into account these results, further research could go in two different ways. When it comes to the theoretical aspect, we could consider going from a partial Cournot-Nash equilibrium model to a general equilibrium model (Yeaple, 2003; Grossman et al., 2006). This would allow us to have a more comprehensive analysis framework of the specifics of EPFDI. From an empirical standpoint, a more complete database would allow us to test the role of relative labor cost. It would make stronger the link between analytical model and empirical part. Furthermore, it would be interesting to measure the impact of EPFDI on the local industry at a meso-economic level (impact on the local industrial production) and also at a micro-economic level (impact on the production of each local firm in the industry at stake) (Nguyen et al., 2010). This analysis, which could be done by comparing Vietnam with other transition economies, would represent an added component when trying to evaluate the efficiency of policies whose aim is to stimulate the entry of foreign firms.

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## Appendix

### List of Vietnamese export-oriented industries (Source: GSO)

- 1500 Food manufacturing
  - 1511 Animal food manufacturing
  - 1512 Seafood product preparation and packaging
  - 1514 Grain and Oilseed milling
  - 1520 Dairy product manufacturing
  - 1532 Bakeries and Tortilla Manufacturing
  - 1542 Sugar and Confectionery product manufacturing
- 1700 Textile product manufacturing
  - 1711 Fibre, Yarn and Thread Mills
  - 1712 Textile ennoblement
  - 1721 Textile and Fabric Finishing
  - 1722 Carpet and Rug Mills
  - 1723 Net and String products
  - 1729 Other textile products
  - 1730 Knitting products
- 1800 Clothing Manufacturing
  - 1810 Garment products manufacturing
- 1900 Leather, leather products and shoes
  - 1920 Shoes manufacturing
- 2500 Plastics and Rubber products manufacturing
  - 2520 Plastics products manufacturing
- 2690 Non-Metallic Mineral products
  - 2691 Pottery, Ceramics and Plumbing Fixture Manufacturing
  - 2692 Clay Building Material and Refractory Manufacturing
  - 2693 Brick and construction products
- 3000 Computer and Peripheral Equipment Manufacturing
  - 3100 Electrical Equipment
  - 3130 Electrical cables manufacturing
  - 3200 Radio, television and communication equipments manufacturing
  - 3210 Electronic components
  - 3220 et 3230 Communication equipment

Figure 1: Different possibilities of market equilibriums in the export-platform regime

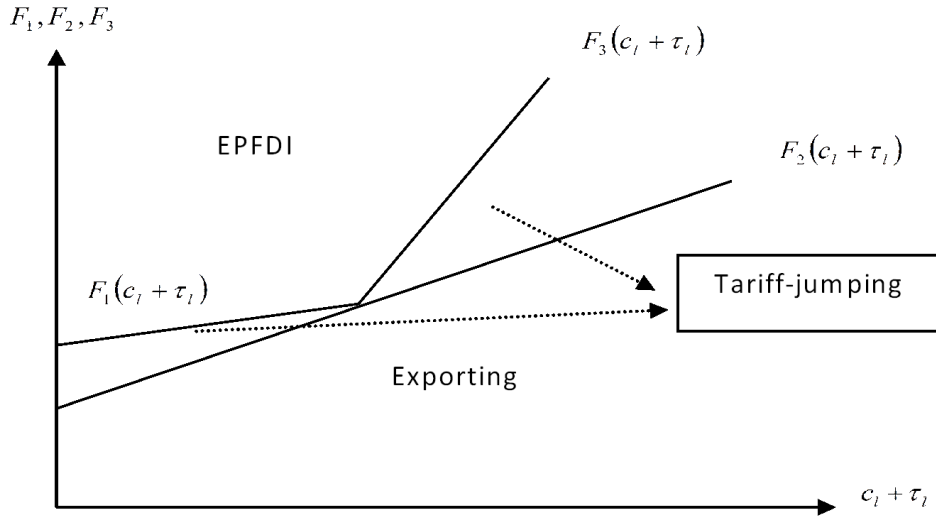
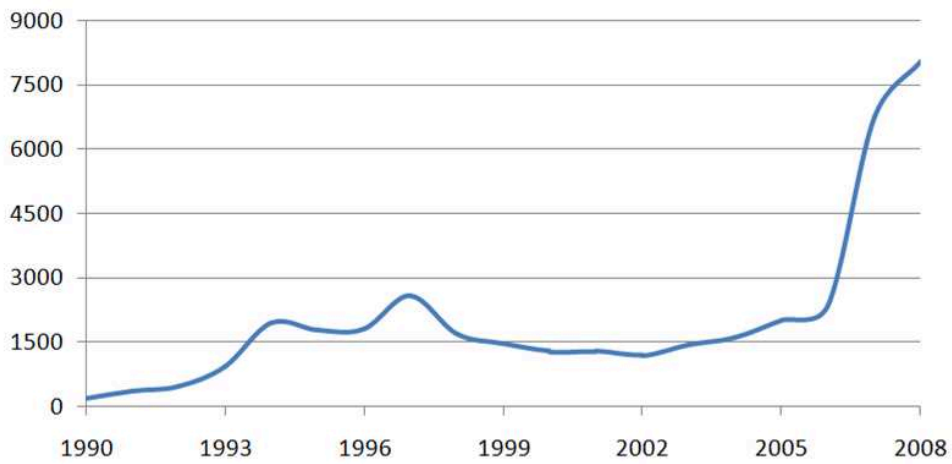
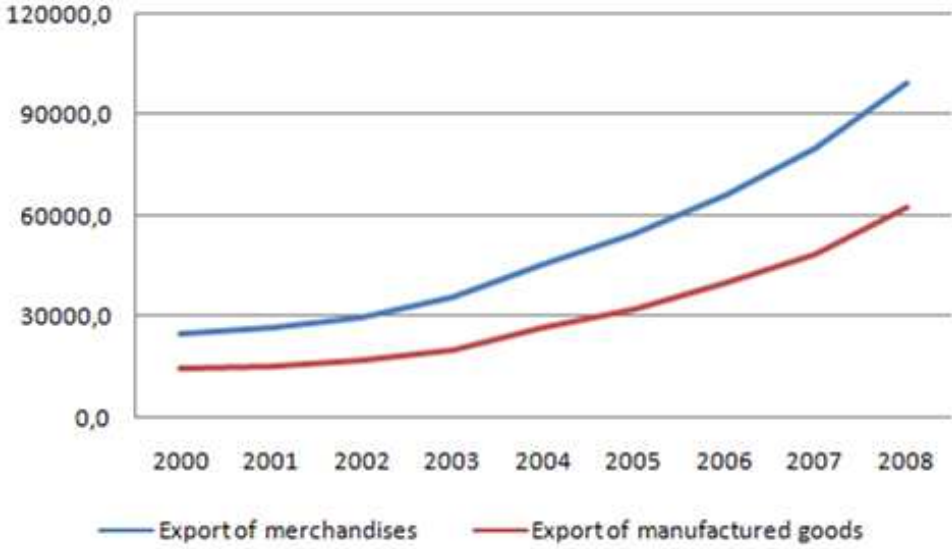


Figure 2: The evolution of FDI flow in Vietnam between 1990 and 2008 (in millions of US dollars)



Source: Vietnamese General Statistic Office database

Figure 3: Evolution of Vietnamese exports between 2000 and 2008 (in millions of US dollars)



Source: Vietnamese General Statistic Office database