

Preliminary Draft

The Impact of AFTA

- Service Link Cost and Export Platform Strategy-

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Abstract

We model and estimate the impact of ASEAN free trade agreement (AFTA) on the changes in multinational enterprise' (MNE's) production strategies. Our simple model predicts that in general a free trade agreement (FTA) makes the MNE easy to take export platform strategy by making use of the unit cost differences between member countries and the market size effect. Service link cost and the investment fixed cost play important roles for determination of MNE's strategies. Using the actual data of automobile production and the service link cost estimates in Thailand and Indonesia, we show that the export platform strategy has substantially proceeded in the 2000s.

Keywords: AFTA, multinational enterprise, service link cost, export platform strategy

JEL Classification: F15, F23

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1. Introduction

ASEAN free trade area (AFTA) reached agreement in 1992 and the common effective preferential tariff (CEPT) scheme started in 1993. The original ASEAN 6 countries¹ have reached the final tariff rates targets that range between 0% and 5% in 2002 with some exceptions. ASEAN newer member countries² are to reach the same level until 2010. AFTA has mainly three targets: expanding trade in ASEAN countries, promoting inflow of foreign direct investments (FDI) from abroad and regional investments, and enhancing the international competitiveness. Since the tariff levels of this region were relatively high, the reductions have affected significantly both local economies and firms including multinational enterprises (MNEs).

In general, any FTA member countries expect that the elimination of tariffs and non-tariff barriers among members promote their production efficiency and international competitiveness. As a result, reduction in trade barriers between FTA member countries is expected to expand the volume of trade in the region. Accordingly, the export-import structure in each country may change.

Figure 1 shows the total ASEAN exports to and imports from the non-AFTA member countries. Imports dropped sharply in the Asian currency crisis of 1998. As a result, before 1998, total imports exceeded total exports, while after the crisis, total exports surpassed the total imports. Total exports of ASEAN countries have an increasing trend after the AFTA in 1993. Figure 2 shows the ASEAN intra-regional trade share since 1993. It is clear from the figure2 that imports from ASEAN members have an increasing trend while the exports to ASEAN members fluctuate and do not show a monotonic trend.

Figure 3 traces the series of auto export share of Indonesia and Thailand respectively. The share is calculated as the ratio of auto intra-regional exports from Indonesia and Thailand to total auto trade (intra-regional exports and imports) of each country. It is clearly shown that the share of intra-regional trade of Indonesia has a declining trend while the share of Thailand fluctuates around 70% which shows neither an increasing nor declining trend. As a result, Indonesia is now a net importer and Thailand is a net exporter.

It can be inferred from these figures that the AFTA affected the trade structure especially procurement structure in ASEAN countries. However, the overall effects of AFTA, especially export structure, may vary from country to country and from industry to industry. In automobile case, for example, it is clear that Indonesia turned a net importer from a net exporter of auto, and Thailand has been a net exporter before and after the AFTA. AFTA has actually affected the trade structure in this region. We should ask questions “how did AFTA affect the trade structure?” and/or “what had happened in AFTA member countries?”

One possible answer is that the changes in trade structure have been induced by the changes in the MNEs strategies which have been, in turn, induced by the trade barriers reduction. In many ASEAN countries, auto and electric equipments are major export items, In addition, a large portion of the auto and electric equipments, machinery, and computers are produced by MNEs or MNE related companies in almost all ASEAN countries.

¹ Six countries include Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Brunei.

² They include Cambodia, Laos, Myanmar, and Vietnam.

It is not strange to say that the MNEs behavior changes ASEAN members' overall trade structures.

In this paper we study the impact of FTA on the changes in the MNE's strategies. Many MNEs have changed their supply modes according to the deepening of AFTA for these years. For example, Toyota recently reshuffled their automobile production sites in ASEAN countries. Toyota shifted and combined productions of Camry, Corolla and Vios in Indonesia and Vios in the Philippines into Thailand in 2003 and 2004 and started to export these autos from Thailand back to Indonesia and the Philippines. Substantial reduction of tariffs and transportation costs makes this export platform strategy profitable. Platform strategy due to FTA has several features: Firstly, focusing on one plant rather than many plants among ASEAN region, the MNE can enjoy the scale economies. Secondly, the headquarters can save its management costs of plants, such as communication costs, flight costs of technicians or managing directors. Tertiary, the MNE can choose the best location for the production among the regional free trade areas. For example, the MNE prefers flexible and cheap labor force or the site where there are many (upstream) vendors. In Toyota's case, a lot of vendors from Japan have been operating in Thailand and they have developed the Toyota system in Thailand.

Spatial economics literature has recently shed some light on the location choice of firms. It shows that transport costs, economies of scale, and history are crucial for the agglomeration of industries (Fujita, 2005). Furthermore one of the important predictions of spatial economics is that adding up scale economies, the reduction of transportation costs and relatively large market size leads the disproportionate agglomeration of scale- economy-activities in larger market, i.e., home market effect.

On the other hand, in this paper we show the conditions that the one production site is more profitable than two or more production sites without scale economies. The reduction of transportation costs among FTA member countries due to the formation of FTA, the market size, and the marginal cost difference play a crucial role in determining the MNE's strategy.

There are several earlier theoretical studies on this issue. Donnenfeld (2003) examines the impact of FTA on the firms' foreign direct investment (FDI) strategies in many countries case. He analyses the strategic choice between export and FDI and identifies the conditions for firm's choice. However, since he studies only impact of tariff difference between insider and outsider of the trading bloc, the conclusion is biased toward the FDI strategy. Im (2004) also investigates the relationship among bilateralism, multilateralism and FDI. Using the framework of coalition formation game, he shows that with the possibility of FDI, countries are likely to choose bilateralism instead of multilateralism. Montout and Zitouna (2005) study the effects of the North-South FTA on the FDI activities. Their important theoretical prediction is export platform strategy depends on the tradeoff between variable trade costs and fixed costs. Our theoretical part follows Montout and Zitouna in the point of basic settings, such as three country one homogenous good framework, and choice problem between FDI and export platform strategies. However, our theoretical part differs from them in the following aspects: we consider the effects of service link cost, such as communication costs, travel costs of

businessmen, and so on³. We examine two types of export platform strategies, one is that the platform exports to only insider country of the FTA, and the other is that the platform exports to both insider and outsider countries.

The paper is organized as follows: In the next section (section 2) we provide the basic theoretical idea of the impact of FTA on the MNE's strategy. Section 3 discusses the evidence of our predictions derived from the previous section. The last section (section 4) concludes the findings.

2. The Model

In this section, we show a simple model that analyzes the impact of FTA on the performance of the MNE. Assume there are three countries that have only one indigenous firm. We refer these three countries to A , B , and J . We also assume there is one MNE, which headquarters is located in country J and supplies good to all three countries. MNE and a local firm in each country (hereafter we call these as firm A , firm B , and firm C) produce a homogenous good. MNE can export the good to countries A and B , or can set-up the plants and produce the good in countries A and B . On the other hand, the indigenous firms cannot export either set-up the plant in the other countries. Therefore, two firms (indigenous and MNE) compete in each country. Cournot duopoly is assumed as a market structure⁴.

Two strategies of MNE are shown in the Figure 4. When the MNE chooses exporting to both countries A and B from J , the MNE's total profits are the collection of profits from countries J , A and B . In this case, the MNE bears transportation costs and tariffs set by countries A and B . On the other hand, when the MNE chooses FDI, the MNE's total profits come from the headquarters in J , and two subsidiaries in A and B .

Let us make the model as simple as possible. We assume the linear model and constant marginal costs of each firm c_i , $i=A, B, J$ where i stands for the market the good is sold. We further assume that $c_A < c_B < c_J = c_M$, M stands for the MNE. If the MNE invests in either A or B , the MNE must pay some amount of fixed costs, K_A , K_B for setting-up the plants.

Export vs.FDI

Assuming the demand is linear, $p_i = a - bQ_i$, $Q_i = q_i + q_{iM}$, $i=A, B, J$, q_i expresses the demand (market) size of country i , when the MNE takes export strategy the profit of the MNE and the indigenous firm becomes respectively;

³ See, for example, Jones and Kierzkowski (2001) for the detail of service link costs.

⁴ Cournot duopoly is assumed for analytical simplicity and tractability. Qualitative results do not change if the competition is assumed in price changes.

$$\pi_{iM}^E = (p_i^E - c_J - t_i)q_{iM}^E$$

$$\pi_{ii}^E = (p_i^E - c_i)q_{ii}^E$$

$$i = A, B, J, t_J = 0,$$

where t_i stands for the transportation cost including tariffs for country i .

Since the MNE and the indigenous firms compete in Cournot fashion under the linear demand function, the total equilibrium profits of the MNE in the case of export are calculated, $\pi^E = \pi_{AM}^E + \pi_{BM}^E + \pi_{JM}^E$, as follows;

$$\pi^E = \frac{1}{9}(\alpha_A - 2c_J + c_A - 2t_A)^2 + \frac{1}{9}(\alpha_B - 2c_J + c_B - 2t_B)^2 + \frac{1}{9}(\alpha_J - c_J)^2 \quad (1)$$

When the MNE chooses FDI instead of exporting, the profit of investing into country i is as follows.

$$\pi_{iM}^F = (p_i^F - c_M)q_{iM}^F - K_i$$

$$\pi_{ii}^F = (p_i^F - c_i)q_{ii}^F$$

$$i = A, B, J, K_J = 0,$$

where K_i is the fixed cost for the building subsidiary in country i . Since the MNE's headquarters is in country J , set-up cost of subsidiary in country J is zero. The total profit of the MNE is, thus, the collection of the profits in three countries, $\pi^F = \pi_{AM}^F + \pi_{BM}^F + \pi_{JM}^F$;

$$\pi^F = \frac{1}{9}(\alpha_A - c_A)^2 - K_A + \frac{1}{9}(\alpha_B - c_B)^2 - K_B + \frac{1}{9}(\alpha_J - c_J)^2 \quad (2)$$

Comparing equations (1) and (2), we have the following lemma;

Lemma 1: Assume that transportation costs between home and host countries are the same ($t_A=t_B$) and the market sizes of countries A and B are the same ($\alpha_A=\alpha_B$). The MNE prefers FDI to exporting as the market sizes become larger, as unit cost difference between the home (J) and host countries (A and B) enlarges, and as transportation cost becomes more expensive.

Proof.:

$$\pi^E - \pi^F = \frac{4}{9} \{t[-(\alpha - 2c_J + c_A - t) - (\alpha - 2c_J + c_B - t)] - (\alpha - c_J)(2c_J - c_A - c_B)\} + (K_A + K_B),$$

Therefore, using this result, we can rearrange it into the following relationship;

$$\pi^E < \pi^F$$

$$\text{iff } \frac{4}{9} \{t[(\alpha - 2c_J + c_A - t) + (\alpha - 2c_J + c_B - t)] + (\alpha - c_J)(2c_J - c_A - c_B)\} > (K_A + K_B)$$

$(\alpha - c_J)$ is referred to the market size effect and $(2c_J - c_A - c_B)$ is referred to unit cost difference. Since the optimal output of the MNE is $\tilde{q}_{iM}^E = \frac{1}{3}(\alpha_i - 2c_J + c_i - 2t_i)$, $i = A, B$, if an interior solution is assumed ($\tilde{q}_{iM}^E > 0$), then $(\alpha - 2c_J + c_A - t) = 3\tilde{q}_{iM}^E + t > 0$. \square

The Impact of FTA -Export Platform Strategy-

Now we consider that countries A and B form an FTA. Tariff between countries A and B is eliminated so that the transportation cost t_i becomes smaller. The MNE may have an incentive to concentrate its production of the good in one country and export the good to the other country. This is referred to an export platform strategy. There are two types of export platform strategy as depicted in Figure 5. The first case (G1) is that the MNE produces in home (J), invest in country A and export from A to country B. The second case (G2) is that the plant in country A exports to both B and J while the MNE does not produce in home country.⁵ Let us consider the case 1 first. The profits of MNE from the market A and J are the same as FDI case. The profit from the market B is now calculated from the following Cournot duopoly competition;

$$\pi_{BM}^{G1} = (p_B^{G1} - c_A - t_B)q_{BM}^{G1} - S$$

$$\pi_{BB}^{G1} = (p_B^{G1} - c_B)q_{BB}^{G1}$$

⁵ It is interesting to check the possibility that the export platform is located in country B and it exports goods to country A and/or J. As shown in the Appendix 1, this is possible when α_A is greater than α_B and marginal costs, c_A and c_B do not differ much each other.

S stands for the service link costs including costs for communication, such as telephone, intranet facilities, face-to-face communication and etc.

Hence the total profit of export platform strategy in the first case, $\pi^{G1} = \pi_{AM}^{G1} + \pi_{BM}^{G1} + \pi_{JM}^{G1}$, is:

$$\pi^{G1} = \frac{1}{9}(\alpha_A - c_A)^2 - K_A + \frac{1}{9}(\alpha_B - 2c_A + c_B - 2t_B)^2 - S + \frac{1}{9}(\alpha_J - c_J)^2 \quad (3)$$

The second export strategy case differs from the first one in the point that the plant in country A also exports to country J . Therefore the profits in the country A and B are the same as case 1. Only difference between cases 1 and 2 is the profit from the market J . In the country J , the MNE competes with indigenous firm to maximize its profit as follows;

$$\begin{aligned} \pi_{JM}^{G2} &= (p_J^{G2} - c_A - t_J) q_{JM}^{G2} - S \\ \pi_{JJ}^{G2} &= (p_J^{G2} - c_J) q_{JJ}^{G2} \end{aligned}$$

Assuming the same service link costs as case 1, the total profit of the MNE is the sum of profits from three markets, $\pi^{G2} = \pi_{AM}^{G2} + \pi_{BM}^{G2} + \pi_{JM}^{G2}$:

$$\pi^{G2} = \frac{1}{9}(\alpha_A - c_A)^2 - K_A + \frac{1}{9}(\alpha_B - 2c_A + c_B - 2t_B)^2 - S + \frac{1}{9}(\alpha_J + c_J - 2c_A - 2t_J)^2 \quad (4)$$

From equations (3) and (4), the following lemma is derived;

Lemma 2: The greater the service link costs between countries A and J , and the larger the transportation costs, the MNE tends to choose the case 1 export platform strategy. On the other hand, the smaller the difference of marginal costs between countries A and J , the MNE tends to choose the case 2 export platform strategy.

Proof:

Calculating eq. (3) less eq. (4) yields the following relationship:

$$\pi^{G1} > \pi^{G2} \quad \text{iff} \quad S > \hat{H}, \quad (5)$$

where $\hat{H} = \hat{H}(\alpha_J, c_A, c_J, t_J) = \frac{4}{9}[(\alpha_J - c_A)(c_J - c_A) - t_J(\alpha_J + c_J - 2c_A - t_J)]$.

Now we look into the effects of FTA on the MNE's strategies. FTA means the reductions in or complete elimination of the tariff rates among member countries. In our model, it means that the reduction of t_i . To take the effects of FTA into consideration, we compare the total profits between FDI case and export platform strategy (G1). We have the following lemma:

Lemma 3: *The smaller the service link costs, or greater the initial investment in country B, the MNE prefers export platform to FDI strategy.*

Proof: Comparing eqs. (2) and (3), we have

$$\pi^F > \pi^{G1} \quad \text{iff} \quad S - \bar{H} > K_B, \quad (6)$$

where $\bar{H} = \bar{H}(\alpha_B, c_A, c_B, t_B) = \frac{4}{9}[(\alpha_B - c_A)(c_B - c_A) - t_B(\alpha_B - 2c_A + c_B - t_B)]$.

Lemma 3 also implies the effects of FTA on the MNE's strategies. As we discussed, an FTA induces the reduction of tariff, therefore the left side of the inequality in the proof of lemma 3 becomes smaller. This indicates that the MNE becomes more profitable if it chooses export platform strategy under the FTA.

When we consider the relationship between FDI and export platform strategy 2 (G2), we have the following lemma:

Lemma 4: *As the tariff rate of country B becomes smaller, the service link costs become smaller, and the market size of country J becomes smaller, then the export platform strategy 2 becomes more profitable. As the initial investment in country B becomes greater, the export platform strategy becomes more preferable.*

Proof: Calculating $\pi^F - \pi^{G2}$ using eqs. (2) and (4), we have the following inequality;

$$\pi^F > \pi^{G2} \quad \text{iff} \quad 2S - \tilde{H} > K_B, \quad (7)$$

where $\tilde{H} = \tilde{H}(\alpha_B, \alpha_J, c_A, c_B, c_J, t_B, t_J) =$

$$\frac{4}{9}[(\alpha_B - c_A)(c_B - c_A) + (\alpha_J - c_A)(c_J - c_A) - t_B(\alpha_B - 2c_A + c_B - t_B) - t_J(\alpha_J - 2c_A + c_J - t_J)].$$

Lemmas 3 and 4 tell that the FTA gives an incentive to the MNE to take export platform strategy (either case 1 or case 2). Then the lemma 2 says that as the service link costs increase and as the tariff rate of country J increases, the export platform strategy case 1 becomes more profitable.

Let us consider \bar{H} , \tilde{H} , and \hat{H} . Each is a function of market size (α_i), marginal cost (c_i) and transportation cost (t_i). We refer $(\alpha_i - c_A)$ to a market size effect of country i , $i=B, J$, $(c_i - c_A)$ to a marginal cost effect of country $i=B, J$, and $t_i(\alpha_i - 2c_A + c_i - t_i)$ to an FTA effect. Every function is an increasing function of a market size and a marginal cost effects while a decreasing function of an FTA effect. With the assumptions of $\alpha_J > \alpha_B > \alpha_A$ and $c_J > c_B > c_A$, we can order the three functions as follows: $\tilde{H} > \hat{H} > \bar{H}$ (see Appendix 2).

With these assumptions, we combine three inequalities, (5), (6), and (7) into one diagram. The three strategies are possible depending upon the degrees of service link cost (S) and the fixed cost in country B (K_B) as shown in the Figure 6. Figure 6 clarifies the FTA effect (decreasing in t_i). A declining in tariff of country B leads to shift \bar{H} and \tilde{H} curves to the rightward with leaving \hat{H} unchanged. Therefore, the areas of G1 and G2 expand while the area for the FDI becomes smaller. In other words, an FTA makes the MNEs easy to take either export platform strategies G1 or G2.

In the following sections, we show some evidences for lemma 3 and 4 using actual data of automobile industry in South East Asian countries.

3. Evidences

In this section, we show some evidence for the former section using actual data of automobile industry in Thailand and Indonesia. Table 1 shows characteristics of main automobile exporters in Thailand in 1997 and 2001. The 10 indicators represents export values, export propensities (export-sales ratios), firm size (sales), a crude measure of labor productivity (sales per employee), two crude measures of capital intensity (assets per employee and fixed assets per employee), foreign ownership shares, profit rates (as a ratio to sales), equity-asset ratios, and firm age export propensity. Most of the large exporters of automobiles are Japanese MNEs that have entered the Thai automobile market in the early period.

Table 2 shows that the number of employment among ASEAN countries by Japanese MNEs in Thailand. The number of employment is large in ASEAN4 (Thailand, Indonesia, Malaysia, and Philippines). If we consider the number of employment shows the scale of the automobile industry, Thailand has a quite large automobile industry compare to the other ASEAN countries. Moreover, the average of employment numbers

in 1996-1998 and 1999-2001, only Thailand has increased the number of employment among ASEAN4 (from 53.6 thousand to 54.4 thousand). This represents Japanese firms for transportation machinery is still growing. On the other hand, Indonesia has decreased the number of employment, from 36.4 thousand to 35.4 thousand.

Thailand experienced an unprecedented boom in the exports of vehicles beginning in 1997. The value of vehicle exports increased from about US\$0.7 billion in 1995 to US\$1.1 billion in 1997, and US\$2.8 billion in 2001 (Table 3). However, vehicle exports are still quite small in Thailand as evidenced by low values of Thailand's revealed comparative advantage index (RCI) in vehicles, which is defined as the ratio of vehicles' share of Thailand's exports to the corresponding share for world exports. This index remained at 0.42 in 2001, despite a three-fold increase in the 1996-2001 period and the low RCI is strong evidence that Thailand has yet to develop a broad-based, competitive vehicle industry.

According to the United Nations Statistics Division, the value of vehicle exports Thailand to Indonesia has also increased quite rapidly in recent years (Table 4). Exports of the automobiles, especially automobiles of the 1000-3000 cc class, increased rapidly in 2003. Correspondingly, the exports of automobile parts also increased enormously at the same time. This phenomenon seems to show that the export platform strategy was chosen by the MNEs and the export base for Indonesia's automobiles is Thailand.

Table 5 shows the change of unit price of auto-related products exported by Thailand and Indonesia in 1995 and 2003. For the automobiles, the unit price in Indonesia is so smaller than that in Thailand in 1995. It seems that the automobiles exported from each country is totally different products. However, the unit price in both countries became closer and Thailand has less unit price of automobiles than Indonesia in 2003. We can see the same trend for automobile and truck parts. If we read this trend of the unit price as change in marginal cost, with greater the difference in marginal costs between Thailand and Indonesia, the export platform strategy was chosen and the exports of auto-related products from Thailand to Indonesia rapidly grew. This evidence is coincident with Lemma 3.

Finally, did the AFTA give an incentive to the MNE to take export platform strategy in Thailand for Indonesia's automobile market? A series of deregulation measures in the past few years has led to conspicuous changes in the business environment for the ASEAN automobile industry. The Asian Industrial Cooperative (AICO) scheme was implemented in 1996, minimizing tariff dissimilarities and offering qualified participating companies the immediate benefit of the CEPT (Common Effective Preferential Tariff) tariff rates in the range of 0 to 5 percent. In 1998, the AFTA was introduced, Indonesia lowered tariff rates on CBU (Complete Built-Up) and CKD (Complete Knock-Down) parts produced in ASEAN to 5 percent in January 2002, followed by Thailand and the Philippines where the tariff rates were lowered in January 2004. Table 6 shows the tariffs on auto-related products in Indonesia before and after AFTA introduced. We recognize the tariff rate of auto-related products in Indonesia became smaller due to the AFTA. The timing of the tariff reduction among ASEAN countries is coincident with the change of trade flow from Thailand to Indonesia demonstrated in Table 4. As the tariff rate of Indonesia became smaller and the service link costs from Thailand to Indonesia

became smaller, the export platform strategy was chosen and the exports of auto-related products from Thailand to Indonesia rapidly grew. This result is coincident with Lemma 4.

4. Concluding Remarks

We investigate the impact of AFTA on the changes in MNE's production strategies. Our theoretical section showed the conditions that the one production site is more profitable than two or more production sites. We derived the conditions that the FTA gives an incentive to the MNE to take export platform strategy. The reduction of transportation costs among ASEAN countries due to the formation of AFTA, the market size, and the marginal cost difference play an important role in determining the MNE's strategy. Our theoretical model predicts that the AFTA makes the MNE easy to take export platform strategy by making use of the marginal cost differences between member countries, the market size effect and the service link cost effect.

Using the actual data of automobile industry in Thailand and Indonesia, we show that the export platform strategy among the ASEAN region has substantially proceeded in the 2000s. Many auto-related MNEs have chosen Thailand as the export platform according to the deepening of AFTA. Substantial reduction of tariffs and transportation costs due to AFTA appear to make the export platform strategy in Thailand profitable. Then, this change in the MNEs production strategies has eventually induced the changes in trade structure.

Appendix A

If the MNE makes export platform strategy in country B and export good to country A, the combined profit of the MNE is:

$$\pi^{G1'} = \frac{1}{9}(\alpha_A - 2c_B + c_A - 2t_A)^2 - S + \frac{1}{9}(\alpha_B - c_B)^2 - K_B + \frac{1}{9}(\alpha_J - c_J)^2 \quad (3')$$

Under the assumption of $t_A = t_B$, the export platform plant is likely to be located if $\pi^{G1} < \pi^{G1'}$ or when

$$(K_A - K_B) + 4(c_B^2 - c_A^2) + 4(\alpha_A + \alpha_B)(c_A - c_B) + 12(c_B - c_A) + 4(\alpha_B - \alpha_A) \geq 0.$$

This inequality holds when the fixed cost in country A (K_A) is much larger than that in country B (K_B), and the market size of country A (α_A) is much larger than that of country B (α_B).

Appendix B

From the explicit functions of \tilde{H} , \hat{H} and \bar{H} , it can be shown for positive functions that $\tilde{H} = \hat{H} + \bar{H}$.

Then, comparing \hat{H} and \bar{H} with the assumptions, $\alpha_J > \alpha_B > \alpha_A$ and $c_J > c_B > c_A$, we have

$\hat{H} > \bar{H}$ when t_J is not different from t_B very much. Finally, we have the relationship among three: $\tilde{H} > \hat{H} > \bar{H}$

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Figure 1: ASEAN Total Extra-Regional Trade (Million US\$)



Source: Association of Southeast Asian Nations, <http://www.aseansec.org/12025.htm>

Notes: Total extra-export indicates the nominal value of ASEAN exports to the outside of non-ASEAN member countries.

Total extra-Import indicates the nominal value (million US\$) ASEAN imports from the non-ASEAN member countries.

Figures in the Graph cover Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand (1993-1998),

Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand (1999), and Brunei Darussalam,

Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand (2000-2003).

Figure 2: ASEAN Intra-Regional Trade Share (%)



Source: Data processed from Association of Southeast Asian Nations, <http://www.aseansec.org/12025.htm>

Notes: Export indicates the share of intra-ASEAN exports to the total exports to the world of ASEAN members. Import indicates the share of intra-ASEAN imports to the total exports to the world of ASEAN members.

Figures in the Graph cover Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand (1993-1998), Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand (1999), and Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand (2000-2003).

Figure 3: Auto Export Shares of Indonesia and Thailand (%)



Source: Data processed from Association of Southeast Asian Nations, <http://www.aseansec.org/12025.htm>

Notes: Auto export share is calculated as the intra-ASEAN export to total intra-ASEAN trade (exports and imports) in each country. Auto is included in the Chapter 87 (Cars, Trucks, and Autos).

Figures in the Graph cover Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand (1993-1998), Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand (1999), and Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand (2000-2003).

Figure 4: Export vs FDI

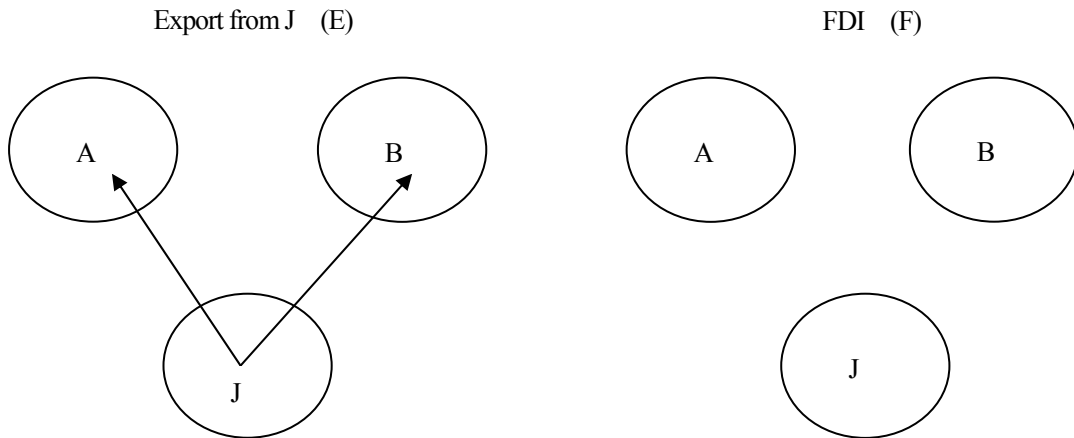


Figure 5: Impact of FTA – Export Platform

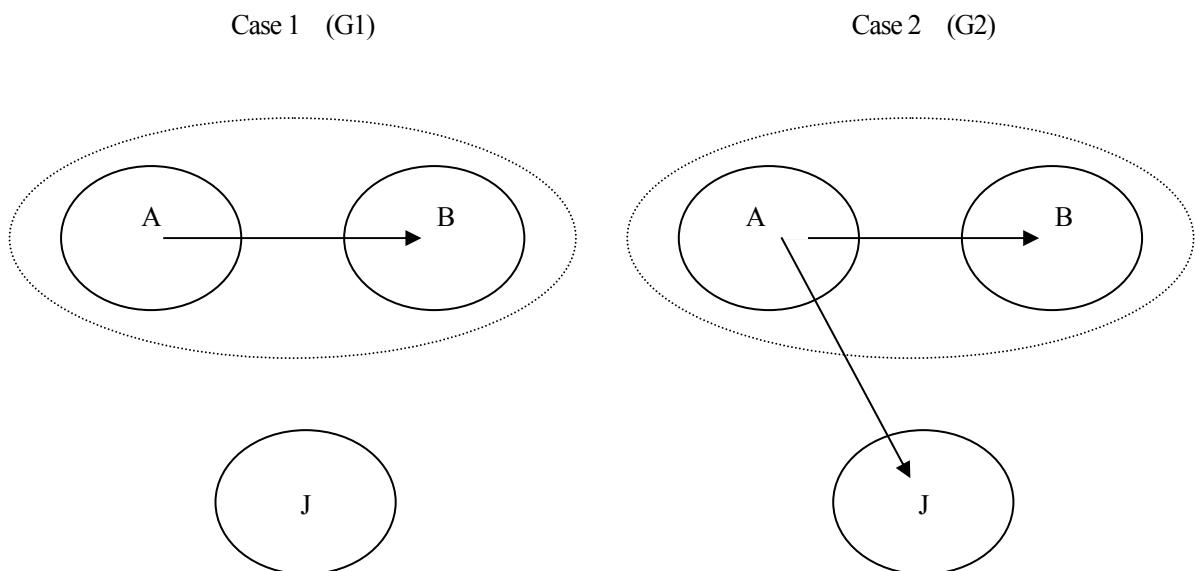


Figure 6: Choice of Entry Mode

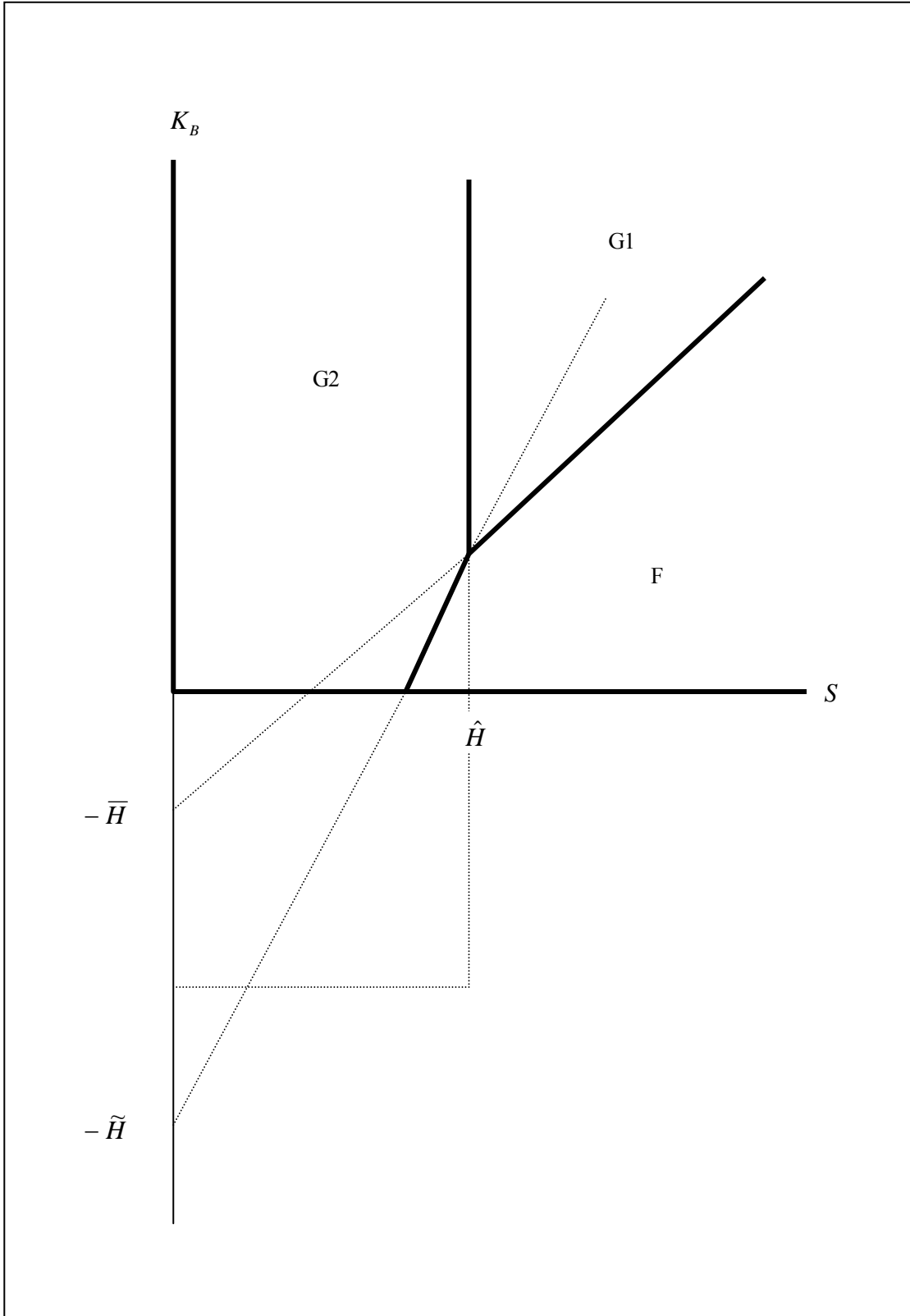


Table 1: Characteristics of Main Automobile Exporters in Thailand, 1997 (1996) and 2001 (2000), values in US\$ millions, age in years

Major Activity, Company	Exports		Sales		Sales/ Employee		Assets/ Employee		FixAssets/ Employee		Exports/ Sales, %		Foreign Owner, %		Profits/ Sales, %		Equity/ Assets, %		Age
	1997	2001	1997	2001	1997	2001	1997	2001	1997	2001	1997	2001	1997	2001	1997	2001	1997	2001	2001
AUTOMOBILES, TRUCKS & PARTS:																			
MMC Sittipol (Mitsubishi)	505	717	933	1,101	0.384	0.353	0.358	0.177	0.105	0.041	54	65	48	100	-49.28	-1	-44	2	40
General Motors (Thailand)	0	656	12	600	0.059	0.429	0.747	0.352	0.454	0.268	0	109	100	100	-380	-7	17	45	9
AutoAlliance (Thailand)	0	484	1	712	-	0.378	-	0.140	-	0.069	1	68	100	100	-13368	7	-16	-1	6
Toyota Motor Thailand	84	309	1,539	1,517	0.380	0.376	0.323	0.181	0.098	0.066	5	20	70	86	-2.86	0.32	16	13	39
Honda Automobile (Thailand)	36	141	552	781	0.375	0.320	0.192	0.101	0.118	0.039	7	18	62	91	-5.91	2.22	22	51	9
Isuzu Motor Thailand	30	86	215	297	0.107	0.704	0.089	0.536	0.071	0.293	14	29	100	99	-5.79	2.37	19	26	35
AUTOMOBILE PARTS:																			
Thai Storage Battery PLC	0	20	44	34	0.111	0.053	0.163	0.059	0.058	0.034	0	57	0	0	-26.58	6.69	16	60	15
Takata-Toa	0	16	15	41	0.119	0.080	0.104	0.042	0.053	-	0	40	49	63	-3.71	12.73	38	49	7
Thai Stanley PLC	0	13	68	87	0.058	0.062	0.065	0.045	0.042	0.026	0	15	30	30	-9.27	8.74	56	67	21
Ford Operations (Thailand)	-	7	-	32	-	0.642	-	0.256	-	-	-	21	-	100	-	2.81	-	10	4
Keihin Auto Parts (Thailand)	-	5	-	29	-	0.464	-	0.138	-	0.042	-	15	-	60	-	1.32	-	27	7
Summit Showa Manufacturing	0	4	11	22	0.056	0.110	-	0.072	-	0.034	0	20	49	49	-	9.49	-	20	7
Thai Automotive Industry	0	3	64	82	0.318	0.209	-	0.081	-	-	0	3	40	40	-	3.55	-	33	14
Koyo Steering (Thailand)	0	2	6	40	0.091	0.145	-	0.179	-	-	0	6	-	99	-	6.92	-	50	6
SiamDK Technology	0	2	13	16	0.130	0.077	0.177	0.053	0.066	0.023	0	10	49	49	44.60	12.85	58	87	7

Notes: - = not available; when data were not available for 1997 or 2001, data for 1996 and 2000, respectively, were used as proxies.

Sources: Umemoto and Ramstetter (2004)

Table 2: Employment of Japanese MNCs in Transportation Machinery in ASEAN (thousands)

Country	Japanese MNCs					
	1996	1997	1998	1999	2000	2001
Cambodia	0.0	0.0	0.0	0.0	0.0	0.0
Indonesia	38.1	39.7	31.3	34.8	37.1	34.1
Laos	0.1	0.1	0.1	0.1	0.1	0.1
Malaysia	19.8	19.9	17.9	18.1	19.3	16.7
Myanmar	0.0	0.0	0.0	0.1	0.1	0.0
Philippines	22.4	23.7	23.6	29.2	24.7	10.5
Singapore	3.3	3.4	3.5	4.8	3.6	0.0
Thailand	57.6	52.9	50.3	49.3	64.9	49.0
Vietnam	4.2	4.4	3.0	3.8	4.6	4.3

Sources: Japan, Ministry of Economy, Trade, and Industry (1998, various years);

Table 3: Thailand's Vehicle Exports to World and Indonesia and Revealed Comparative Advantage Indices (RCIs) by Commodity Category

commodity category	1995	1996	1997	1998	1999	2000	2001
Exports to World (US\$ millions except for Total exports)							
Total exports (US\$ billions)	56.44	55.68	58.09	53.58	58.42	68.79	65.11
Vehicles, excl. rail & trams	658	746	1,086	1,312	1,981	2,502	2,767
Automobiles	16	11	33	71	125	219	674
Trucks under 5 tons	79	183	523	621	1,111	1,354	1,213
Motorcycles	149	166	152	113	132	114	99
Automobile & truck parts	140	124	164	234	344	508	501
Motorcycle parts	40	39	85	160	160	183	146
Share of Exports to Indonesia (%)							
Total exports	2.31	3.53	2.57	2.93	2.73	2.34	2.33
Vehicles, excl. rail & trams	0.22	0.25	0.16	0.06	0.02	0.07	0.08
Automobiles	0.00	0.00	5.24	1.80	0.10	0.02	0.03
Trucks under 5 tons	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motorcycles	0.00	0.00	0.00	0.00	0.00	0.62	4.21
Automobile & truck parts	0.82	2.25	2.13	0.63	0.24	1.13	0.87
Motorcycle parts	45.18	54.72	14.37	1.44	1.30	2.14	13.86
RCIs							
Vehicles, excluding rail & trams	0.13	0.14	0.19	0.24	0.33	0.38	0.42
Automobiles	0.01	0.00	0.01	0.02	0.04	0.06	0.18
Trucks under 5 tons	0.26	0.51	1.24	1.67	2.86	3.05	2.76
Motorcycles	1.82	1.89	1.69	1.24	1.35	0.96	0.86
Automobile & truck parts	0.11	0.09	0.12	0.17	0.23	0.30	0.31
Motorcycle parts	1.31	1.69	3.46	7.90	6.69	6.42	4.83

Sources: United Nations Statistics Division (various years).

Table 4: Thailand's Vehicle Exports to Indonesia by Commodity Category
(US\$ millions except for Total exports)

commodity category	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total exports (US\$ billions)	0.74	1.10	0.87	0.84	0.93	1.11	0.99	1.19	1.70	2.77
Vehicles, excl. rail & trams	9	14	19	10	7	42	62	142	316	624
Automobiles	0	0	1	1	0	0	1	9	135	386
Automobiles, 1000-3000 cc	0	0	1	1	0	0	1	9	123	363
Trucks	0	1	0	1	0	3	4	27	38	62
Trucks under 5 tons	0	0	0	0	0	0	0	19	19	62
Motorcycles	0	0	0	0	0	1	4	8	6	7
Automobile & truck parts	2	3	6	3	3	29	22	44	69	85
Motorcycle parts	7	8	10	4	3	7	30	51	65	81

Sources: United Nations Statistics Division (various years).

Table 5: Unit Price by Commodity Category
(US\$ per item for Automobiles & trucks; US\$ per kg for Parts)

commodity category	Thailand		Indonesia	
	1995	2003	1995	2003
Automobiles	124,587	8,908	220	17,003
Automobiles, 1500-3000 cc	241,472	12,651	318	17,013
Trucks	50,420	9,728	15,627	-
Automobile & truck parts	8.98	4.98	8.01	7.16
Motorcycle parts	8.23	12.79	11.64	9.44

Sources: United Nations Statistics Division (various years).

**Table 6: Indonesia's Tariff Rates for Vehicle Import
by Commodity Category (%)**

commodity category	before AFTA	after AFTA
Automobiles	25-80	5
Trucks	5-45	5
Motorcycles	25-60	5
Automobile & truck parts	15	5
Motorcycle parts	5-15	5

Sources: US-ASEAN Business Council Web Site
(<http://www.us-asean.org/aftatariffs.asp>)

Appendix Table 1: HS Section Definitions used in Tables

HS Sections	Definition
87	Vehicles, excluding rail & trams
87032~87039	Automobiles
870421+870431	Trucks under 5 tons
8711	Motorcycles
8706+8707+8708	Automobile & truck parts
87141	Motorcycle parts