Revised

How do the Asian Economies Compete with Japan in the US Market, China Exceptional? A Triangular Trade Approach*

October 2004

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* The earlier version of this paper was circulated under the title "How Does China Compete with Japan in the US Market?: A Triangular Approach." This research was conducted in part while Yushi Yoshida was a visiting research associate at the University of California, Santa Cruz and Hiro Ito was at UCSC. We would like to thank Eiji Fujii, participants of APEC Study Center Conference at City University of Hong Kong, Japan Economic Association Conference at Meiji Gakuin University, "WTO, China and the Asian Economies II" Conference at Renmin University of China, and 6th ETSG Conference at University of Nottingham.
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[Abstract]

Political conflicts among trading partners have changed their forms with ever-increasing flows of foreign direct investment. A decrease in the exports of Japan might merely be a reflection of a global production shift by Japanese multinational corporations. We investigate the effect of Japanese trade on the exports of other countries to the United States in the 1990s. In our sample we include eight Asian countries besides the US and Japan. With the trade data disaggregated at the HS 4-digit level, we regress the exports of an Asian country to the US on the Japanese exports to the US and the third-country, and the Japanese FDI to a third-country in a panel data specification. Among eight countries investigated, we find the evidence that Chinese and Japanese exports are substitutes in the US market while the exports of China to the US are partly promoted by Japanese FDI to China. The estimation result confirms a view that China competes vigorously with Japan in the US market while Japanese multinationals are adjusting their production bases to China in a process of reforming a new global production network.

Key Words: China, Foreign Direct Investment, Japan, Trade, Triangular Trade Approach.
JEL Classification: F14, F23

1. Introduction

In the last two decades, international trade with China has expanded most rapidly while the Chinese economy has experienced an unprecedented high growth. Between 1992 and 2000, Chinese exports have almost tripled from $84.9 billion to $249 billion. During the same period, Chinese imports have also grown from $80.6 billion to $225 billion. With the accession to the WTO in 2001, China's trade is expected to experience an even higher growth in the years to come.

China's significant presence in the world trade, however, has also given a rise to new trade disputes with trading partners. China is not only condemned for its sluggish response to foreign partners' requests to open up its domestic markets, but also for its pervasive violations in intellectual property rights such as computer software licenses. A recent active debate between Alan Greenspan, Chairman of the Federal Reserve Board, and the US Congress about the restrictions on textile imports from China also exemplifies political concerns over a loss of manufacturing jobs in US industries competing directly with Chinese manufacturers.[1] A list of other manufacturing products under debates between these two countries includes bedroom furniture, television sets, handbags, and handcarts.

To many, these trade issues between the US and China are reminiscent of the trade conflicts between the US and Japan that lasted for decades until recently. While both academic and business circles intensely debated on foreign access to Japanese domestic markets, Japanese exporters in textile, automobile, and semiconductors among many others received fierce allegations of unfair trade practices that were claimed to have hurt US industries.[2] The intensity of the bilateral trade disputes waned in the last decade, partly due to the decade-long recession in Japan, and more importantly, to the emergence of China as the world exporter[3].

Generally speaking, political conflicts between trading countries could change their forms and players as the tide in foreign direct investment changes its direction. For example, a decrease in the exports of a country might merely be a reflection of global production shift by the country's multinational corporations. Although we

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[1] See *New York Times*' articles, "US moves to limit textile imports from China," Nov 19, 2003, and "Greenspan warns Congress not to create trade barriers," Mar 12, 2004.

[2] For example, papers in Krugman (1991) discuss the degree of openness of Japanese domestic markets. Lawrence (1991) argues "keiretsu" is one of the sources of trade barriers in Japan, whereas Saxonhouse (1993) takes a view that Japan is no different from other industrial countries in terms of market access for foreign competitors.

[3] For example, between 1999 and 2003, there is only one trade dispute case against Japan brought to the WTO dispute settlement mechanism.

witness the "threat" of Japanese exports waning and US-Japan trade conflicts diminishing, that change may be because of strategic moves by Japanese multinational corporations to shift their production bases from Japan to other countries. In other words, some part of the surge in the exports from China to the US may have been the Japanese products by the same Japanese companies or their affiliates in China with the labels changed from 'made in Japan' to 'made in China.' The Ministry of Finance reported that the number of new outflow FDI cases by Japanese firms to China exceeded those to the US in 1994, 1995 and 2002.

For China, unquestionably, the US and Japan are the most important trading partners besides Hong Kong. Trading with these major economic powers is increasing its importance for China especially for the recent years. Before China started decentralizing its economy, Hong Kong played the most important role as a middleman between China and the rest of the world; Table 1 shows that in 1992, Hong Kong was China's biggest trading partner in both exports and imports in terms of traded values.[4] For the recent years, with its economic liberalization efforts, China started trading more directly with the rest of the world while Hong Kong's role as a middleman dwindled. Nonetheless, if we assume the indirect trade flows via Hong Kong to China are proportional to the direct trade flows to China, we could say the US and Japan have been the two largest trading partners in both exports and imports during the last decade. Between 1992 and 2000, China's imports from Japan tripled from $13.7 billion to $41.5 billion while imports from the US more than doubled from $8.9 billion to $22.4 billion (see Table 1). During the same period, while China's exports to Japan dramatically increased by almost four-folds from $11.7 billion to $41.6 billion , its exports to the US even surpassed the growth of exports to Japan from $8.6 billion to $52.1 billion.

In this study we investigate the dynamics of the trilateral trade relationship among China, Japan and the US. More specifically in what we call 'triangular trade approach,' we explore how Japanese trade and foreign direct investment affect the exports of China to the US market. Moreover, we also investigate the same trilateral trade relationship for other seven Asian countries among an Asian country, Japan and the US[5]. With comparison to other Asian countries, we can check a possible peculiarity of Chinese trade for robustness. For the reminder of the paper, we refer a country other than the US and Japan as a "third-country" for convenience.

With the trade data disaggregated at the HS 4-digit level, we regress the exports

[4] See Fung and Iizaka (1998) for a detailed description on Hong Kong's role as a re-exporter of US and Japanese exports to China.

[5] These countries are Hong Kong, Indonesia, Korea, Malaysia, Philippine, Singapore, and Thailand.

of a third-country to the US on the Japanese exports to the US as well as those to the third-country in a panel data specification while controlling for Japanese FDI and other macro economic variables. With this triangular trade approach, it can be examined whether Japanese exports to the U.S. are in a substitute relationship with those of a third-country, while this relationship possibly signifying Japanese multinationals' shift of their production bases in the Asian countries.

One contribution of our paper in empirical international trade literature is that we attempt to estimate bilateral trade in a three-country framework whereas most of the previous empirical works on international trade considers bilateral trade in a two-country framework. The empirical studies on bilateral trades using gravity models ignore a possibly important source of trade determinants, that is, presence of a third country.

Our main empirical results are as follows. First, we find that Japanese exports to China promote Chinese exports to the US. However, after controlling for Japan's FDI to China, the trade enhancing effect of Japanese exports to China disappears, which indicates that Japanese exports to China promote Chinese exports to US only because Japanese firms have shifted their production bases to China. Moreover, we also find that Japanese FDI to other countries are not promoting exports of those countries to US. Second, after controlling for the US market size for each commodity, we confirm that the exports of many countries are in competitive relationship with Japanese exports. However, the absolute magnitude of the coefficients remained much higher for China. Third, our results indicate that the use of macroeconomic variables do not help explaining fluctuations of disaggregated trade, probably due to the lack of finer variation compared to disaggregated trade variables.

The rest of the paper is organized as follows. Section2 reviews previous empirical research investigating the link among the Asian countries and Japan. Section 3 reviews the related literature and presents theoretical backgrounds for our triangular trade approach. In section 4, we describe our data set. Section 5 discusses our preliminary estimation results for triangular trade framework. The preliminary investigation with macroeconomic variables suggests that we need to use more disaggregated data comparable to trade data. Section 6 discusses the estimation results with foreign direct investment at the industry level and US total imports at the commodity level. Section 7 presents conclusions.

2. The economic linkage among the Asian economies: the trade-FDI nexus

Since they started discussing the recipe of the "Asian miracle" in the early

1990s, many researchers have focused on the strength of the interdependencies of trade and investment, often dubbed as the trade-FDI nexus, in the Asian-Pacific region. The relationship between trade and FDI in the region is often claimed to have entailed two-way causality. The Asian economies implementing policies to create friendly environment for an inward investment were able to transform their industrial structures toward a more export-oriented economy. Then, export expansion has positive feedback effects that facilitate further liberalization of goods and financial trade. Finally, financial liberalization will enable countries to receive more FDI inflows. Petri (1995) finds empirical evidence in both the macro and the firm level that supports the relationship between trade and FDI is two-way causality.

Between 1985 and 1997, exports from East Asia marked a steady almost five-fold increase (before declining in 1998 due to the Asian financial crisis), raising the share of exports in world total export from 9 percent in 1980-85 to 18 percent 1997 (see Kawai, 2004). Simultaneously, FDI inflows are expanding in East Asia hand-in-hand with trade. The share of FDI inflows to East Asia in world total increased from eight percent in 1985 to 22 percent in the mid-1990s, thought it declined again to nine percent in 2002.

While enlarging its exporting capacity, foreign direct investments in the Asian region also changed the trade structure of the region. As Fukao, et al. (2003) documents, we have observed a sharp rise in intra-industry trade following vertical FDIs by multinational corporations of the US and Japan. These multinationals relocated segments of production rather than entire industries, depending on each country's comparative advantage (Hill and Athukorala, 1998). Hence, the trade expansion in East Asia inevitably involved a rise in intra-industry trade. Athukorala (2003) documents that expansion in fragmented trade is the most evident in the East Asian region, more than in Europe or North America.

For the Asian economies, the US and Japan are the most important trading partners. Table 2 presents the shares of Japan and the US in the trade of the Asian countries for the period between 1990 and 2000. We can see that US markets are important for Asian exports while Japan is also important source country of imports to these countries. The share of the US as the export destination ranges from 14 percent (Indonesia) to 30 percent (the Philippines), while that of Japan as the import source country from 16percent (Indonesia) to 25percent (Thailand). With these observations, we can depict a stereotype that Japan exports to Asia while the latter exports to the US.

Japan's role as an FDI provider in the region is also increasing its importance. Table 3 reports both the value and the number of Japanese FDI cases in East Asia for the

period between 1989 and 2002. We can see that Japanese FDI toward China is increasing enormously. The total value of direct investment flows to China, starting from a level slightly above the Philippines in 1989, hits its peak in 1995, exceeding far beyond twofold of those of other Asian countries. The figures in terms of FDI cases are even more striking; 27 percent of Japanese total FDI is directed to China in 1995. China is the major recipient of Japanese FDI in the Asian region during the last decade.

Given these trends in trade and FDI in the Asian region, many researchers have investigated the characteristics of the trade-FDI nexus in the region. Petri (1992) finds Japanese firms' FDI to Thailand enhances both trade between the two countries and trade between these two countries and the rest of the world, while Lee (1994) and Lin (1996) present evidence that the FDI from the home countries, Korea and Taiwan, respectively, promote only the bilateral trade volumes. Between Japan's exports and FDI to East Asia, Kawai and Urata (1998) also find a complementary relationship for food, textiles, chemical products, general machinery, and electric machinery. However, they also find that exports and FDI in wood and pulp exhibit a strong negative relationship. Dobson and Chia (1997), investigating intra-firm trade in East Asia, conclude that intra-firm trade tends to diminish as the host country's economy matures, because the direction of FDI shifts to more sophisticated, or more end-user type of products such as consumer durables as the host country develops and its domestic purchasing power rises.

One important note we must make here is that most of the empirical studies on the trade-FDI nexus are focusing on the bilateral trade and bilateral FDI flows and also tend to base their empirical models on the bilateral gravity model. Our paper makes one important contribution to the literature, that is, we look at the dynamics of the trade-FDI nexus among the US, Japan, and an Asian third country in a three country frame work.

3. Triangular Trade Approach and Related Literature

3-1. FDI and Trade in a Two-Country Framework: Mode of Entry

When considering to supply products in a foreign market, a multinational firm can choose whether it exports its products directly from its home country, or produces in the foreign market through its foreign subsidiaries. In the trade empirical literature, many researchers have attempted to answer the question of whether foreign production

(i.e., FDI) and exports are substitutes or complements.[6] Yamawaki (1991), Clausing (2000), and Head and Ries (2001) find empirical evidence that supports a complimentary relationship between foreign production and exports. Belderbos and Sleuwaegen (1998) find that Japanese FDI and exports are substitutes only when the intention of FDI is to avoid antidumping tariffs in Europe. Blonigen (2001), using product-level data, also finds evidence for a substitute relationship between FDI and exports when FDI is horizontal. However, these studies only focus on outward FDI flows and exports, both of which move in the same direction from a home country.

Our framework is more in line with Zhang and Felmingham (2001) who investigate the causal relationship between inward FDI to China and exports from China. Using data from both national and provincial levels, they confirm that the causal relationship is bidirectional. Especially for the causality from inward FDI flows to exports, they argue that foreign investors who have superior knowledge on the world market conditions tend to be successful in exporting products from the host country.

3-2. FDI and Trade in a Three-Country Framework: Intra-firm Trade

In this paper we extend the investigation on the FDI-trade relationship to a three-country framework. Given the recent trends in international trade which involve multilateral intra-firm trade associated with an expansion of FDI at global scale, we think that investigating the dynamics of trade in the conventional bilateral framework is not sufficient. In order to examine the dynamics of trade between, say, China and the US, we cannot ignore the effect of other trade flows between China and other countries than the US, as well as FDI flows from other countries into China. In what follows, we attempt to disentangle and generalize the complex trilateral trade and FDI relationship in the simplest manner.

A. Vertical Foreign Direct Investment

Let us consider the trade-FDI dynamics of one commodity among three countries: the US, Japan, and a third country which we call China for now. For the sake of brevity, we assume that the US provides a market for the commodity, and Japan has a multinational firm that produces the commodity. The multinational firm may involve two firms for the production of the commodity: an upstream firm, U, and a downstream firm, D, while the former supplies intermediate goods to the latter which

[6] More recent development in the literature can be also found in Helpman, et al. (2004) who use the ratio of export sales and foreign sales and find that the heterogeneity of firms in the industry is also an important determinant for the choice between exporting and FDI-based foreign production.

also sells the final product to the US market. If both downstream and upstream firms are established in Japan, the products will be exported directly from Japan to the US. The trade dynamics of this first base case are shown in Figure 1.a. Arrows in the figure represent flows of goods. In this case international trade flows are purely bilateral between the US and Japan, and involve no foreign production or FDI by the Japanese multinational.

Now, we consider a next case where the Japanese multinational makes vertical FDI[7]. The Japanese multinational firm fragments its production by establishing a downstream firm, D', in China through vertical FDI, and export products from there. This case is depicted in Figure 1.b. We assume for simplicity that the domestic downstream plant, D, is shut down, and that all of the exports come from the Japanese-affiliated plant, D', in China. This case leads to three changes in the trade flows among the three countries. First, Japanese exports to the US stop because of the shut-down of the domestic plant D. Second, Japanese exports to China, instead, brings about intra-firm trade between the parent firm U and its foreign affiliate D'. Also, Chinese exports to the US emerge because the Japanese downstream plant in China starts shipping products.

In reality, a trilateral relationship is not as clear-cut as is shown above. However, we can come up with a general prediction that if Japanese firms are shifting their production to China through vertical FDI to China, Japanese exports to the US would decrease while both Japanese exports to China and Chinese exports to the US would increase. With vertical foreign direct investment, even if Japanese exports of a certain product are observed to be decreasing on the surface, Japanese exporters are still exporting to the US, but by bypassing through China.

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7 We can also consider the case with a multinational firm shifting its upstream firm to a local market, however, this case does not alter the existing trade flow.

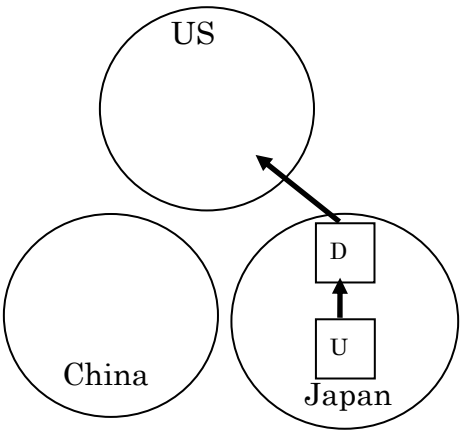

Figure 1.a : prior to FDI

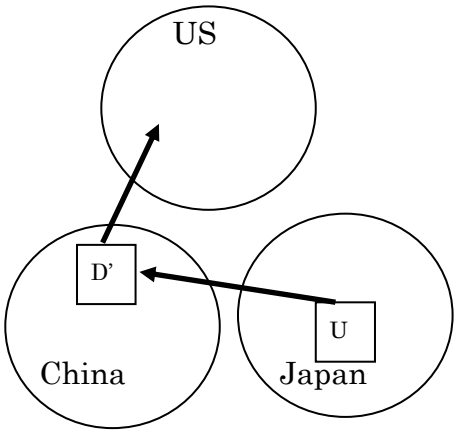

Figure 1.b: after vertical FDI for down stream firm

B. Horizontal Foreign Direct Investment

Next, we turn to a case where the Japanese multinational makes horizontal FDI.[8] Figure 2.a depicts another base case in which the Japanese multinational exports its products directly to the US. However, unlike the case in Figure 1.a, we assume the multinational does not possess a vertical chain of production. In other words, the firm's production is vertically internalized. Since there is no distinction between upstream and downstream firms, we just denote the multinational firm as M. Figure 2.b shows the case where horizontal FDI occurs, making the product exported from China instead of Japan. In practice, as in Figure 1.b, the trade flows based on horizontal FDI would entail a decrease in Japanese direct exports to the US and an increase in Chinese exports to the US. However, contrary to the previous vertical FDI case, the shift in the trade flows in this case does not yield any intra-firm trade between Japan and China.

C. Spillover effect

So far we have only argued for a possible trade structure change caused by foreign direct investment by multinational firms. However, the presence of foreign affiliate firms might also create spillover effects on local exporters. A large amount of literature investigate whether inward direct investment may enhance the productivity of domestic firms in the host country. For example, Javorcik (2004) finds evidence for positive spillover effects of foreign affiliates to their local suppliers. Therefore, spillovers from Japanese affiliates to local firms can enhance the productivity of the

[8] For the analysis on the determinants of vertical and horizontal trade, refer to Aizenman and Marion (2001).

latter and eventually making local producers to be more competitive exporters in international market. With this spillover effect we expect to observe an increase in export of host country with an inflow of FDI.

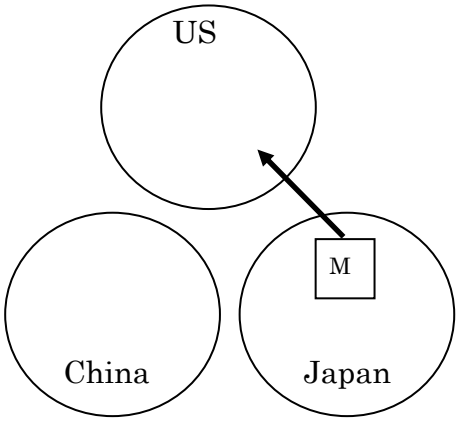

Figure 2.a: prior to FDI

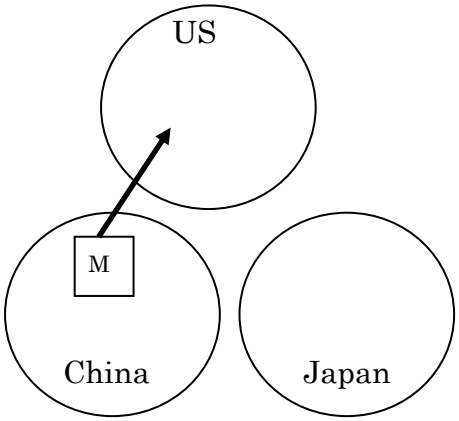

Figure 2.b: after horizontal FDI

3-3. Do Imports Promote Export?

Besides FDI flows, other factors can affect the trilateral trade relationship. Some studies find that imports of foreign products with higher quality force domestic competitors to become more efficient through international competition. MacDonald (1994) finds that the growth of import ratio raised productivity growth in US industries. In a more generalized sense, we can also ask whether competitive pressure increases the productivity of firms or the industry. Galdon-Sanchez and Schmitz (2002) find that competitive pressure in iron-ore markets led to an increase in US labor productivity.

There are, on the other hand, an overwhelming amount of findings that more efficient firms tend to export. Bernard and Jensen (1999) find that both the growth rates and the levels of success measures are higher for exporters in ex-ante. Combining these two premises and applying to our trilateral trade analysis, we can hypothesize that an increase in imports from a Japanese firm (JPN) to China may lead a Chinese domestic firm (CHN) to become more efficient and start exporting. This case is shown in Figure 3. Although the trade flows look alike to the case in Figure 1.b, unlike the previous case, this case does not involve any FDI flows.

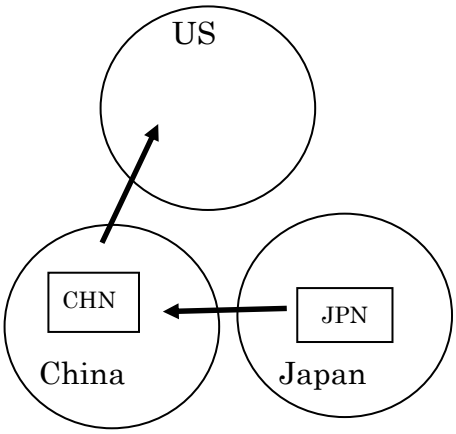

Figure 3: positive spillover effect from imports

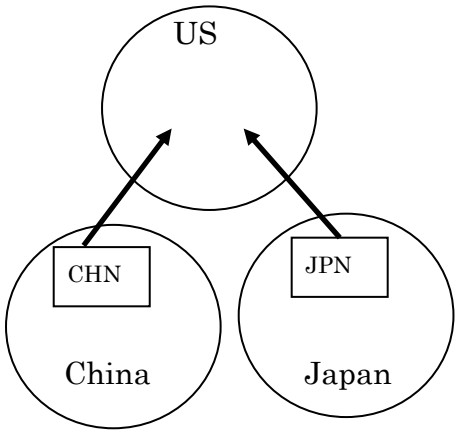

Figure 4: negative relation from competition

3-4. Competition or Compliments

Lastly, but not the least, we can think of a case where Japanese exports to the US and Chinese exports to the US are substitute for those products in direct competition, see Figure 4. This is highly plausible for an industry in which exports of two countries are similar in quality. In this case, the head-to-head competition between Japanese and Chinese firms should appear as a negative correlation between Japanese and Chinese exports to the US.

On the other hand, Japanese and Chinese firms could have a complementary relationship if both export intermediate products but different components to the US market where a firm in the US assembles final goods using these intermediate products. When we are dealing with data, we might observe positive correlation between Japanese and Chinese exports to the US. It is, however, unlikely to find products from two countries to be complement if we keep industry classification to be as disaggregate as HS 4-digit level. In empirical sections we use HS 4-digit level classification for trade data, therefore, we expect to find negative correlation between Japanese exports and Chinese exports to the US, given competition effect overwhelming compliment effect.

3-5. A Triangular Trade Approach

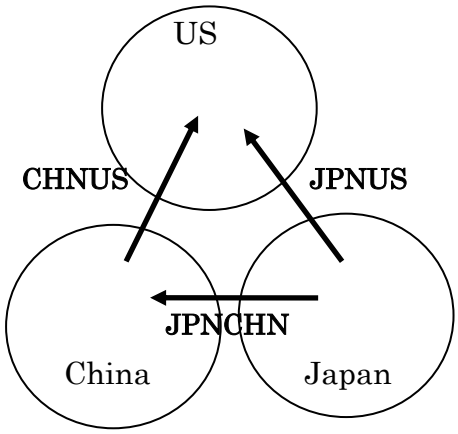

Figure 5: Triangular Trade

The above discussions have shown the complexity of the trade-FDI dynamics, however, it is also demonstrated that we only need to examine the relationship between three different flows of trade among the three countries. Figure 5 presents a generic export flow chart among the three countries. The Japanese exports to the US and those to China are denoted as JPNUS and JPNCHN, respectively, and the Chinese exports to the US is denoted as CHNUS.[9]

Table 4 summarizes all the scenarios we discussed and expected signs for the correlations between two of the three trade flows. Between JPNUS and CHNUS we would expect negative relation if products are in direct competition in the US market or FDI is horizontal or vertical. Between JPNCHN and CHNUS the expected relation is positive if there is spillover effect from Japanese export to Chinese firms or FDI is vertical. For a blank space, it indicates that there is no specific theoretical prediction for the sign of the correlation.

Classifying possible scenarios and expected signs for the correlations between two of the trade flows in the triangular trade relationship is helpful in the empirical analysis. The export flow from China or a third country to the US can be used as the dependent variable in a model in which we can include JPNCHN and JPNUS as explanatory variables. This is what we call the "triangular trade approach." Finally, we should note that relation between two trades captures two closely linked but distinct sources, i.e., trade and foreign direct investment. In the empirical analysis, we also include FDI variables to disentangle these effects in the triangular trade approach framework.

[9] For the sake of brevity, we continue to use China as the third country. However, in the empirical analysis section, we will test other East Asian countries as the third country.

Table 4: Expected Signs for the Correlation between Trade Flows

	JPNCHN and CHNUS	JPNUS and CHNUS
Vertical FDI	+	-
Horizontal FDI		-
Imports-Exports	+	
Competition		-

4. The Data

The export data used in this study are extracted at the HS 4-digit level from *International Trade by Commodity Statistics, Harmonized System Rev.1,* OECD. At this level of disaggregation, there are 1,367 commodity classifications. From this set of data, we select our sample in two steps. First, we omit the commodities which are either not traded between a pair of countries or missing in any of the years in our sample period of 1990 through 2000. We also restrict our sample to comprise the commodities for which a complete set of observations exists with a strictly positive amount of trade for the entire sample period. Second, we need three flows of exports for each "third country": Japanese exports to the third-country, Japanese exports to the US, and the third-country's exports to the US. Then, we restrict our data to only those commodities with a complete set of observations for *all three* kinds of exports. This selection process reduces the observations considerably, and also causes the number of observations (even for the same HS 4-digit classification codes) to vary among the third countries depending upon data availability. For example, there are 576 commodities for China while there are only 162 commodities for Indonesia[10].

Annual observations of exchange rate volatility are constructed from monthly exchange rates which are obtained from IMF's *International Financial Statistics*. Other macroeconomic variables, such as inflation rates, real GDP per capita, nominal GDP, and aggregate trade flows, are retrieved from *IFS* and *Direction of Trade*, IMF. We also include the trade intensity indices for each pair of trading countries using the method in Frankel and Rose (1997) and the data from *DOT* and *IFS*. More details on the data definitions are given in Appendix 1.

[10] The number of commodities for third countries are 576 for China, 572 for Korea, 487 for Hong Kong, 288 for Singapore, 310 for Thailand, 162 for Indonesia, 180 for the Philippines, and 218 for Malaysia.

5. Preliminary Empirical Results

In this section we investigate bilateral trade in the three country framework. Specifically, we analyze the effect of Japanese exports on the exports of a third country to the US. Slightly modified from Figure 5, from now on, we denote exports of a third-country to the US as THDUS, Japanese exports to a third-country as JPNTHD and Japanese exports to the US as JPNUS.

5-1. A General Estimation Model and Specification Test

First, we specify a general error component regression model for the panel dataset using the first-differenced trade flows among the three countries as shown in equation (1). We assume that the coefficients for the export variables are heterogeneous among the sample countries.

$$\Delta T_{i,j,t}^{THDUS} = \sum_{i=1}^{I} \alpha_i D^i \Delta T_{i,j,t}^{JPNTHD} + \sum_{i=1}^{I} \beta_i D^i \Delta T_{i,j,t}^{JPNUS} + \sum_{k=1}^{K} \phi_k Z_{i,t}^k + \lambda_{i,j} + \varepsilon_{i,j,t} \quad (1)$$
$$i = 1,...,I;\ \ j(i) = 1,...,J(i);\ \ t = 1,...,T$$

$\Delta T_{i,j,t}^{THDUS}$ is the first-differenced exports of a third-country to the US, while $\Delta T_{i,j,t}^{JPNTHD}$ and $\Delta T_{i,j,t}^{JPNUS}$ are the first-differenced Japanese exports to the third-country and to the US, respectively, for country *i* and commodity *j* at year *t*. The dummy variable D^i takes a value of unity for country *i* and zero otherwise, and is included to allow for heterogeneous coefficients for the export variables. $Z_{i,t}^k$ represents a *k*-th exogenous variable for country *i* at year *t*. $\lambda_{i,j}$ is the error component term for commodity *j* for country *i* while $\varepsilon_{i,j,t}$ is the disturbance term. We should note that the number of commodities, *J(i)*, varies for each country *i* and that we suppress (*i*) for the subscript *j* in the notation.

For the specification test on the random effects, many researcher use Hausman (1978) which employs both GLS and Within estimators. Hausman and Taylor (1981)

show that alternative test statistics incorporating the Between estimators are also numerically identical. However, these tests are no longer valid if the disturbances are heteroskedastic and/or serially correlated. Arellano (1993) suggests an alternative Wald test which is robust to heteroskedasticity and autocorrelation of the disturbances. In this study, we use this robust test statistic to select our model specification and choose between random effect and fixed effect models.[11] If the null hypothesis that the conditional expectation of the unobserved individual effects is zero is rejected, we will adopt the fixed effect model in the following analysis. If the LM heteroskedasticity test or Bhargava-DW statistics from Within estimation indicate that the disturbances possess heteroskedasticity or serial autocorrelation, we use the White heterosckedasticity-consistent standard deviations. If the null can not be rejected, we will adopt the random effect model specification.

5-2. Preliminary Results with only Export Variables

First, as a preliminary analysis, we start with a panel data estimation, using only the export variables as shown in equation (2). When we calculate the aforementioned robust Arellano statistic, it is found to be 75.2, with which we can reject the null hypothesis at the one percent significance level. Therefore, we use the fixed effect specification for the regression model. Since test statistics also indicate that the model specification entails heteroskedasticity and autocorrelation in the disturbances, we use the White standard deviations.

$$\Delta T_{i,j,t}^{THDUS} = \sum_{i=1}^{8} \alpha_i D^i \Delta T_{i,j,t}^{JPNTHD} + \sum_{i=1}^{8} \beta_i D^i \Delta T_{i,j,t}^{JPNUS} + \lambda_{i,j} + \varepsilon_{i,j,t} \qquad (2)$$
$$i = 1,...,8;\ j(i) = 1,...,J(i);\ \ t = 1,...,10$$

Table 5 reports the estimation results. The estimated coefficients for JPNTHD, Japanese exports to a third-country, are found to be always positive. We obtained statistically significant coefficients for China, Korea and Malaysia. Notably, the magnitude of the coefficients is often higher for some countries than others. Especially for Korea, Singapore, and Malaysia, the estimated coefficients for JPNTHD are 0.30, 0.32, and 0.73, respectively, more than tenfold of the coefficients for Hong

[11] For the summary of Hausman's specification test, see Baltagi (2001). Also, see Ahn and Low (1996) and Baltagi et al. (2003) for recent developments of the specification tests.

Kong, Thailand, and Indonesia.

From this preliminary analysis, we can interpret that export promotion effect of Japanese exports in the Asian economies is pervasive although we find only weak evidence for some countries. In section 3 we discussed a possibility for the import channel of technology transfer from exporting country, in this case Japan, to importing countries. This result is not surprising for Korea when we look at new global corporations emerging from Korea are in many cases under same industry of Japanese multinationals, e.g., Samsung vs. Sony and Hyundai vs. Toyota. At this stage, however, we can not exclude a possibility of FDI effect as also discussed in section 3.

The expected sign for the coefficient of JPNUS (Japanese exports to the US) can be negative when the exports from Japan and those from a third-country are competing head-to-head. The coefficient can also be negative if a large portion of the change in a third-country's exports to the US involves products of Japanese affiliated firms in the third country. That is, if Japanese companies are shifting their production bases from Japan to their subsidiaries in the third-country, that will cause Japanese exports to reduce and the third country's exports to the US to increase. It can be positive, however, when there are common factors, such as high US economic growth, causing the world exports to increase.

Interestingly, the estimated coefficient of JPNUS is significantly negative only for China (–0.05). We can interpret this result as evidence for two alternative hypotheses that Japanese multinational corporations are shifting their production bases to China, and that direct exports from companies in Japan to the US markets are being replaced by the exports from China. We can not, however, distinguish these two hypotheses at this stage. Although the other coefficients are insignificant, the coefficient for Korea is significantly positive (0.22) at the one percent significant level. The coefficient means that a ten million dollar increase in the Japanese exports to the US leads to a two million dollar increase in Korean exports to US markets.

Given a wide variety of the estimated coefficients found in a panel framework, we can confirm that the impact of Japanese trade on the exports from a third-country to the US differs among the third countries, and, therefore, that we must allow for heterogeneous coefficients for our model specification as in equation (2).

5-3. Country Characteristics as Explanatory Variables

As is often found in the gravity model literature, we include macroeconomic variables in addition to the JPNTHD and JPNUS variables. They are inflation rates, exchange rate volatility, real GDP per capita, nominal GDP, and aggregate trade flows.

The list of the macroeconomic variables and their definitions are provided in Appendix 1. After dropping some of the macroeconomic variables to avoid multicollinearity, we now have 10 macro variables in the matrix $Z_{i,t}$ in equation (1).[12]

The estimation results are shown in Table 6. Unlike past findings in the literature, most of the macroeconomic variables turn out to be insignificant, and the estimated coefficients for JPNTHD and JPNUS do not change considerably compared to the previous estimates, suggesting that inclusion of the macroeconomic variables does not improve the estimation. This is also observed from a little improvement in the adjusted R-squared. We suspect that the insignificance of the macroeconomic variables in this estimation is because some of the macroeconomic variables take a small number of different values, while export-related data can vary depending on the third country (*i*) and the commodity (*j*). For example, there are only 10 different values for the nominal income of the US (NY_US) in a sample of 27,930 observations.[13] As such, we need to employ some other data that entail more variation.

When estimating equation (2), we did not obtain negative coefficients for JPNUS, which would have been consistent with the theoretical prediction of head-to-head competition or a production shift. We then presumed that underlying factors such as US market growth might be causing the two variables, THDUS and JPNUS, to increase simultaneously. Inclusion of US nominal income, however, does not seem to mitigate this problem, either. Obviously, US nominal income enters as an appropriate explanatory variable for the aggregate imports to the US, but it is not fine enough to capture the difference among the commodities when imports are disaggregated at the HS 4-digit level. Therefore, we also need to construct a variable which more accurately captures the market size of each commodity in the US and which involves more variation.

6. The Empirical Results with More Disaggregated Explanatory Variables

In this section, instead of the macroeconomic variables, we include other control variables which are more disaggregated than the macroeconomic variables. We include US total imports disaggregated at the HS 4-digit level to control for changes in the US demand for each commodity. Also, we include Japanese FDI at the HS

[12] These variables are EXVOL_US, INF_THD, INF_US, NY_THD, NY_US, NY_JPN, W_IMP_THD, W_IMP_JPN, W_EXP_THD, and W_EXP_US.

[13] The explanatory power of macroeconomic variables in past bilateral trade studies hinges on the use of aggregated trade data.

2-digit level on each commodity to capture an effect of a production shift by Japanese multinational corporations.

6-1. Data Construction

As the income level of a country can be an appropriate explanatory variable in a conventional bilateral trade model with aggregate data, we expect income allocated for a particular commodity to be an explanatory variable for our model with disaggregated trade data. From this perspective, we choose an actual expenditure allocated for each imported commodity, i.e., total import for each HS 4-digit commodity, as a proxy variable, hoping that this variable will circumvent the simultaneity problem for the JPNUS variable. Using the same data set from *International Trade by Commodity Statistics, Harmonized System Rev.1*, OECD, we construct a variable for the US total import from the world for each commodity category disaggregated at the HS 4-digit level which is expected to represent each commodity market's size, and we call this variable USMAR.[14] Unlike the macroeconomic variables, this variable takes as many different values as the dependent variable for each individual country.

Because FDI involves vertical trade between parent multinationals and their subsidiaries overseas, Japanese exports to a third-country should expand when Japanese FDI to the third-country increases (see Figure1 (b)). This downstream FDI may also create new exports from the third country to US markets. In the previous estimation, the variable for Japanese exports to a third country may have captured the effect of Japanese FDI flows to the third-country. In this section, we include in our estimation equation a variable that specifically refers to Japanese FDI to third countries, so that the dynamics of FDI and trade will be separated.

The *Overseas Japanese Companies Data (OJCD)*, Toyo Keizai, contains the information for approximately 19,000 Japanese overseas subsidiaries. The data contained in this dataset are categorized in 68 industry classifications, which do not correspond to HS industry classifications, and include the firms' established year, locations, business objectives, industry classifications, and other information relevant to affiliated firms. Among the 68 industries, we exclude those industries which do not actively engage in goods trade such as real estate and banking sectors. Then, we reallocate OJCD's codes to corresponding HS 2-digit codes and reclassify the data such that we can create the FDI data based on the HS classification.[15] Thanks to this

[14] Like other trade-related variables, we include USMAR as the first differenced variable.
[15] The concordance table is shown in Appendix 2. When a particular OJCD code covers more than two HS 2-digit codes, the FDI data for this OJCD code is counted in all corresponding HS 2-digit codes.

concordance effort, we can construct a variable that refers to Japanese FDI stock to Asian third countries in terms of the number of established subsidiaries by Japanese firms for each host country, year, and HS 2-digit industry code.[16]

6-2. Estimation Results

With the two additional variables, our estimation model now becomes:

$$\Delta T_{i,j,t}^{THDUS} = \sum_{i=1}^{8} \alpha_i D^i \Delta T_{i,j,t}^{JPNTHD} + \sum_{i=1}^{8} \beta_i D^i \Delta T_{i,j,t}^{JPNUS} + \sum_{i=1}^{8} \delta_i D^i FDI_{i,j,t} + \sum_{i=1}^{8} \gamma_i D^i USMAR_{i,j,t} + \lambda_{i,j} + \varepsilon_{i,j,t} \quad (3)$$

$$i = 1,...,8; \; j(i) = 1,...,J(i); \; t = 1,...,10$$

The estimation results are shown in Table 7. While most of the coefficients for the US market size variables, USMAR, are significantly positive, the coefficient for the Japanese FDI variable is significantly positive only for China. The positive coefficient should mean that the FDI by Japanese multinationals to a third country and the exports from the third country to the US have a complementary relationship. Interestingly, when we control for the Japanese FDI, the estimated coefficient for the Japanese exports to China is no longer significant. Previously, we interpreted the results in Table 5 that Japanese exports to China are promoting Chinese exports to the US. However, in the estimation based on equation (3), this relationship disappears. With the results from these two estimations, we can surmise that Chinese exports to the US grow only through a shift of Japanese production plants to China, but not from indirect technology transfer through Japanese exports. (See section 3-3.)

The triangular trade relationship involving Korea and Indonesia casts an interesting contrast to the case with China. The coefficients of the Japanese exports variables to these two countries remain significant at the five percent significance level while the coefficients of the FDI variables are not significant. For Korea and Indonesia, we can infer that Japanese exports to these countries have some enhancement effect on their exports to the US while Japanese FDI does not have any significant impact on these countries' exports to the US. The persistence of the positive coefficient for the Japanese exports to Korea and Indonesia can be attributed to

[16] Therefore, two different HS 4-digit codes with the same first two digits share the same number of accumulated Japanese affiliated firms. This may not be problematic as long as there is cross-industry effect within the HS 2-digit level since we are trying to capture the trade-creating effect of FDI.

technological-transfer through Japanese products or competitive effect of substitutes imported to these countries.

In contrast to the previous results shown in Table 5, the coefficients for JPNUS are also significantly negative for Indonesia and the Philippines in addition to China. Moreover, the puzzling estimation result for Korea, i.e., a significantly positive coefficient for JPNUS, is no longer observed. We believe including the USMAR variable, a proxy for the expenditure level in each commodity market, eliminates the positive income effect of US market growth previously captured by the JPNUS variable. It is noteworthy that the absolute value of the coefficient of JPNUS for China is relatively larger than that of Indonesia or the Philippines. Therefore, we can conclude that the degree of competition between Chinese exports and Japanese exports is relatively high.[17] [18]

7. Conclusions

Among 8 countries investigated in our study, we have found some evidence that the exports of China and those of Japan are directly competing in US markets while the exports of China to the US is partly promoted by Japanese exports to China. However, after controlling for FDI, trade enhancing effect of Japanese export to China disappears. With statistically significant coefficient of FDI for China, we can conclude that Japanese exports to China seem to promote Chinese exports to US because of increasing vertical trades between Japanese multinationals and their corresponding affiliates. The combined evidence of the substitute relationship between Chinese and Japanese exports and export-promoting effect of Japanese FDI in China confirms a view that China competes vigorously with Japan in US markets while Japanese multinationals are shifting production bases to China in forming a global production-exporting network.

We also obtained the result for other Asian countries that their exports are competing with Japanese exports in the US. These countries are Indonesia and Philippine. However, the absolute magnitude of the coefficients remained much higher for China. This just confirms that Chinese exports are in more competition with Japan.

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[17] In a preliminary analysis, this could also be attributed to the shift of production from Japan to China due to the Japanese FDI. With inclusion of FDI variable, this effect is supposedly removed from JPNUS variable.

[18] We also investigate equation (3) with the macroeconomic variables. The results remain qualitatively quite similar. The coefficient of FDI for China becomes statistically insignificant; however, its p-value is 14.8%. The estimation result can be obtained from the corresponding author upon request.

From the political perspective view, our findings shed a light on different aspect of current debate about the trade dispute between China and US. Our empirical result indicates an increase in Chinese exports might be a reflection of Japanese multinationals' operation in China. Of course, for industries in which Chinese exports are under allegations, these products may not be strongly related to Japanese multinational operations. With the high growth currently observed in China, however, it is not difficult to imagine a case in which Chinese exports brought to WTO trade dispute settlement are actually products of Japanese multinationals.

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Appendix 1:

exvol_US = exchange volatility between THD's currency and the U.S. dollars

exvol_JPN = exchange volatility between THD's currency and Japanese yen

inf_THD = THD's inflation rate

inf_US = US inflation rate

inf_JPN = Japanese inflation rate

rypc_THD = real GDP per capita of THD

rypc_US = real GDP per capita of US

rypc_JPN = real GDP per capita of Japan

ny_THD = nominal GDP of THD

ny_US = nominal GDP of US

ny_JPN == nominal GDP of Japan

W_IMP_THD = THD's imports from the world

W_IMP_US = US imports from the world

W_IMP_JPN = Japanese imports from the world

W_EXP_THD = THD's exports to the world

W_EXP_US = US exports to the world

W_EXP_JPN = Japanese exports to the world

Appendix2: Concordance Table for FDI and Trade Classification

HS Code	Toyo Keizai Code				HS Code	Toyo Keizai Code			
	1st	2nd	3rd	4th		1st	2nd	3rd	4th
1					53	700	2700		
3	200	600	2600		54	700	2700		
5	200	600	2600		55	700	2700		
6	200	2600			56	700	2700		
7	200	600	2600		57	700	2700		
9	200	600	2600		58	700	2700		
10	200	600	2600		59	700	2700		
11	200	600	2600		60	700	2700		
12	200	600	2600		61	700	2700		
13	200	600	2600		62	700	2700		
14	200	600	2600		63	700	2700		
15	200	600	2600		64				
16	600				65				
17	600				66				
18	600				67				
19	600				68	1400	3200		
20	600				69	1400	3200		
21	600				70	1400	3200		
22	600				71				
23	600				72	1500	3300		
24					73	1500	3300		
25	300				74	1600	1700	3400	3500
26	300				75	1600	1700	3400	3500
27	300	1200	3000		76	1600	1700	3400	3500
28	1100	2900			78	1600	1700	3400	3500
29	1100	2900			79	1600	1700	3400	3500
30	1100	2900			80	1600	1700	3400	3500
31	1100	2900			81	1600	1700	3400	3500
32	1100	2900			82	1600	1700	3400	3500
33	1100	2900			83	1600	1700	3400	3500
34	1100	2900			84	1800	3600		
35	1100	2900			85	1900	3700		
36	1100	2900			86	2000	3800		
37	1100	2900			87	2100	3900		
38	1100	2900			88	2000	3800		
39	1100	2900			89	2000	3800		
40	1300	3100			90	2200	4000		
41	1300	3100			91	2200	4000		
42	1300	3100			92	2300			
44	800	2800			93				
46	800	2800			94				
48	900	2800			95				
49	1000				96				
50	700	2700			97				
51	700	2700							
52	700	2700							

Table 1: Trade of China with Major Trading Parters

(thousand dallars)

Imports

	1992		1995		1998		2000	
1	Hong Kong	20,533,589	Japan	29,004,529	Japan	28,275,074	Japan	41,509,675
2	Japan	13,682,461	United States	16,118,291	United States	16,883,171	Taiwan	25,493,561
3	United States	8,900,735	Taiwan	14,783,944	Taiwan	16,631,051	Korea	23,207,406
4	Taiwan	5,865,971	Korea	10,293,234	Korea	15,014,348	United States	22,363,148
5	Germany	4,015,042	Hong Kong	8,590,713	Germany	7,020,657	Germany	10,408,731
	World	80,585,333	World	132,083,539	World	140,236,807	World	225,093,731

Exports

	1992		1995		1998		2000	
1	Hong Kong	37,512,229	Hong Kong	35,983,427	Hong Kong	38,741,792	United States	52,099,220
2	Japan	11,678,713	Japan	28,466,685	United States	37,947,666	Hong Kong	44,518,285
3	United States	8,593,800	United States	24,713,498	Japan	29,660,114	Japan	41,654,314
4	Germany	2,447,990	Korea	6,687,805	Germany	7,354,309	Korea	11,292,364
5	Korea	2,404,912	Germany	5,671,451	Korea	6,251,516	Germany	9,277,790
	World	84,940,062	World	148,779,565	World	183,809,065	World	249,202,551

Source: ITCS,OECD

Table 2: Share of Trade by Japan and US among the Asian countries

Exporting Country

	1990		1995		2000	
	Japan	**US**	**Japan**	**US**	**Japan**	**US**
China	0.15	0.08	0.19	0.17	0.17	0.21
Korea	0.19	0.29	0.13	0.19	0.12	0.22
Hong Kong	0.06	0.24	0.06	0.22	0.06	0.23
Singapore	0.09	0.21	0.08	0.18	0.08	0.17
Thailand	0.17	0.23	0.17	0.18	0.15	0.21
Indonesia	0.43	0.13	0.27	0.14	0.23	0.14
Philippine	0.20	0.38	0.16	0.36	0.15	0.30
Malaysia	0.15	0.17	0.12	0.21	0.13	0.21

Importing Country

	1990		1995		2000	
	Japan	**US**	**Japan**	**US**	**Japan**	**US**
China	0.14	0.12	0.22	0.12	0.18	0.10
Korea	0.25	0.23	0.24	0.23	0.20	0.18
Hong Kong	0.16	0.08	0.15	0.08	0.12	0.07
Singapore	0.20	0.16	0.21	0.15	0.17	0.15
Thailand	0.30	0.11	0.29	0.12	0.25	0.12
Indonesia	0.25	0.11	0.23	0.12	0.16	0.10
Philippine	0.18	0.20	0.22	0.18	0.19	0.17
Malaysia	0.24	0.17	0.27	0.16	0.21	0.17

Source: Direcion of Trade, IMF

Table3 : Japanese Foreign Direct Investment in the Asia (1989 - 2002)

(100M Yen)

(Cases)	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
China	587	511	787	1,381	1,954	2,683	4,319	2,828	2,438	1,377	849	1,112	1,808	2,152
	(126)	(165)	(246)	(490)	(700)	(636)	(770)	(365)	(258)	(114)	(78)	(105)	(189)	(263)
Korea	799	419	357	291	289	420	433	468	543	389	1,094	899	704	763
	(81)	(54)	(48)	(28)	(34)	(27)	(25)	(33)	(53)	(48)	(62)	(52)	(47)	(44)
Hong Kong	2,502	2,610	1,260	966	1,447	1,179	1,106	1,675	860	789	1,088	1,039	374	248
	(335)	(244)	(178)	(154)	(184)	(112)	(119)	(89)	(121)	(51)	(76)	(52)	(37)	(31)
Singapore	2,573	1,232	837	875	735	1,101	1,143	1,256	2,238	832	1,102	505	1,433	915
	(181)	(139)	(103)	(100)	(97)	(69)	(94)	(102)	(96)	(58)	(51)	(25)	(31)	(34)
Thailand	1,703	1,696	1,107	849	680	749	1,196	1,581	2,291	1,760	924	1,030	1,105	614
	(403)	(377)	(258)	(130)	(127)	(126)	(147)	(196)	(154)	(72)	(72)	(62)	(51)	(52)
Indonesia	840	1,615	1,628	2,142	952	1,808	1,548	2,720	3,085	1,398	1,024	464	622	509
	(140)	(155)	(148)	(122)	(115)	(116)	(168)	(160)	(170)	(64)	(57)	(26)	(56)	(41)
Philippine	269	383	277	210	236	683	692	630	642	488	689	514	951	500
	(87)	(58)	(42)	(45)	(56)	(75)	(100)	(75)	(64)	(46)	(32)	(44)	(25)	(20)
Malaysia	902	1,067	1,202	919	892	772	555	644	971	668	588	256	320	98
	(159)	(169)	(136)	(111)	(92)	(51)	(57)	(69)	(82)	(34)	(44)	(23)	(18)	(11)
World	90,339	83,527	56,862	44,313	41,514	42,808	49,568	54,095	66,236	52,413	74,703	53,854	39,922	44,175
	(6589)	(5863)	(4564)	(3741)	(3488)	(2478)	(2863)	(2501)	(2495)	(1616)	(1729)	(1701)	(1768)	(2144)

Source: Outward Direct Investment, Ministry of Finance, Japan.

Table 5: Within Estimators for Triangular Trade Equation

Variable	Coefficient	Variable	Coefficient
JPNCHN	0.125**	JPNUS(CHN)	-0.048*
	(0.063)		(0.028)
JPNKOR	0.301**	JPNUS(KOR)	0.215***
	(0.122)		(0.069)
JPNHKG	0.071	JPNUS(HKG)	0.022
	(0.068)		(0.016)
JPNSGP	0.319	JPNUS(SGP)	0.082
	(0.246)		(0.098)
JPNTHA	0.006	JPNUS(THA)	0.024
	(0.035)		(0.015)
JPNIDN	0.024	JPNUS(IDN)	-0.004
	(0.017)		(0.006)
JPNPHL	0.161	JPNUS(PHL)	-0.024
	(0.369)		(0.023)
JPNMAL	0.732***	JPNUS(MAL)	0.053
	(0.245)		(0.040)

NOB= 27930 Adj. R2 = 0.350

Note: White heteroskedasticity consistent standard deviations are in parentheses. ***, **, and * denote significance at 1, 5, and 10 percent level, respectively. The number of commodities for each country differs due to selection criteria; 576 for China, 572 for Korea, 487 for Hong Kong, 288 for Singapore, 310 for Thailand, 162 for Indonesia, 180 for Philippine, and 218 for Malaysia.

Table 6: Within Estimators for Triangular Trade Equation with Macro Variables

Variable	Coefficient	Variable	Coefficient	Variable	Coefficient
JPNCHN	0.109*	JPNUS(CHN)	-0.049*	EXVOL_US	-6,347
	(0.063)		(0.028)		(9,781)
JPNKOR	0.299**	JPNUS(KOR)	0.215***	INF_THD	-0.631
	(0.124)		(0.069)		(52)
JPNHKG	0.074	JPNUS(HKG)	0.023	INF_US	457
	(0.069)		(0.016)		(1,118)
JPNSGP	0.319	JPNUS(SGP)	0.082	NY_THD	-0.016
	(0.246)		(0.098)		(0.012)
JPNTHA	0.018	JPNUS(THA)	0.024	NY_US	0.007
	(0.036)		(0.015)		(0.005)
JPNIDN	0.031*	JPNUS(IDN)	-0.003	NY_JPN	-0.002
	(0.018)		(0.006)		(0.002)
JPNPHL	0.171	JPNUS(PHL)	-0.022	W_IMP_THD	0.069**
	(0.367)		(0.022)		(0.032)
JPNMAL	0.733***	JPNUS(MAL)	0.052	W_IMP_JPN	-0.055
	(0.245)		(0.040)		(0.044)
				W_EXP_THD	0.251***
					(0.061)
				W_EXP_US	-0.011
				(0.030)	

NOB = 27930 Adj. R2 = 0.351

Note: White heteroskedasticity consistent standard deviations are in parentheses. ***, **, and * denote significance at 1, 5, and 10 percent level, respectively. The number of commodities for each country differs due to selection criteria; 576 for China, 572 for Korea, 487 for Hong Kong, 288 for Singapore, 310 for Thailand, 162 for Indonesia, 180 for Philippine, and 218 for Malaysia.

Table 7: Within Estimators for Triangular Trade Equation with FDI and US Market Size

Variable	Coefficient	Variable	Coefficient	Variable	Coefficient	Variable	Coefficient
JPNCHN	0.038	JPNUS(CHN)	-0.141***	FDICHN	51.358***	USMAR(CHN)	0.052***
	(0.067)		(0.044)		(15)		(0.016)
JPNKOR	0.202**	JPNUS(KOR)	0.055	FDIKOR	-531.120	USMAR(KOR)	0.093***
	(0.095)		(0.050)		(522)		(0.024)
JPNHKG	0.048	JPNUS(HKG)	0.012	FDIHKG	-42.172	USMAR(HKG)	0.006
	(0.069)		(0.012)		(54)		(0.004)
JPNSGP	0.263	JPNUS(SGP)	0.063	FDISGP	-107.803	USMAR(SGP)	0.017
	(0.224)		(0.110)		(231)		(0.016)
JPNTHA	-0.002	JPNUS(THA)	0.013	FDITHA	-27.908	USMAR(THA)	0.006
	(0.031)		(0.019)		(23)		(0.005)
JPNIDN	0.026**	JPNUS(IDN)	-0.020***	FDIIDN	-76.020	USMAR(IDN)	0.008***
	(0.011)		(0.008)		(72)		(0.003)
JPNPHL	-0.003	JPNUS(PHL)	-0.083***	FDIPHL	90.768	USMAR(PHL)	0.031**
	(0.345)		(0.032)		(175)		(0.013)
JPNMAL	0.440**	JPNUS(MAL)	-0.041	FDIMAL	-647.534***	USMAR(MAL)	0.068***
	(0.224)		(0.042)		(212)		(0.022)
	NOB = 27930		Adj.R2 = 0.445				

Note: White heteroskedasticity consistent standard deviations are in parentheses. ***, **, and * denote significance at 1, 5, and 10 percent level, respectively. The number of commodities for each country differs due to selection criteria; 576 for China, 572 for Korea, 487 for Hong Kong, 288 for Singapore, 310 for Thailand, 162 for Indonesia, 180 for Philippine, and 218 for Malaysia.