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**Cost Reduction Effects of “pseudo FTAs”
in Asia**

- Application of a price model
based on a multilateral I/O table -

Chiharu TAMAMURA*

Abstract

This paper examines the repercussion effects on the production cost of industries in Asian countries when some countries eliminate tariffs and import commodity taxes on all imports. This kind of analysis is related in some sense to that measuring the effects of FTAs on economies, and thus may be considered as an analysis of “pseudo FTAs.” Examining a number of combinations of “pseudo FTAs” between China, Japan, and ASEAN, it is found that the case of China plus Japan plus ASEAN is the most effective “pseudo FTA” of the combinations in terms of production cost reduction. The method is a form of price model based on the Asian International Input-Output Table. Almost no studies on price models related to multilateral I/O tables have been implemented thus far.

Keywords: Input-Output Models; Input-Output Table and analysis; Trade

JEL classification: C67, D57, F1

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This paper examines the repercussion effects on the production cost of industries in Asian countries when some countries eliminate tariffs and import commodity taxes on all imports. This kind of analysis is related in some sense to that measuring the effects of FTAs on economies, and thus may be considered as an analysis of “pseudo FTAs.” Examining a number of combinations of “pseudo FTAs” between China, Japan, and ASEAN, it is found that the case of China plus Japan plus ASEAN is the most effective “pseudo FTA” of the combinations in terms of production cost reduction. The method is a form of price model based on the Asian International Input-Output Table. Almost no studies on price models related to multilateral I/O tables have been implemented thus far.

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Introduction

Manufacturing industries produce goods by procuring raw materials, intermediate goods and services, machines for producing goods, and a labor force. Especially in procuring input goods from overseas, tariffs and/or import commodity taxes will be levied on the imports. The tariffs and import commodity taxes will create a certain amount of revenue for the government. However, they are generally regarded as trade barriers intervening in the free trade scheme.

These tariffs and import commodity taxes are costs which producers must bear, and so eliminating these barriers will reduce production costs and cause producers to produce more goods to meet demand as long as resources for production are available for use. Moreover, this elimination will, to a greater or lesser extent, lead to a reduction in production costs of some other domestic or overseas industries, since the price of some goods produced at lower costs due to the elimination of barriers will become cheaper, resulting in a reduction in input costs in certain other industries. (Cost decreases are passed along faithfully as intermediate input price decreases to all purchasers, who in turn pass on these decreases by decreasing their output prices accordingly.) In this way, cost reduction spreads throughout the world.

An input-output table is an appropriate tool for quantitative analysis of these kinds of repercussion effects. In this paper, the multilateral Asia International Input-Output Table is used for analysis, and a so-called “price model” is constructed. A price model has thus far usually been applied to a unilateral input-output table and seldom to a multilateral table. In this sense, this paper blazes a new trail in this field even though there are some restrictions in the analysis.

Furthermore, the analysis here will examine tariffs and import commodity taxes in terms of trade barriers for free trade and assess the “pseudo FTA” effects of several combinations of the countries and regions covered by the Asia International Input-Output Table. What is meant by “pseudo FTA” here is to open the market in terms of the elimination of tariffs and import commodity taxes for the entire world by a certain country unilaterally, and it does not signify barrier-free cross-border trade between or among specific countries.

1. Framework of analysis and method

1.1 Framework of analysis

As the analysis here is based upon the Asia International Input-Output Table 2000 (hereafter referred to as “the Asia table”), the framework of the Asia table is depicted here first. The table consists of ten endogenous countries, each of which has 16 aggregated sectors (industries), so that the size of the intermediate transaction matrix of the Asia table is 160×160 . An example of

the cost structure of the table is shown in the figure below.

(Example of a cost structure: column vector) Japan's electrical machinery industry

		Japan's electrical machinery industry
(1)	Endogenous countries	Inputs from Indonesia (16 sectors)
(2)		Inputs from Malaysia (16 sectors)
(3)		Inputs from Philippines (16 sectors)
(4)		Inputs from Singapore (16 sectors)
(5)		Inputs from Thailand (16 sectors)
(6)		Inputs from China (16 sectors)
(7)		Inputs from Korea (16 sectors)
(8)		Inputs from Taiwan (16 sectors)
(9)		Inputs from US (16 sectors)
(10)		Inputs from Japan (16 sectors)
(11)	International Freight and Insurance	
(12)	(Exogenous) Inputs from Hong Kong (16 sectors)	
(13)	(Exogenous) Inputs from EU (16 sectors)	
(14)	(Exogenous) Inputs from the rest of the world (ROW) (16 sectors)	
(15)	Tariff and import commodity tax	
(16)	Value Added	
(17)	Total of domestic product (Total inputs)	

Endogenous transactions (1) to (10) are valued at producers' prices and the exogenous inputs (12) to (14) at CIF value. The concept of the international freight and insurance cost (11) is the total of costs for freight and insurance which, in this example, Japan's electrical machinery industry pays when importing intermediate inputs from the endogenous countries. Tariffs and import commodity taxes (15) refers to the total of those items levied on imported inputs (1) to (9) and (12) to (14).

The ratios of input values (1) to (16) to the total domestic product (17) is known in input-output work as input coefficients. This paper focuses its analysis on the input coefficient of the tariffs and import commodity taxes. By comparing these coefficients among sectors and countries, it is possible to ascertain which sector in which country spends relatively more on tariff and import commodity tax costs for its production activity. This will be shown in Section 2.

1.2 A model for measuring the repercussion effect on production cost by elimination of tariffs and import commodity taxes

Price model

The price model is a useful model in input-output analysis, and is known as the dual system of the repercussion effect model for production [Miller and Blair, 2009, pp41-53]. Until now this model has been applied mostly to a unilateral input-output table. Here, however, the model is applied to a multilateral table, i.e., the Asia table. This investigation will be the most important contribution of this paper.

The formula of the model is as follows.

$$A^t \boldsymbol{t} + \boldsymbol{b} + \boldsymbol{c} + \boldsymbol{d} + \boldsymbol{v} = \boldsymbol{t} \quad (\text{a})$$

where, \boldsymbol{A} : input coefficient matrix (for the endogenous part)

\boldsymbol{b}^t : international freight & insurance ratio row vector (calculated by (11)/(17)), such that \boldsymbol{b} is a column vector.

\boldsymbol{c}^t : imported input ratio from exogenous regions (calculated by the total of (12)~(14)/(17)), such that \boldsymbol{c} is a column vector.

\boldsymbol{d} and \boldsymbol{v} are defined analogously, i.e.

\boldsymbol{d}^t : tariff and import commodity tax ratio ((15)/(17))

\boldsymbol{v}^t : value added ratio ((16)/(17)),

and

\boldsymbol{t} : the column vector of all elements = 1.

Needless to say, the size of the column vectors $\boldsymbol{b}, \boldsymbol{c}, \boldsymbol{d}, \boldsymbol{v}$, and \boldsymbol{t} is 160×1 , and the size of \boldsymbol{A} is 160×160 .

Each row equation of formula (a) shows the total inputs (on the left hand side) for each dollar's worth of production by industry and by country.

Now, setting \boldsymbol{p} as the unit production price column vector of which each element is the unit production price of each industry's output in each endogenous country, (so that the size of \boldsymbol{p} is 160×1), multiplying the equation system (a) by \boldsymbol{p} , we obtain the following equation system.

$$A^t \boldsymbol{p} + \tilde{\boldsymbol{b}} + \tilde{\boldsymbol{c}} + \tilde{\boldsymbol{d}} + \tilde{\boldsymbol{v}} = \boldsymbol{p} \quad (\text{b})$$

where,

$\tilde{\boldsymbol{b}}$: international freight and insurance value included in \boldsymbol{p}

\tilde{c} : imported input value from exogenous regions included in \mathbf{p}
 \tilde{d} : tariff and import commodity tax included in \mathbf{p}
 \tilde{v} : value added included in \mathbf{p}

From (b), \mathbf{p} is expressed as

$$\begin{aligned}
\mathbf{p} &= (\mathbf{I} - \mathbf{A}^t)^{-1}(\tilde{\mathbf{b}} + \tilde{\mathbf{c}} + \tilde{\mathbf{d}} + \tilde{\mathbf{v}}) \\
&= \{(\mathbf{I} - \mathbf{A})^{-1}\}^t(\tilde{\mathbf{b}} + \tilde{\mathbf{c}} + \tilde{\mathbf{d}} + \tilde{\mathbf{v}}) \\
&= \mathbf{B}^t(\tilde{\mathbf{b}} + \tilde{\mathbf{c}} + \tilde{\mathbf{d}} + \tilde{\mathbf{v}})
\end{aligned} \tag{c}$$

Here, $(\mathbf{I} - \mathbf{A}^t)^{-1} = \{(\mathbf{I} - \mathbf{A})^{-1}\}^t = \mathbf{B}^t$, and \mathbf{B} is called the Leontief inverse.

To aid understanding of the analysis below, we describe \mathbf{p} more precisely.

$\mathbf{p} = (p_i^\alpha)$, p_i^α is the unit production price of industry i of country α (an endogenous country), and it can also be considered as the cost of a unit of production.

In many cases, (c) is utilized for analyzing the change in cost \mathbf{p} for the change in value added $\tilde{\mathbf{v}}$ (wages of employees, and so on).

Methodology of the analysis

In this paper, we examine the impact effect on production cost \mathbf{p} of eliminating all tariffs and import commodity taxes of a certain country (or countries), which means to measure the effect by the change in the vector $\tilde{\mathbf{d}}$.

In practice, the calculation is carried out by utilizing the formula a. More specifically, the following equation is derived from (a),

$$\boldsymbol{\iota} = \mathbf{B}^t(\mathbf{b} + \mathbf{c} + \mathbf{d} + \mathbf{v})$$

and the percentage change (reduction rate) in the production cost (\mathbf{p}) due to the elimination of tariffs and import commodity taxes, which are embodied in the vector \mathbf{d} , are measured by the formula below.

$$\text{Percentage change (reduction rate)} = \boldsymbol{\iota} - \mathbf{B}^t(\mathbf{b} + \mathbf{c} + \mathbf{d} + \mathbf{v})$$

For our target, the vector \mathbf{d} is set in the following way.

In $\mathbf{d} = (d_i^\alpha)$ (α indicates endogenous countries and i indicates the number of the sector (1~16)), set $d_i^\alpha = 0$ for all i belonging to the country α , which eliminates all of its tariffs and import commodity taxes.

2. Ratio of tariffs and import commodity taxes included in unit production cost

Table A-1 shows the ratio of tariffs and imported commodity taxes included in the unit production cost for each industry in endogenous countries. As mentioned above, figures in the table are weighted averages of these taxes (tariffs and import commodity taxes) levied on imported components of inputs for each industry. Therefore, for instance, the table shows that the ratio for Japan's textile industry is 0.571% of unit production cost. Similarly, that of Thailand's transport equipment industry shows the relatively high ratio of 6.823%.

Firstly, comparing the averages of the ratios of all sectors (industries) in each country, Thailand and the Philippines have high ratios, 1.615% and 1.363%, respectively. On the other hand, Singapore has a very low ratio, 0.073%, followed by 0.091% for the US, since these two countries now have almost zero tariffs. Focusing attention on the manufacturing industries, the main features of the situation are almost same as the averages for all industries. However, the differences in the ratios between countries appear significantly larger and the average ratios for manufacturing industries are mostly higher than those for all industries. Overall, the ratios for Thailand and the Philippines are high and those for Indonesia and China are not low. Those for Japan and Korea are almost at the same low level of around 0.5%. However, it is remarkable that the level for Malaysia, 0.443%, is lower than those for Japan and Korea. Comparing the ratios for countries by each manufacturing industry, industries with a relatively high ratio (over 1.0%) are listed below.

- ♦ **Textiles:** Philippines (2.7%), China (1.2%)
- ♦ **Other light manufacturing:** Thailand (2.4%), Philippines (1.6%), China (1.3%)
- ♦ **Chemicals:** Philippines (3.9%), Thailand (3.0%), Japan (2.2%)
- ♦ **Non-metallic mineral products:** Thailand (1.2%), Philippines (1.0%)
- ♦ **Metal products:** Thailand (2.5%), Philippines (1.8%)
- ♦ **Machinery:** Thailand (6.8%), Indonesia (2.5%), Philippines (1.8%)
- ♦ **Electrical equipment:** Philippines (1.9%), Thailand (1.8%), China (1.6%), Indonesia (1.5%)
- ♦ **Transportation equipment:** Thailand (6.8%), Indonesia (2.6%), Philippines (2.2%), Taiwan (1.8%), China (1.5%)
- ♦ **Other manufacturing:** Philippines (2.0%), China (1.7%), Indonesia (1.5%), Thailand (1.5%)

Table A-1 Ratio of tariffs and import commodity taxes included in unit production cost

(%)

Industry No.→	1	2	3	4	5	6	7	8	9
Japan	0.124	0.067	0.614	0.571	0.244	2.161	0.149	0.348	0.165
China	0.096	0.369	0.322	1.231	1.308	0.757	0.430	0.487	0.821
Korea	0.497	0.108	0.660	0.391	0.506	0.978	0.311	0.431	0.478
Indonesia	0.059	0.018	0.184	0.651	0.316	0.504	0.303	0.763	2.491
Malaysia	0.117	0.043	0.465	0.341	0.248	0.204	0.272	0.365	0.475
Philippine	0.276	0.364	0.520	2.700	1.597	3.920	1.002	1.738	1.849
Singapore	0.060	0.269	0.232	0.015	0.009	0.125	0.026	0.025	0.033
Thailand	0.127	0.054	0.823	0.732	2.443	2.957	1.221	2.561	3.082
Taiwan	0.267	0.304	0.648	0.431	0.532	0.973	0.637	0.549	0.711
US	0.024	0.026	0.071	0.627	0.050	0.069	0.041	0.072	0.103

Industry No.→	10	11	12	13	14	15	16	Ave.	Ave. (*)
Japan	0.359	0.117	0.336	0.652	0.101	0.026	0.069	0.382	0.507
China	1.631	1.456	1.736	0.334	0.527	0.259	0.350	0.757	1.018
Korea	0.419	0.363	0.498	2.580	0.232	0.206	0.291	0.559	0.503
Indonesia	1.542	2.626	1.498	0.095	0.839	0.068	0.086	0.753	1.088
Malaysia	0.680	0.931	0.444	0.191	0.206	0.195	0.102	0.330	0.443
Philippine	1.862	2.186	1.991	0.570	0.713	0.283	0.228	1.363	1.936
Singapore	0.006	0.020	0.014	0.243	0.003	0.066	0.018	0.073	0.050
Thailand	1.760	6.823	1.497	0.114	1.244	0.080	0.318	1.615	2.390
Taiwan	0.373	1.804	0.518	0.874	0.464	0.706	0.064	0.616	0.718
US	0.050	0.122	0.100	0.014	0.060	0.011	0.014	0.091	0.130

(*) denotes the averages of manufacturing sectors (No.3 - No.12).

Table A-2 Sector (Industry) Classification

No.	Industry	No.	Industry
1	Agriculture, forestry, fishery	9	Machinery
2	Mining, quarrying	10	Electrical equipment
3	Food, beverage, tobacco	11	Transport equipment
4	Textiles	12	Other manufacturing
5	Other light manufacturing	13	Electricity, gas, water
6	Chemicals	14	Construction
7	Non-metallic mineral products	15	Trade and transport
8	Metal products	16	Services

3. Changes in production costs after the elimination of tariffs and import commodity taxes

In this section, we will take up several of the main findings for the following cases, based on the methodology described in 1. (2). In the following descriptions, the case of China, for example, refers to the case where China eliminates all tariffs and import commodity taxes. The results of the calculations are shown in Tables B-1 to B-6 for each of the respective cases. In each table, figures exceeding 0.1% production cost reduction are shaded.

3.1 The Case of China (Table B-1)

Comparing the figures for China's industries in Table B-1 to the corresponding figures in Table A-1, it is clear that the reduction ratios of unit production costs are larger than those of the tariffs and import commodity taxes included in the unit production costs. To what degree does this elimination in China's industries affect industries in other countries? As Table B-1 shows, the case of China here does not have a significant effect on industries in other countries. Some contributions to cost reduction are found in the Korean and Singaporean textile industries, and in the Thai electrical industry.

3.2 The Case of Japan (Table B-2)

Here we carry out a similar analysis to that of China. In stark contrast to the case of China, the elimination of tariffs and import commodity taxes by Japan contributes significantly to reductions in the production costs of industries in other endogenous countries. More precise examination of the table shows the industries where production cost reduction exceeds 0.1%, as listed below.

- ♦ *Malaysia:* metal products, electrical equipment, transport equipment, other manufacturing
- ♦ *Singapore:* food/beverage/tobacco, metal products, electrical equipment, other manufacturing
- ♦ *Taiwan:* textiles, chemicals, electrical equipment, other manufacturing
- ♦ *Philippines:* electrical equipment, transport equipment, other manufacturing
- ♦ *Thailand:* machinery, electrical equipment, transport equipment

It should be noted that elimination of tariffs and import commodity taxes with respect to a certain type of industry does not mean that it results in production cost reductions in the same type of industries in other countries, since some industries use commodities from different types of industries as intermediate inputs. In this regard, it is found from Table B-2 that commodities produced in Japan are more likely to be used as intermediate inputs in industries in other countries, especially in ASEAN countries (except Indonesia), than Chinese products .

3.3 The Case of China Plus Japan (Table B-3)

In this case, all tariffs and import commodity taxes are eliminated in both China and Japan. The effect is enhanced compared to the case of elimination in one country, either China or Japan. In fact, the effect expands to cover even Korea and Indonesia. Looking at the figures by industry, relatively high effects are noted in textiles, chemicals, metal products, machinery, electrical equipment and transport equipment.

3.4 The Case of China Plus ASEAN, and the Case of Japan Plus ASEAN (Tables B-4 and B-5)

Comparing these two cases, the effect of the case of Japan plus ASEAN exhibits a wider and stronger spread. Some exceptions are the effects of the case of China plus ASEAN on textile industries in Korea, the Philippines, Singapore, and Thailand, and on electrical appliances in Thailand, which are a little stronger than in the case of Japan plus ASEAN. It can also be seen that the effects on China and Japan are not greatly changed compared with case (3), Japan plus China. The effect on the US is insignificant.

3.5 The Case of China Plus Japan Plus ASEAN

It is apparent that the tax elimination effect of this case is the strongest among the cases examined thus far. The effect spreads not only to the countries included in this case, but also to Korea and Taiwan, and even to the US.

4. Conclusions from the findings

In Section 2 we firstly examined the ratio of tariffs and import commodity taxes in unit production cost for 16 industries (especially ten manufacturing industries) in the endogenous countries in terms of the Asia table. From this, we found that those ratios were unexpectedly high for Thai manufacturing industries. Although this seems counterintuitive when considering the progress of AFTA, this fact indicates that Thai manufacturing industries procure considerable amounts of intermediate inputs not from within the region (ASEAN) but from outside the region. In fact, taking Thai transport equipment as an example, even though AFTA or AICO are utilized for procuring intermediate inputs, Thailand still imports large amounts of intermediates from Japan, on which high tariffs and import commodity taxes are levied. The same thing can be said for Philippine industries.

Thus, tariffs and import commodity taxes included in unit production costs cannot be eliminated by removing those only from limited categories of import commodities. The import tax barrier should be removed from almost all categories of imports.

Taking this into consideration, in Section 3 we tested the six cases of eliminating all tariffs and import commodity taxes in several endogenous countries to measure the repercussion effect on unit production costs in the various industries. We will not summarize each of the six cases here, but will mention a number of core facts emanating from the six cases.

- (1) The elimination effect of tariffs and import commodity taxes is stronger and spreads more widely to industries in endogenous countries as the number of countries eliminating those taxes increases. Thus the case of China plus Japan plus ASEAN is the most effective in reducing the unit production costs of industries.
- (2) The elimination of tariffs and import commodity taxes by Japan is the most effective case since Japanese products are the most likely to be utilized as intermediate inputs by industries in other countries. On the other hand, although the effect of the elimination of tariffs and import commodity taxes by ASEAN is large for ASEAN industries, this is not a very influential factor in production cost reductions for industries in other countries.
- (3) If we define a “pseudo FTA among countries” as an elimination of all tariffs and import commodity taxes which those countries levy on all their imports, the four cases taken in Section 3., that is cases (3), (4) and (5), are kinds of pseudo FTAs. Elimination of tariffs and import commodity taxes results in reductions in production costs, which gives industries a greater chance to produce commodities under the same budget through free trade among countries. This is the same as the purpose of the well-known FTA.

To end this section, we include some remarks on the method used in this paper. First, the price model of the I/O analysis assumes there is no discontinuity in the propagation of the price

effect through industries over the world. However, this is a rather ideal phenomenon with respect to the real world. Secondly, the elimination of tariffs and import commodity taxes as applied in this paper refers to the unilateral opening of a certain country's market to the whole world, and does not signify cross-border barrier-free trade between two or more specific countries. In this regard, our scenario is quite far removed from FTA analysis in the usual sense, which is the reason why we have used the term "pseudo FTA" here. To conduct an analysis to estimate the effect of an FTA among specific countries, more detailed tariff data and the harmonization of the model with the data will be necessary.

Nevertheless, the main purpose of this paper is to introduce the price model for a multilateral input-output table (the Asia table) and apply it to a "pseudo FTA" effect, since very few studies have been carried out in this field thus far.

(Note) The tables of calculation results for the cases of Japan plus China plus Korea, Japan plus China plus Korea plus ASEAN, and further more plus US are included in an annex.

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Table B-1

Sector #	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.00%	0.53%	0.01%	0.00%	0.01%	0.01%	0.02%	0.01%	0.01%	0.00%
2	0.00%	0.95%	0.01%	0.00%	0.01%	0.01%	0.02%	0.00%	0.01%	0.00%
3	0.01%	0.86%	0.02%	0.01%	0.02%	0.01%	0.04%	0.01%	0.01%	0.00%
4	0.04%	2.49%	0.10%	0.03%	0.09%	0.07%	0.10%	0.07%	0.02%	0.02%
5	0.01%	2.30%	0.03%	0.01%	0.02%	0.02%	0.03%	0.02%	0.02%	0.01%
6	0.01%	1.64%	0.02%	0.02%	0.02%	0.02%	0.04%	0.02%	0.02%	0.01%
7	0.01%	1.40%	0.02%	0.01%	0.02%	0.03%	0.03%	0.02%	0.03%	0.01%
8	0.01%	1.48%	0.04%	0.02%	0.04%	0.03%	0.06%	0.03%	0.04%	0.01%
9	0.01%	1.93%	0.02%	0.04%	0.03%	0.02%	0.03%	0.03%	0.04%	0.01%
10	0.02%	2.92%	0.05%	0.03%	0.08%	0.03%	0.09%	0.13%	0.05%	0.02%
11	0.01%	3.02%	0.03%	0.03%	0.03%	0.04%	0.04%	0.03%	0.03%	0.02%
12	0.02%	2.91%	0.04%	0.02%	0.03%	0.04%	0.05%	0.04%	0.03%	0.01%
13	0.00%	1.13%	0.02%	0.01%	0.01%	0.02%	0.02%	0.01%	0.00%	0.00%
14	0.01%	1.57%	0.02%	0.02%	0.03%	0.01%	0.03%	0.03%	0.03%	0.01%
15	0.00%	1.06%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%
16	0.00%	1.04%	0.01%	0.00%	0.01%	0.00%	0.02%	0.01%	0.00%	0.00%

JAP=Japan, CHN=China, KOR=Korea, INDN=Indonesia, MLY=Malaysia,
 PHL=Philippines, SIN=Singapore, THA=Thailand, US=USA

Table B-2

Sector #	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.49%	0.01%	0.01%	0.00%	0.03%	0.01%	0.04%	0.02%	0.02%	0.01%
2	0.55%	0.02%	0.01%	0.00%	0.02%	0.02%	0.04%	0.02%	0.04%	0.00%
3	0.93%	0.01%	0.02%	0.01%	0.03%	0.01%	0.11%	0.03%	0.03%	0.00%
4	1.16%	0.04%	0.05%	0.06%	0.09%	0.05%	0.05%	0.05%	0.10%	0.01%
5	0.59%	0.03%	0.03%	0.02%	0.06%	0.02%	0.06%	0.06%	0.05%	0.01%
6	2.84%	0.04%	0.08%	0.04%	0.08%	0.07%	0.06%	0.09%	0.19%	0.01%
7	0.48%	0.02%	0.04%	0.02%	0.06%	0.04%	0.07%	0.07%	0.06%	0.01%
8	0.75%	0.03%	0.06%	0.04%	0.12%	0.07%	0.10%	0.09%	0.07%	0.01%
9	0.51%	0.03%	0.05%	0.08%	0.07%	0.07%	0.09%	0.10%	0.09%	0.01%
10	0.74%	0.05%	0.09%	0.05%	0.12%	0.14%	0.13%	0.13%	0.15%	0.03%
11	0.59%	0.03%	0.05%	0.04%	0.12%	0.11%	0.08%	0.13%	0.07%	0.02%
12	0.95%	0.05%	0.08%	0.09%	0.13%	0.11%	0.16%	0.08%	0.14%	0.01%
13	0.92%	0.02%	0.02%	0.01%	0.02%	0.05%	0.03%	0.02%	0.00%	0.00%
14	0.41%	0.03%	0.03%	0.03%	0.07%	0.03%	0.06%	0.07%	0.05%	0.01%
15	0.18%	0.02%	0.01%	0.01%	0.02%	0.02%	0.02%	0.02%	0.01%	0.00%
16	0.25%	0.02%	0.01%	0.01%	0.02%	0.01%	0.03%	0.03%	0.01%	0.00%

Table B-3

Sector #	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.49%	0.54%	0.02%	0.01%	0.04%	0.02%	0.07%	0.03%	0.03%	0.01%
2	0.55%	0.97%	0.02%	0.00%	0.02%	0.03%	0.06%	0.02%	0.05%	0.01%
3	0.94%	0.87%	0.04%	0.01%	0.06%	0.02%	0.15%	0.05%	0.04%	0.01%
4	1.20%	2.53%	0.16%	0.09%	0.19%	0.12%	0.14%	0.12%	0.12%	0.04%
5	0.60%	2.32%	0.06%	0.03%	0.08%	0.05%	0.09%	0.08%	0.07%	0.01%
6	2.85%	1.68%	0.11%	0.06%	0.10%	0.08%	0.10%	0.11%	0.21%	0.02%
7	0.49%	1.43%	0.06%	0.04%	0.08%	0.06%	0.09%	0.09%	0.09%	0.01%
8	0.77%	1.50%	0.09%	0.06%	0.16%	0.10%	0.16%	0.12%	0.11%	0.02%
9	0.52%	1.96%	0.07%	0.12%	0.10%	0.09%	0.13%	0.13%	0.13%	0.02%
10	0.76%	2.97%	0.14%	0.08%	0.20%	0.18%	0.22%	0.25%	0.20%	0.05%
11	0.60%	3.06%	0.08%	0.07%	0.15%	0.15%	0.12%	0.16%	0.11%	0.04%
12	0.97%	2.96%	0.12%	0.10%	0.16%	0.16%	0.21%	0.13%	0.17%	0.02%
13	0.93%	1.15%	0.03%	0.02%	0.03%	0.06%	0.05%	0.02%	0.00%	0.00%
14	0.41%	1.60%	0.04%	0.05%	0.09%	0.04%	0.09%	0.10%	0.08%	0.02%
15	0.18%	1.07%	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%	0.02%	0.01%
16	0.25%	1.05%	0.02%	0.01%	0.03%	0.02%	0.04%	0.04%	0.02%	0.01%

JAP=Japan, CHN=China, KOR=Korea, INDN=Indonesia, MLY=Malaysia,
PHL=Philippines, SIN=Singapore, THA=Thailand, US=USA

Table B-4

Sector #	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.01%	0.53%	0.01%	0.16%	0.29%	0.60%	0.21%	0.70%	0.02%	0.01%
2	0.01%	0.96%	0.01%	0.07%	0.11%	0.82%	0.39%	0.78%	0.02%	0.01%
3	0.01%	0.86%	0.03%	0.35%	0.91%	1.04%	0.44%	1.47%	0.03%	0.01%
4	0.05%	2.50%	0.13%	1.08%	0.68%	3.32%	0.22%	1.89%	0.06%	0.05%
5	0.02%	2.32%	0.05%	0.54%	0.50%	2.26%	0.14%	3.14%	0.05%	0.01%
6	0.02%	1.65%	0.04%	0.63%	0.43%	4.43%	0.28%	3.50%	0.05%	0.01%
7	0.01%	1.41%	0.03%	0.48%	0.50%	1.99%	0.19%	1.98%	0.05%	0.01%
8	0.02%	1.49%	0.04%	1.04%	0.61%	2.60%	0.20%	3.30%	0.06%	0.01%
9	0.02%	1.94%	0.03%	2.65%	0.66%	2.62%	0.24%	3.93%	0.08%	0.02%
10	0.05%	2.96%	0.11%	1.99%	1.03%	2.14%	0.27%	2.39%	0.16%	0.05%
11	0.04%	3.03%	0.04%	3.46%	1.31%	3.18%	0.19%	8.29%	0.06%	0.03%
12	0.03%	2.92%	0.05%	1.80%	0.68%	2.48%	0.15%	2.38%	0.07%	0.02%
13	0.01%	1.14%	0.02%	0.25%	0.32%	2.08%	0.40%	0.67%	0.00%	0.00%
14	0.01%	1.58%	0.02%	1.12%	0.46%	1.31%	0.13%	2.15%	0.05%	0.02%
15	0.00%	1.07%	0.01%	0.35%	0.31%	0.82%	0.13%	0.98%	0.01%	0.01%
16	0.00%	1.05%	0.01%	0.30%	0.23%	0.59%	0.09%	0.93%	0.01%	0.01%

Table B-5

Sector #	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.49%	0.01%	0.02%	0.16%	0.31%	0.61%	0.23%	0.71%	0.03%	0.01%
2	0.55%	0.02%	0.02%	0.07%	0.12%	0.84%	0.42%	0.79%	0.05%	0.01%
3	0.94%	0.02%	0.03%	0.35%	0.92%	1.05%	0.52%	1.49%	0.05%	0.01%
4	1.18%	0.04%	0.08%	1.10%	0.69%	3.31%	0.17%	1.87%	0.13%	0.04%
5	0.60%	0.05%	0.06%	0.56%	0.53%	2.26%	0.17%	3.19%	0.08%	0.01%
6	2.85%	0.04%	0.10%	0.65%	0.49%	4.48%	0.30%	3.56%	0.22%	0.02%
7	0.49%	0.03%	0.04%	0.49%	0.54%	2.00%	0.22%	2.03%	0.07%	0.01%
8	0.76%	0.04%	0.06%	1.06%	0.69%	2.65%	0.25%	3.36%	0.09%	0.01%
9	0.52%	0.04%	0.06%	2.69%	0.70%	2.67%	0.30%	4.00%	0.13%	0.02%
10	0.77%	0.08%	0.15%	2.02%	1.08%	2.25%	0.31%	2.38%	0.26%	0.06%
11	0.62%	0.04%	0.07%	3.47%	1.40%	3.26%	0.22%	8.39%	0.10%	0.04%
12	0.96%	0.06%	0.09%	1.87%	0.77%	2.55%	0.26%	2.42%	0.18%	0.02%
13	0.93%	0.03%	0.02%	0.26%	0.33%	2.11%	0.40%	0.68%	0.00%	0.00%
14	0.41%	0.04%	0.03%	1.13%	0.50%	1.32%	0.16%	2.19%	0.07%	0.01%
15	0.18%	0.02%	0.02%	0.35%	0.32%	0.83%	0.14%	0.99%	0.02%	0.01%
16	0.25%	0.03%	0.01%	0.31%	0.24%	0.60%	0.10%	0.94%	0.02%	0.01%

JAP=Japan, CHN=China, KOR=Korea, INDN=Indonesia, MLY=Malaysia,
 PHL=Philippines, SIN=Singapore, THA=Thailand, US=USA

Table B-6

Sector #	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.49%	0.54%	0.02%	0.16%	0.32%	0.61%	0.25%	0.72%	0.04%	0.01%
2	0.56%	0.98%	0.02%	0.08%	0.12%	0.84%	0.43%	0.80%	0.06%	0.01%
3	0.94%	0.87%	0.05%	0.36%	0.94%	1.06%	0.56%	1.50%	0.05%	0.01%
4	1.21%	2.54%	0.18%	1.13%	0.78%	3.37%	0.26%	1.94%	0.16%	0.06%
5	0.61%	2.35%	0.08%	0.56%	0.55%	2.28%	0.20%	3.20%	0.10%	0.02%
6	2.86%	1.69%	0.12%	0.67%	0.51%	4.50%	0.34%	3.58%	0.24%	0.02%
7	0.50%	1.44%	0.06%	0.50%	0.56%	2.02%	0.25%	2.05%	0.10%	0.02%
8	0.77%	1.51%	0.10%	1.08%	0.73%	2.67%	0.30%	3.39%	0.13%	0.02%
9	0.53%	1.97%	0.08%	2.73%	0.73%	2.69%	0.33%	4.03%	0.17%	0.03%
10	0.79%	3.01%	0.20%	2.04%	1.15%	2.28%	0.40%	2.51%	0.31%	0.08%
11	0.63%	3.07%	0.10%	3.50%	1.43%	3.29%	0.26%	8.42%	0.13%	0.05%
12	0.98%	2.97%	0.13%	1.89%	0.80%	2.59%	0.31%	2.46%	0.21%	0.03%
13	0.93%	1.16%	0.04%	0.26%	0.34%	2.13%	0.43%	0.68%	0.00%	0.01%
14	0.42%	1.61%	0.05%	1.15%	0.52%	1.34%	0.19%	2.22%	0.10%	0.02%
15	0.18%	1.08%	0.03%	0.36%	0.32%	0.84%	0.15%	1.00%	0.02%	0.01%
16	0.25%	1.06%	0.02%	0.31%	0.25%	0.60%	0.12%	0.95%	0.02%	0.01%

ANNEX

Case of Japan + China + Korea

Sector#	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.5%	0.5%	0.9%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
2	0.6%	1.0%	0.5%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
3	0.9%	0.9%	1.3%	0.0%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%
4	1.2%	2.6%	1.2%	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%
5	0.6%	2.4%	1.2%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
6	2.9%	1.7%	1.5%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.0%
7	0.5%	1.4%	0.9%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
8	0.8%	1.5%	1.2%	0.1%	0.2%	0.1%	0.2%	0.1%	0.1%	0.0%
9	0.5%	2.0%	1.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
10	0.8%	3.0%	0.9%	0.1%	0.2%	0.2%	0.2%	0.3%	0.2%	0.1%
11	0.6%	3.1%	1.1%	0.1%	0.2%	0.2%	0.1%	0.2%	0.1%	0.0%
12	1.0%	3.0%	1.3%	0.1%	0.2%	0.2%	0.2%	0.1%	0.2%	0.0%
13	0.9%	1.2%	3.2%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
14	0.4%	1.6%	0.7%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
15	0.2%	1.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16	0.2%	1.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

JAP=Japan, CHN=China, KOR=Korea, INDN=Indonesia, MLY=Malaysia,
PHL=Philippines, SIN=Singapore, THA=Thailand, US=USA

Case of Japan + China + Korea + ASEAN

Sector#	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.5%	0.5%	0.9%	0.2%	0.3%	0.6%	0.3%	0.7%	0.1%	0.0%
2	0.6%	1.0%	0.5%	0.1%	0.1%	0.9%	0.4%	0.8%	0.1%	0.0%
3	0.9%	0.9%	1.3%	0.4%	1.0%	1.1%	0.6%	1.5%	0.1%	0.0%
4	1.2%	2.6%	1.2%	1.2%	0.8%	3.4%	0.3%	2.0%	0.2%	0.1%
5	0.6%	2.4%	1.2%	0.6%	0.6%	2.3%	0.2%	3.2%	0.1%	0.0%
6	2.9%	1.7%	1.6%	0.7%	0.5%	4.5%	0.4%	3.6%	0.3%	0.0%
7	0.5%	1.5%	0.9%	0.5%	0.6%	2.0%	0.3%	2.1%	0.1%	0.0%
8	0.8%	1.5%	1.2%	1.1%	0.8%	2.7%	0.3%	3.4%	0.1%	0.0%
9	0.5%	2.0%	1.1%	2.8%	0.8%	2.7%	0.3%	4.0%	0.2%	0.0%
10	0.8%	3.0%	1.0%	2.1%	1.2%	2.3%	0.4%	2.5%	0.4%	0.1%
11	0.6%	3.1%	1.1%	3.5%	1.5%	3.3%	0.3%	8.4%	0.1%	0.1%
12	1.0%	3.0%	1.3%	1.9%	0.8%	2.6%	0.3%	2.5%	0.2%	0.0%
13	0.9%	1.2%	3.2%	0.3%	0.3%	2.2%	0.4%	0.7%	0.0%	0.0%
14	0.4%	1.6%	0.8%	1.2%	0.5%	1.4%	0.2%	2.2%	0.1%	0.0%
15	0.2%	1.1%	0.5%	0.4%	0.3%	0.8%	0.2%	1.0%	0.0%	0.0%
16	0.3%	1.1%	0.6%	0.3%	0.3%	0.6%	0.1%	1.0%	0.0%	0.0%

ANNEX (Continued)

Case of Japan + China + Korea + ASEAN + US

Sector#	JAP	CHN	KOR	INDN	MLY	PHL	SIN	THA	TWN	US
1	0.5%	0.5%	0.9%	0.2%	0.3%	0.6%	0.3%	0.7%	0.1%	0.1%
2	0.6%	1.0%	0.5%	0.1%	0.1%	0.9%	0.4%	0.8%	0.1%	0.1%
3	1.0%	0.9%	1.3%	0.4%	1.0%	1.1%	0.6%	1.5%	0.1%	0.1%
4	1.2%	2.6%	1.2%	1.2%	0.8%	3.4%	0.3%	2.0%	0.2%	0.9%
5	0.6%	2.4%	1.2%	0.6%	0.6%	2.3%	0.2%	3.2%	0.1%	0.1%
6	2.9%	1.7%	1.6%	0.7%	0.5%	4.5%	0.4%	3.6%	0.3%	0.1%
7	0.5%	1.5%	1.0%	0.5%	0.6%	2.0%	0.3%	2.1%	0.1%	0.1%
8	0.8%	1.5%	1.2%	1.1%	0.8%	2.7%	0.3%	3.4%	0.1%	0.1%
9	0.5%	2.0%	1.1%	2.8%	0.8%	2.7%	0.4%	4.0%	0.2%	0.2%
10	0.8%	3.0%	1.0%	2.1%	1.2%	2.3%	0.4%	2.6%	0.4%	0.2%
11	0.6%	3.1%	1.1%	3.5%	1.5%	3.3%	0.3%	8.4%	0.2%	0.3%
12	1.0%	3.0%	1.3%	1.9%	0.8%	2.6%	0.3%	2.5%	0.2%	0.2%
13	0.9%	1.2%	3.2%	0.3%	0.3%	2.2%	0.4%	0.7%	0.0%	0.0%
14	0.4%	1.6%	0.8%	1.2%	0.5%	1.4%	0.2%	2.2%	0.1%	0.1%
15	0.2%	1.1%	0.5%	0.4%	0.3%	0.8%	0.2%	1.0%	0.0%	0.0%
16	0.3%	1.1%	0.6%	0.3%	0.3%	0.6%	0.1%	1.0%	0.0%	0.0%