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Japan and United States in Intra-Industry Trade of the EAEC

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ABSTRACT

The principal aim of this study is to provide empirical evidence on the phenomena of intra-industry trade in the bilateral trade of the East Asian Economic Caucus (EAEC) countries and the United States (US) and the EAEC and Japan. The rationale for doing so, is to evaluate the impact of both US and Japan in contributing to intra-industry trade as it relates to the discussions on trade integration within EAEC and the Asian Pacific Economic Cooperation (APEC). The results show that the contribution of the US to intra-industry of the EAEC is larger than that of Japan although in the latter case, the dispersion of product divisions that contribute to intra-industry trade is larger than that of the former.

ABSTRAK

Tujuan utama kajian ini ialah untuk melihat bukti empiris mengenai fenomena perdagangan intra-industri dalam hubungan perdagangan dua hala negara Rundingan Ekonomi Asia Timur (EAEC) dengan Amerika Syarikat dan negara EAEC dengan Jepun. Rasional bagi membuat demikian, adalah untuk menilai impak kedua-dua Amerika Syarikat dan Jepun terhadap perdagangan intra-industri berhubungan dengan integrasi perdagangan di dalam EAEC dan Kerjasama Ekonomi Asia Pasifik (APEC). Keputusan kajian menunjukkan bahawa sumbangan Amerika Syarikat terhadap perdagangan intra-industri adalah lebih besar daripada negara Jepun walaupun penyelerakan kategori keluaran yang menyumbang ke arah perdagangan intra-industri adalah lebih besar bagi Jepun.

INTRODUCTION

The proposed formation of the East Asian Economic Grouping (EAEC), later on East Asian Economic Caucus (EAEC), has sparked off

"discussions" as to the necessity of forming another group that might duplicate the efforts of the Asian Pacific Economic Cooperation (APEC). APEC which was set up in 1989 consists of all the ASEAN countries, South Korea, Japan, Australia, New Zealand, Canada and the US. The proposed EAEC also includes ASEAN countries, Lao, Cambodia, Vietnam, North and South Korea, Hong Kong, Taiwan, China and Japan. The US, an important trading partner of a large number of EAEC countries is noticeably excluded from the EAEC.

The work programme of APEC includes seven working groups covering trade and investment data, trade promotion, investment and technology transfer, human resources development, energy cooperation, marine resource conservation and telecommunications. The EAEC attempts to foster closer trade relation among countries in the region and also to enhance its bargaining power in future trade negotiations. Within EAEC, the most dominant member in terms of economic strength and volume of trade is Japan. Within APEC, the most dominant member is the US. The importance of both Japan and US. in the trade relationship of EAEC members cannot go unnoticed as shown in the bilateral trade data of EAEC and APEC countries in Table 1.

Studies by Balassa (1966) and Grubel (1967) have reported evidence which suggested a positive association between the formation of EEC and the growth of intra-industry exchange. The pattern of trade specialization among industrial countries is predominantly intra-industry in character (simultaneous export and import of differentiated product) while those of the dynamic Asian economies which are moving towards the economic structure of industrial countries exhibit a similar pattern (Gunasekera 1989). This paper attempts firstly to examine links between intra-industry trade and economic integration of the EAEC members. Specifically, the paper attempts to comment on the phenomena of intra-industry trade in the bilateral trade relation between EAEC members and the US. and between EAEC members and Japan as it relates to trade integration within APEC and EAEC. Secondly, the way these links differ between EAEC members and Japan and between EAEC members and the US will also be considered. International trade can be of the intra-industry or

TABLE 1. Bilateral Trade (millions US$) of EAEC and APEC Countries (1989)

	EAEC Countries												
	Brunei	China	Hong Kong	Indonesia	Japan	S. Korea	Lao	Malaysia	Phillipines	Singapore	Thailand	Vietnam	Taiwan
Brunei		3.7	11.1	9.4	1 069.7	217.5	–	91.5	45.0	577.9	205.9	–	60.2
China	3		35 812	748	18 285	–	17	968	548	3 042	1 181	–	–
Hong Kong	10	44 030		1 024	16 475	5 180	2	1 381	1 072	5 012	1 685	270	9 298
Indonesia	9	1 071	708		13 084	1 476	–	581	206	2 847	448	52	1 608
Japan	1 159	19 560	13 679	14 244		29 422	32	9 202	4 421	12 136	10 382	512	24 262
South Korea	238	–	4 042	1 779	31 101		–	2 038	679	2 187	1 141	2	2 620
Lao	–	16.3	1.12	.03	34.04	–		.34	–	–	103.86	–	–
Malaysia	83	1 090	1 233	761	9 454	1 817	–		484	8 007	1 293	51	1 692
Phillipines	49.3	292.1	802.3	236.6	3 755.4	593	–	382.3		736.9	245.1	34.5	940.3
Singapore	538	2 897	4 245	–	14 440	2 354	–	12 628	930		3 718	–	3 588
Thailand	220	1 354	1 099.5	1 521.4	11 085.5	1 042.5	101.5	1 166.7	205.3	3 246		47.4	1 570
Vietnam	–	–	267.5	53.4	498	–	–	48.3	33.9	–	45.6		–
Australia	27.9	1 710	2 007	1 316	19 276	3 275	.67	1 431	516.9	2 148	853.6	82.4	2 982
Canada	2.6	1 317	1 858	418	15 382	3 525	.58	405	305.1	662	652.5	14.9	2 750
New Zealand	.3	322	302	156	2 987	476	–	202	115.1	271	140.7	2.8	477.6
U.S.	142.1	10 906	24 438	5 691	142 207	36 811	1.16	8 487	5 067	18 954	7 049	11.6	36 951

Source : Direction of Trade Statistics Yearbook, IMF, 1990.
Notes : Data for North Korea and Cambodia is not available.

inter-industry type. By looking at intra-industry trade, we indirectly are also looking at inter-industry trade because the residual of intra-industry trade is inter-industry trade and vice versa.

DETERMINANTS OF INTRA-INDUSTRY EXCHANGE

Traditional trade theory does not predict intra-industry trade on a large scale although intra-industry trade (IIT) is an undeniable fact of modern industrial economies. IIT refers to the simultaneous exchange, by countries of products which are very close substitutes in terms of end-use or factor inputs. Standard comparative cost theory cannot explain the extensive trade among the industrial countries and also the prevalence in this trade of two way exchanges of differentiated products. Krugman (1980), Grubel (1970) and others have proposed a new framework that incorporates scale economies, product differentiation, and imperfect competition. Perfect competition an element of traditional trade theory is an impossible market structure under conditions of diverse preferences and infinitely variable product specifications (Lancaster 1980).

Economic growth and development leading to rising per capita income levels will lead to shifts in demand structures following Engel's Law. The relative demand for manufactured goods and services rises while the relative demand for agricultural products falls. Rising income levels tends to increase demand for different products and for greater variety within each product group. The potential for intra-industry exchange increases, cet. par., the more evenly preferences are distributed across a given product spectrum. Both horizontal and vertical product spectrum is important in determining intra-industry exchange where the former refers to diverse preferences for alternative combinations of a given number of attributes and the latter to diverse preferences for alternative quality gradings (Greenaway & Milner 1984).

Another consideration on the demand side of the market with respect to intra-industry trade is that of taste overlap. The greater the extent of taste overlap between potential trading partners, cet. par., the greater the potential scope of IIT. Of course, demand considerations must be backed by purchasing power to make it effective demand.

The above mentioned demand factors provided the necessary conditions for intra-inudstry exchange but the sufficiency condition is decreasing costs in the production function. The sources of the scale economies will determine the minimum efficient scale of production and in turn the number of firms that can exist in a market. The number of firms that can exist is thus independent of the decreasing cost condition.

Previous studies have examined the production and trade of differentiated products in manufacturing industries. If industrial and industrializing countries wish to gain from declining average cost of output due to scale economies internal to firms, production of all varieties of a given product in each country will not then be possible. Instead production will be based only on a limited subset of products in each differentiated product industry in each country and intra-industry trade will then satisfy consumers' demand for variety.

As countries of the world industrialize, the levels of various forms of capital formation rises. This then leads to a decline in the dissimilarity of factor endowments between developing countries that are industrializing and the industrialized countries. The decline in the dissimilarity of factors endowments will lead to reductions in the dissimilarity of the pattern of production (in terms of commodity composition) among countries and consequently an overlapping pattern of production in some industries. An overlapping pattern of production will then encompass some production and trade of differentiated products.

Based on Mundell (1957), conventional wisdom states that the relationship between factor movements and trade is that they are substitutes rather than complements. This presumption has been challenged based on work in IIT. Factor movements and IIT can be considered to be complements. Specifically IIT emerges as a product of foreign direct investment, with transnational corporations specializing in different varieties in different countries (Drabek & Greenaway 1984: 494). Rising wages normally accompany economic development and differences in the cost of labour among countries at different stages of development create incentives to transfer production of "product cycle" goods from industrial countries toward locations with lower labour cost. The developing countries with low wage costs then specialize in the production of mature product cycle goods and export them to industrial countries. Economic integration which leads to liberalization of capital flows and promotion of foreign

direct investment can be expected to positively influence intra-industry trade.

METHODOLOGY AND DATA

There are a number of alternative measures of intra-industry exchange which has been explored in the literature (Tharakan 1984; Grubel & Llyod 1975). Perhaps the best known measure for measuring IIT in product i (IIT_i) is the Grubel-Llyod index which is defined as

$$IIT_i = B_i = \frac{\{(X_i + M_i) - |X_i - M_i|\}\ 100}{(X_i + M_i)} \qquad (1)$$

where X_i = exports of product i by a given country (region) in a given year, and

M_i = imports of product i by the same country (region) in the same year.

When expressed in percentage terms, the Grubel-Llyod index would vary from zero to 100. It would be zero if there is only inter-industry trade (i.e., only exports or imports of commodity i, but not both) and it would be 100 where there is only intra-industry trade (i.e. exports of commodity i exactly equals imports of commodity i). Obviously the index will increase as the level of aggregation of products in trade flows increases. There are a number of problems associated with categorial aggregation (Greenaway & Milner 1983) in the measurement of the Grubel-Lloyd index. The problem of categorical aggregation is acknowledged but no attempt will be made to establish its significance.

For a given level of aggregation, the most useful statistic for summarizing the distribution of a set of individual measures of IIT is the weighted average, using as weights the relative size of exports plus imports of each industry in the total value of exports plus imports of the set of n industries:

$$C_i = \left\{\sum_{i=1}^{n} B_i (X_i + M_i) \Big/ \sum_{i=1}^{n} (X_i + M_i)\right\} \cdot 100 \qquad (2)$$

IIT indices between EAEC countries and US and EAEC countries and Japan are only calculated for groups 5 – 8 (i.e. semi and finished manufactures) in the Standard International Trade Classification (SITC) since it is in these groups that the greatest potential for IIT exists. The indices were calculated for the year 1986, the latest year for which data is available. Data was obtained from the *Statistics of Foreign Trade* published by the Organization for Economic Cooperation and Development (OECD), 1988. The OECD data is at the 2 digit level of aggregation. Ideally, the 3 digit level of aggregation should be used in calculating the IIT indices but it is difficult to amass data for 14 countries trade with the US and Japan for 151 industries each at the 3 digit level. Since the study attempts to compare IIT between EAEC and the US and IIT between EAEC and Japan, and not try to interpret the absolute levels of IIT, this shortcoming will hopefully not bias the conclusions.

IIT indices were calculated at the 2 digit level and then aggregated at the single digit level according to formula 2 for SITC 5 – 8 for the bilateral trade of EAEC countries with US and Japan. The EAEC countries were divided into ASEAN and non-ASEAN countries to discern any differences in IIT between these two groups of EAEC members. In the non-ASEAN group, Cambodia did not trade with both Japan and US in 20 industries at the 2 digit level. In the remaining 15 industries, Cambodia may have traded with either US or Japan or both the countries but no intra-industry trade occurred. Similarly for Lao, trade with Japan and US did take place in some industries but they were all of the inter-industry type. Thus, both Cambodia and Lao were omitted from the analysis of IIT although they are both members of EAEC.

An overall IIT index was calculated for each EAEC member's trade with US and Japan. In this case also, the results were divided into 2 sub-groups, i.e. ASEAN and non-ASEAN.

RESULTS

The results of the calculation of IIT for the manufacturing groups SITC 5 – 8 are set out in Table 2. These results are aggregated from IIT indices calculated at the 2 digit level. In the case of the ASEAN countries, Phillipines, Thailand and Malaysia show a predominance in SITC 7 (machinery and transport equipment) in intra-industry trade

with the US. At the 2 digit level, the industries in division 77 (electrical machinery, apparatus and appliances, n.e.s. and electrical parts there of) shows the highest index of IIT, that is 74.6, 69.02 and 64.9 for Phillipines, Malaysia and Thailand respectively. Indonesia's IIT with the US pedominates in SITC 5 (chemicals) with division 56 (manufactured fertilizer) having the highest index of 5.23 within SITC 5. For the non-ASEAN countries; Hong Kong, South Korea and Taiwan also show a predominance of IIT with the US in SITC 7. But in the case of Hong Kong, at the 2 digit level, the largest index of IIT with the US is 39.44 and it occurs in division 74 (general industrial machinery and equipment, n.e.s., and machinery and parts, n.e.s.). At the 2 digit level, South Korea's IIT index for bilateral trade with the US is highest in division 77 with a percentage of 18.97. Similarly for Taiwan, in SITC 7, the largest index for IIT with the US occurs in division 77 with a percentage of 12.5. Singapore's IIT with the US is highest in SITC 6 (basic manufactures) with division 69 (manufactures of metal, n.e.s.) having the highest percentage of 30.23 at the 2 digit level. In the case of China, the biggest IIT index at the single digit level occurs in SITC 5 with division 51 (organic chemicals) having the highest index of 13.11.

For both the ASEAN and non-ASEAN countries (in EAEC), IIT with the US predominates in SITC 7 with the division 77 contributing the most to IIT. In general, it can be said that in the EAEC's trade with US, about half of the volume of trade in SITC 7 is of the intra-industry type. The second largest index of IIT with the US at the single digit is in SITC 6 (23.85) for ASEAN countries and SITC 5 (30.19) for non-ASEAN countries. For EAEC as a whole, the ranking of IIT with the US is highest in SITC 7 (machinery and transport equipment), followed by SITC 5 (chemicals manufacture), SITC 6 (basic manufactures) and lastly SITC 8 (miscellaneous manufactured goods).

In ASEAN countries IIT with Japan; Singapore, Phillipines, Malaysia and Thailand show a predominance of IIT in SITC 5 (chemicals). Within SITC 5, division 51 (manufacture of organic chemicals) has the largest IIT index of 19.27 for Singapore. Similarly for Philippines, the highest IIT index of 29.9 occurs in division 51 within SITC 5. Both Malaysia and Thailand has the largest index in division 59 (manufacture of chemical materials and products, n.e.s.) within SITC 5 with indices of 15.06 and 13.7 respectively. In the case of Malaysia, at the 2 digit level, the second highest index of 14.28 within

TABLE 2. IIT Index and Value (Thousand US$) of IIT with US and Japan According to SITC (1986)

EAEC Member	US				Japan			
	SITC5	SITC6	SITC7	SITC8	SITC5	SITC6	SITC7	SITC8
Brunei	14.08	1.30	.35	3.61	2.77	1.59	.04	2.89
	(68)	(14)	(673)	(102)	(74)	(228)	(16)	(102)
Indonesia	13.12	3.06	8.83	4.83	5.78	13.88	.04	11.43
	(28 519)	(13 450)	(31 223)	(17 369)	(19 492)	(141 278)	(573)	(14 294)
Malaysia	40.36	22.74	72.23	11.46	33.91	17.30	13.41	19.83
	(60 65)	(40 984)	(2 046 882)	(46 798)	(65 660)	(80 323)	(150 183)	(24 971)
Phillipines	35.26	17.87	80.53	11.89	43.28	27.25	8.52	36.11
	(57 648)	(31 403)	(1 001 269)	(103 890)	(83 568)	(102 327)	(41627)	(35 199)
Singapore	11.51	65.66	52.21	36.21	48.74	6.45	11.32	7.99
	(47 983)	(158 168)	(2 973 696)	(322 476)	(190 651)	(48 635)	(344 375)	(125 921)
Thailand	18.62	24.80	80.40	5.80	23.24	21.73	14.64	41.69
	(27 506)	(87 551)	(660 611)	(31 029)	(76 988)	(151 752)	(162 557)	(57 131)
ASEAN	20.29	23.85	60.27	16.99	30.12	15.78	9.67	12.48
	(222 389)	(331 570)	(6 714 354)	(521 664)	(436 433)	(524 543)	(699 331)	(257 618)

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Table 5 (*Continued*)

China	32.51	26.15	16.39	4.19	34.17	18.82	1.20	21.86
	(205 331)	(252 469)	(304 473)	(138 178)	(335 762)	(830 453)	(56003)	(271 961)
Hong Kong	9.18	54.12	84.56	7.95	12.54	11.08	4.70	31.02
	(37 208)	(531 837)	(2 925 264)	(513 327)	(54 237)	(216 321)	(153 123)	(588 706)
North Korea	0	0	0	0	4.47	32.21	.02	25.06
	–	–	–	–	(763)	(38 072)	(14)	(5 036)
South Korea	30.87	24.29	39.58	5.05	26.20	67.21	19.01	22.14
	(275 210)	(578 786)	(2 680 076)	(331 735)	(412 908)	(2 329 480)	(1 171 443)	(494 304)
Taiwan	36.08	13.57	37.24	2.97	30.03	41.77	25.00	24.58
	(394 792)	(487 563)	(3 164 039)	(306 524)	(348 704)	(977 833)	(1 168 786)	(420 148)
Vietnam	0	0	0	0	3.13	1.58	.62	22.19
	–	–	–	–	(759)	(546)	(669)	(886)
Non-ASEAN	30.19	23.36	44.08	4.84	27.50	35.64	13.46	25.06
	(912 541)	(1 850 655)	(9 073 852)	(1 289 764)	(1 153 133)	(4 392 705)	(2 550 038)	(1 781 041)
EAEC	27.55	23.43	49.77	6.10	28.17	31.33	12.42	22.22
	(1 134 930)	(2 182 225)	(15 788 206)	(1 811 428)	(1 589 566)	(4 917 248)	(3 249 369)	(2 038 659)

Note : Number in parentheses denotes value of IIT.

SITC 5 is in division 51. Indonesia's IIT with Japan is mainly in SITC 6. Within SITC 6, division 67, (iron and steel manufactures) has the largest index of 6.77.

South and North Korea, and Taiwan's IIT with Japan is mainly in SITC 6 (basic manufactures). At the 2 digit level, South and North Korea has the highest index in division 67 with indices of 29.13 and 18.31 respectively. In the case of Taiwan, the highest index at the 2 digit level is in division 65 (manufacture of textile yarn, fabrics, made-up articles, n.e.s. and related products) with an index of 14.13. The predominance of SITC 5 in China's IIT with Japan is similar to its IIT with US. In both IIT with Japan and US, within SITC 5, division 51 has the highest index of 13.86 and 13.11 respectively. Hong Kong's IIT with Japan is largely in SITC 8 (miscellaneous manufactured goods) with the division 89 (miscellaneous manufactured articles, n.e.s.) having the highest index of 14.99.

The structure of ASEAN countries IIT with Japan is different from that of the non-ASEAN countries: ASEAN countries IIT with Japan is mainly in SITC 5 (chemicals) with divisions 51 and 59 predominating. This is then followed by IIT in SITC 6 (basic manufactures), SITC 8 (miscellaneous manufactured goods) and SITC 7 (machinery and trasport equipment) for the ASEAN countries as a whole. But in the case of non ASEAN countries in EAEC, IIT with Japan in mainly in SITC 6 with division 67 predominating in the case of North and South Korea and division 65 predominating in the case of Taiwan. This is then followed by IIT in SITC 5, SITC 8 and lastly SITC 7.

The structure of IIT of EAEC countries with the US and with Japan is also different. In the case of IIT with the US, SITC 7 (machinery and transport equipment) predominates with an IIT index of about 50% with division 77 (electrical machinery, apparatus and appliances, n.e.s and electrical parts thereof) contributing the most to IIT for both ASEAN and non-ASEAN countries. SITC 7 is the least important category where IIT of EAEC with Japan is concerned. SITC 5 (chemicals) and SITC 6 (basic manufactures) are the next two most important categories of IIT with the US. But in these two categories, the percentage of IIT is about half that of SITC 7. In the case of IIT of EAEC with Japan, the categories SITC 6 and SITC 5 have indices of IIT roughly around 30% and SITC 8 has an index about 22. The indices are closer together and the dispersion of IIT trade among the different divisions is wider. The ASEAN and non-ASEAN countries IIT with Japan predominate in different categories and this contrasts with IIT

with the US where IIT predominate in SITC 7 for both ASEAN and non-ASEAN countries. An overall aggregated index for EAEC members bilateral trade with the US. and Japan was calculated from the 2 digit level data. These results are presented in Table 3. With the exception of Brunei, the IIT index of bilateral trade with the US is greater than the IIT index of bilateral trade with Japan for all the remaining ASEAN countries. The ASEAN members trade slightly more with the US than Japan and about 50% of ASEAN's trade with the US is of the intra-industry type compared with only 13% of ASEAN's trade with Japan which is of the intra-industry type. Traditionally, ASEAN has received foreign direct investment from its colonial powers and later on US transnational corporations (TNCs) arrived. The wave of US TNCs precedes that of Japan and this may account for the higher propotion of intra-industry trade with the US than with Japan in the ASEAN region for the year 1986.

For the non-ASEAN countries, Hong Kong has an IIT index of bilateral trade with the US greater than the similar index for bilateral trade with Japan. This can be attributed to Hong Kong's entreport trade where the US has sought inroads for trade with the Asia Pacific region via Hong Kong's open economy. North Korea does not trade with the US and Vietnam trades with the US but it is of the inter-industry type. The rest of the non-ASEAN countries have IIT indices for Japan higher than that of the US. About 33% of South Korea's trade with Japan is of the intra-industry type while IIT with the US is 23%. When Japan started to industrialize, it reached out towards its immediate neighbours, namely Taiwan and Korea for trade and later on as hosts for its foreign operations. Taiwan's IIT with Japan is about 30% while the similar index for IIT with US is 19. This again may reflect Japan's foreign investment in Taiwan in search of cheaper labour and in search of markets for Japan's products which precedes that of US. The IIT index for the non-ASEAN countries as a whole show that the non-ASEAN countries IIT index with US and Japan is roughly equal at 23%.

Where IIT for EAEC as a whole is considered, the IIT index of EAEC trade with the US. (28.96) is greater than the IIT index of trade with Japan (20.76). The absolute volume of IIT trade is about twice as much for US compared to Japan.

TABLE 3. Overall IIT Index of EAEC Members with the US and Japan (1986)

EAEC Member	US (a) Total Trade (US$000)	US (b) IIT Trade (US$000)	US (b)/(a) = (c) IIT_{US} (%)	Japan (d) Total Trade (US$000)	Japan (e) IIT Trade (US$000)	Japan (e)/(d) = (f) IIT_J (%)
Brunei	196 526	845	.43	60 378	423	0.7
Indonesia	1 370 112	90 564	6.61	2 991 550	175 566	6.03
Malaysia	3 572 738	2 195 448	61.45	1 903 782	321 168	16.87
Phillipines	2 456 331	1 194 268	48.62	1 154 657	262 800	22.76
Singapore	7 243 989	4 268 158	58.92	5 763 346	670 277	11.63
Thailand	1 857 393	806 665	43.43	2 277 025	448 346	19.69
ASEAN	16 697 089	8 555 948	51.24	14 070 738	1 878 580	13.35
China	6 752 544	900 789	13.34	11 306 258	1 495 818	13.23
Hong Kong	11 304 362	4 007 396	35.45	7 540 626	1 012 706	13.43
North Korea	0	0	0	225 381	43 882	19.47
South Korea	16 614 626	3 866 223	23.27	13 436 829	4 408 624	32.81
Taiwan	23 504 167	4 350 621	18.51	9 886 631	2 915 567	29.49
Vietnam	660	0	0	170 691	2 851	1.67
Non-ASEAN	58 176 359	13 125 029	22.56	42 566 416	9 879 448	23.21
EAEC	74 873 448	21 680 977	28.96	56 637 154	11 758 028	20.76

CONCLUSION

Mundell showed that if production functions are identical in each industry across countries and in the absence of international trade and labor mobility, capital flows from the capital abundant to the capital scarce country in search of a higher rate of return. This type of capital movement eliminates differences in factor proportions and destroys the basis for trade. But capital movements nowadays as characterized by direct foreign investment acitivties of transnational corporations is not so much capital but rather represents firm-specific corporate assets such as production technology, managerial and marketing skills. The pattern of intra-industry trade revealed in this study closely parallels the pattern of foreign direct investment especially that of the US. This tends not to support Mundell's proposition that trade and factor movements are substitutes. Contrary to conventional wisdom, IIT and factor movements are complements.

The EAEC's IIT with the US is concentrated on a narrower base of industries compared to Japan. For both ASEAN and non-ASEAN countries, IIT with the US predominates mainly in SITC 7 (machinery and transport equipment) with division 77 (electrical machinery, apparatus and appliances, n.e.s. and electrical parts thareof) having the largest index. About 50% of EAEC's trade with the US in SITC 7 is of the intra-industry type and the respective percentages for SITC 5 (chemicals), SITC 6 (basic manufactures) and SITC 8 (miscellaneous manufactured goods) are 28%, 23% and 10%. Japan's IIT with the EAEC countries is based on a wider range of products in many different divisions. 31% of EAEC's IIT with Japan is in SITC 6, 28% in SITC 5, 22% in SITC 8 and 12% in SITC 7. Although Japan's IIT with EAEC is smaller than that of the US, the wider coverage of products in Japan's IIT can hopefully be counted on to provide linkages with the economies of EAEC members and to promote trade within the EAEC countries.

ASEAN countries IIT with the US is relatively more important than IIT with Japan. This contrasts with non-ASEAN countries where IIT with Japan is about as important as IIT with the US. About half the volume of ASEAN's trade with the US is of the intra-industry type compared to only 13% of ASEAN's trade with Japan which is of the intra-industry type. For the non-ASEAN countries, roughly 23% of trade with both Japan and US is of the intra-industry type. In value terms, for the EAEC as a whole, US$ 21 681 million worth of trade with

the US is of the intra-industry type while US$11 758 million worth of trade with Japan is of the intra-industry type.

The above analysis is for the year 1986. We might say that cheap labour may have drawn US TNCs into ASEAN countries to a larger extent than to the non-ASEAN countries leading to higher IIT indices for ASEAN compared to non-ASEAN countries trade with the US. The foreign direct investment of the US is generally of the large firm type where economies of scale are important and pointedly concentrated in a few industries in which they have a technological advantage with the labour intensive part of production being carried out in labour abundant countries. The intermediate inputs for production are normally imported into the ASEAN countries and the finished products re-exported back to the US leading to large IIT indices for industries such as those in division 77 of the SITC.

Japan's IIT predominates in the non-ASEAN countries compared to ASEAN countries possibly reflecting Japan's outflow of direct foreign investment into its immediate neighbours at the time. Japan being natural resource scarce and increasingly facing higher labour costs at home and protectionist overtones from the US initially sought non-ASEAN (and later on ASEAN) countries as a base for production and export to other countries and also to Japan. The foreign direct investment of Japan in the host countries may be motivated by cheap labour and also to serve host countries markets whereas American direct foreign investment may be motivated only by cheap labour resulting in Japan's IIT index for EAEC countries to be less than that of the US.

The post – 1987 wave of Japanese foreign direct investment into ASEAN countries can be expected to increase IIT of Japan with the ASEAN countries. Japan's IIT with Vietnam, Cambodia and China is also expected to increase following the latter governments' democratic inclinations and this will lead to increases in IIT of EAEC countries with Japan. The North American Free Trade Agreement can be expected to diminish US IIT with ASEAN as US investments are directed towards Mexico (if cheap labour is what US TNCs sought), the Carribean countries and other Latin American countries that are embracing free market capitalism with less government intervention. Where the trade relationship of the US and the dynamic Asian economies is concerned; within some industries, production specialization in differentiated goods in which different countries produce different varieties of a product can lead to increases in IIT.

Overall, the direction of change of the US's IIT with the EAEC countries is unclear.

The importance of the US in contributing to IIT of the EAEC and especially the importance of its foreign direct investment in contributing to IIT specifically and overall trade in general should be appreciated. It is best not to discount the importance of the US as a trade and investment partner and to continue to pursue both the EAEC and APEC forums so as to promote international trade and economic growth for all members concerned.

REFERENCES

Aquino, A. 1978. Intra-industry trade and inter-industry specialization as concurrent sources of international trade in manufactures. *Weltwirtsch Archiv.* 114: 275-279.

Balassa, B. 1966. Tariff reductions and trade in manufactures among industrial countries. *American Economic Review* 56: 466-473.

Drabek, Z. & Greenaway, D. 1984 Economic Integration and Intra-Industry Trade: The EEC and CMEA Compared. *Kyklos* 37: 444-469.

Greenaway, D. & Milner, C. 1983. On the measurement of intra-industry trade. *The Economic Journal* 93: 900-908.

_____ . 1984. A cross-section analysis of intra-industry trade in the U.K., *European Economic Review* 25: 319-344.

_____ . 1986. *The Economics of Intra-Industry Trade.* Oxford: Basil Blackwell.

Grubel, H.G. 1967. Intra-industry specialization and the pattern of trade. *Canadian Journal of Economics and Political Science* 1: 374-388.

_____ . 1970. The theory of intra-industry trade. In *Studies in International Economics*, I.A. Mc Dougall and R.H. Snape, eds Amsterdam.

Grubel, H.G. & Llyod, P.J. 1975. *Intra-industry Trade.* London: Macmillan.

Gunasekera, H.B. 1989. Intraindustry specialization in production and trade in newly industrializing countries: A conceptual framework and some empirical evidence from East Asia. *World Development* 17(8): 1279-1287.

Krugman, P. 1980. Scale economies, product differentiation and the pattern of trade. *American Economic Review* 70(5): 950-959.

Lancaster, K. 1980. Intra-industry trade under perfect monopolistic competition. *Journal of International Economics* 10: 151-175.

Mundell, R.A. 1957. International trade and factor mobility. *American Economic Review* 47: 321-335..

Tharakan, P.K.M. 1984. Intra-industry trade between the industrial countries and developing world. *European Economic Review* 26: 213-227.

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