

Export Performances of Selected Electronics Products:

The Case of China and ASEAN-5

Abdul Latif Salleh (Corresponding author) College of Business Administration Prince Sultan University P.O.Box 66833, Riyadh 11586, Kingdom Of Saudi Arabia Tel: 966-1-454-8011 ext 2137 E-mail: asalleh@fnm.psu.edu.sa

Siow I Rene

Assistant Principal (Academic), Serdang Agriculture Institute P.O.Box 204, 43400, Serdang, Selangor, Malaysia Tel: 60-3-8948-6082 E-mail: i_rene@doa.gov.my

Abstract

Since embarking on its economic reform and open door policy in the late 1970s, China has emerged as the world's new economic powerhouse. Its accession into the World Trade Organization (WTO) in 2001 further accelerated the growth. China's vast potential market and cost competitiveness have combined to attract substantial foreign investment especially in electronics production. China's dominance in electronics production as reflected in its export performance may jeopardize the position of ASEAN-5 countries, which have previously been the established locations for electronics production. This paper sets to assess the impact of China's impressive economic growth and ascendancy on its ASEAN-5 neighbors by examining the trends in their export performances of office machines, data processing machines, and telecommunication equipments. The findings suggest that by 2004, China's exports have surpassed the combined exports of ASEAN-5 countries in all three product groups

Keywords: China, ASEAN-5, Export performance, Electronics

1. Introduction and Objective of the Paper

Since embarking on its economic reform and open door policy in 1978-79, China has experienced rapid and sustained economic growth. Its accession into the World Trade Organization (WTO) in 2001 further accelerated the growth and China's progress has begun to make a significant impact on economic prospects of East Asia and beyond. According to Woodall, P. (2004), China has become a locomotive for the rest of East Asia, accounting for half of the total export growth of the other East Asian economies in 2003.

While China's vast and expanding market offers exciting opportunities, its immense productive capacity poses potential threat to its Asian neighbors. For ASEAN-5 countries of Indonesia, Malaysia, the Philippines, Singapore, and Thailand, China's huge and cheap labor force and its cost competitiveness could eat into ASEAN's market shares in their traditional export markets such as the U.S., EU and Japan as well as threaten ASEAN industries in their domestic markets. China's cost competitiveness in production and its rapidly growing domestic market could also divert Foreign Direct Investment (FDI) from ASEAN to China. However, its vibrant economy and market of 1.3 billion consumers could turn China into a new regional growth engine that would benefit its ASEAN counterparts.

This paper examines export performances of selected electronic product groups from China and ASEAN-5 into the United States market. The first part of the paper introduces the patterns of economic growth of China and ASEAN-5 countries. This is followed by a brief description of the emergence of China as a new force in the global electronics industry and ends with a comparative analysis of the export trends and market shares of selected electronic products.

2. China's Economic Growth

Table 1 shows the trends in Gross Domestic Product (GDP) growth for China and ASEAN-5. The figures indicate that since the 1990, all countries of ASEAN-5 have been lagging behind China in terms of economic growth. Two major drivers of China's growth have been identified: exports and investments in fixed capital China's exports had been growing at more than twice the world average for over a decade prior to 2002 and in 2002 its exports accounted for 4% of world trade.

It is noted that China has now become the location of choice for foreign firms especially among electronics manufacturers. The importance of China as the favored destination *vis-à-vis* its Asian neighbors is reflected in Table 2, which shows a consistent and fast growing inward investments into China (UNCTAD Trade and Development Report, 2004).

3. The Electronics Industry in Asia

The modular nature of most electronic products allows electronics production to become easily fragmented and spatially dispersed. Hence, electronics production is generally organized through geographically distributed global production networks. These networks opened up opportunities for countries that lack sizeable market, technological sophistication, or marketing capabilities to participate in the global production chains, albeit to perform low-skilled activities (Lall et al. 2004; Salleh 2000).

During its infancy in 1960s, Asian electronics production was dominated by Japanese firms that used Hong Kong, Taiwan, and South Korea as low-cost platforms to penetrate export world market, particularly the United States. The 1970s saw an influx of large vertically-integrated U.S. electronic firms setting up operations in these countries and several countries of Southeast Asia. By mid-1980s, these early initiatives have spawned off domestic producers and suppliers within the East Asian countries, notably in Taiwan and South Korea, and the ASEAN-5 (Salleh, 1997). Early 1990s saw China entering the scene as another center for electronics production in Asia. By 2005, Asia Pacific region has accounted for 38% of global electronics output (Reed Electronics Research, 2006).

4. Methodology: Classification of Electronic Products and Analysis of Export Trends

Comparing the various findings of different studies relating to electronic products is fraught with problems because of the different ways those products are classified. This is caused by at least two reasons namely, the different needs for data compilation and the convergence of technologies and industries. Nevertheless, the general approach has been to use the SITC classifications (Ng and Yeat, 2004; Lall et.al., 2004).

This study uses US import figures for several groups of products as the basis for analysis. As U.S. remains the largest market for electronic products, the choice is appropriate. The trade statistics for exports by China and ASEAN-5 countries into the U.S. are derived from data compiled by the U.S. Department of Commerce, the U.S. Treasury, and the U.S. International Trade Commission, which are made available under USITC of US General Imports (USITIC 2005). However, the product groups used in the analysis are limited to three - those classified under SITC 751 (Office Machines), SITC 752 (ADP Machines), and SITC 764 (Telecommunication Equipments). Limiting our analysis to these three classes of products, while obviously restrictive, is still meaningful given the importance of these products to the nations concerned and thus illustrative of their export competitiveness.

5. Results

The following describes the export trends of China and the ASEAN-5 individual countries for the period 1989 to 2004. The analysis covers export values, export growth, export shares, and export shares of ASEAN-5 relative to China.

5.1 Office Machines (SITC 751)

Office machines include typewriters, check writing machines, calculators, cash registers, and other types of office machines. Table 3 shows exports of SITC 751 into the US market, in terms of value and growth rates.

World imports of SITC 751 grew steadily at 15.4 % between 1992 and 1995, dipped sharply during the period of 1998 and 2001, and grew again at a tremendous rate of 24% between 2001 and 2004. The world export value shows that there has been a sharp fall from US\$ 4.5 billion in 1998 to US\$ 2.2 billion in 2001. During this period, growth rates were negative for all countries of interest.

The global liberalization of the telecommunications industry and the explosion of the Internet could be the cause of the decline in demand for typewriters and calculators due to the influence of the multi purpose usage of computers. However, world exports of office machines grew again at 24% between 2001 and 2004. Comparatively, the export share of ASEAN-5 in 1989 was 3.6 times that of China, but from 1995 onwards they began to lose ground to China that in 2004 the ratio has diminished to only 0.15 times of China's exports (Table 4). China's cost competitiveness may have contributed to its rising exports and large share of world exports of office machines into the US. Among ASEAN-5, Thailand has fared the worst in recent years (negative 41.5% growth between 2001 and 2004), and its share stood at

0.68% in 2004. Singapore also fared very badly, with a share of only 0.05 that of China compared to 2.76 times in 1989.

5.2 ADP Machines (SITC 752)

ADP machines include analogue and hybrid data processing machines, complete computers, micro-processors, storage units (e.g. hard disk drives), peripherals including control and adapting units, and off-line processing equipments.

Unlike, office machines which have been declining, US imports of SITC 752 have increased from about US\$ 14 billion in 1989 to \$60 billion in 2004. This steady increase may have been due to increased competition among US computer hardware vendors, which led to the lowering of prices of computers and peripherals, and fueling demand for imports. Growth in Internet use, electronic commerce, and corporate investment in computer infrastructure to implement Internet or Internet-like technologies (intranets, extranets) may have certainly played a part too.

Again, as evidenced from Table 5, China has made an enormous gain over its ASEAN-5 counterparts, especially after 2001 when it overtook Singapore, which had previously been the leading exporter among ASEAN-5. As indicated in Table 6, in 1989, the export share of ASEAN-5 was 22.46% (compared to a meager 0.1% share of China), and its export value was 254 times bigger than China. This ends around 2001 when China's share rose to 12.5% - higher than any other ASEAN-5 nations. By 2004, its share of imports into the US stood at 41%, which is higher than the combined share of ASEAN-5 at 27.5%. Among ASEAN-5, Singapore, which had a share of about 19% in 1989, is the biggest loser, with only 7.5% of the share in 2004. Malaysia seemed to have been able to maintain a steady increase in its share from only 0.66% in 1989 to 14% in 2004.

5.3 Telecommunication Equipments (SITC 764)

Products grouped under SITC 764 include telecommunication equipments and parts of apparatus for TVs, radio, gramophones and telecommunication equipments. According to USITC (2000), US imports consisted mostly of low-end commodity-type products such as telephone sets, cellular telephones, and parts. The USITC also reports that in 1999, US imports of cellular telephones replaced cordless telephone sets as the leading import within the product group.

Table 7 shows the pattern of world exports of SITC 764 into the US. Import of SITC 764 grows slowly prior to 1998 to be followed by a sharp increase in 2001 and 2004. It grows from US\$ 11.5 billion in 1989 to US\$ 50.6 billion in 2004. Although China has registered an impressive growth, except for the Philippines, ASEAN-5 countries have done equally well, especially Thailand, which had 50% growth in export between 2001 and 2004.

Similar to the case of SITC 751 and SITC 752, China has, again, fared better than all ASEAN-5 countries. The figures in Table 8 indicate that by 1995, China's share of exports into the US has surpassed that of every individual ASEAN-5 nation. Among these ASEAN countries, Malaysia seemed to have been the best performer, followed by Thailand. Still, in 2004, Malaysia's export of USD 4 billion was only one-third of China's share of world exports of SITC 764 into the U.S.

The continued expansion and upgrade of the digital wireless infrastructure and increased use of cellular telephones have apparently boosted sales of telecommunication equipments in the US market. Similarly, the need for greater data carrying capacity associated with greater Internet usage and new services might have prompted telecommunications carriers, the primary customers for this product group, to increase spending on new equipment.

6. Conclusion

The above analysis of import trends into the U.S. for the period between 1989 and 2004 suggests that the emergence of China has certainly affected the performance of ASEAN-5 countries in the exports of electronics products. The analysis indicates that by 2004, China has surpassed not only individual countries, but the whole ASEAN-5 combined, for all three product groups. Although the analysis is limited to only three product groups, and include only imports figures for the U.S. market, nonetheless the analysis points to a very clear trends of the rising dominance of China in electronics production and exports at the world level.

The findings tend to support Ozawa's (1993) model of comparative advantage recycling in labor-intensive goods. The model explains how Asian economies have successfully initiated a succession of export-driven growth by developing and exporting labor-intensive goods mostly to the relatively open markets of the U.S. In this model, China becomes the latest Asian country to follow the earlier trodden steps of Japan, NIEs (Hong Kong, Taiwan, South Korea, and Singapore), and ASEAN-4 (Malaysia, Thailand, Indonesia, and the Philippines).

As argued by Kwan (2003), China has become the new "factory of the world", i.e. China's spectacular export growth is dependent on low wages and exploitation of scale economies. Evidently, China's wage level was only a small fraction of those in the U.S. and Japan, and it was considerably lower than those of ASEAN countries (Chia, 2004). Not surprisingly, among ASEAN-5, Singapore is the only country that has experienced a continuous decline in export shares for the entire electronic product group from 1989 to 2004. This is consistent with the fact that Singapore has an

increasing labor cost plus the fact that there's been a shift of emphasis in its Government's trade specialization policy (Chua, 2001).

While other ASEAN nations have not suffered as badly as Singapore, the overall trends, and especially the figures for 2004, suggest that these other ASEAN countries may soon suffer the same fate as Singapore. Based on comparative wage level as appeared in UNCTAD Trade and Investment Report (2002), Singapore's wage level (23 times that of China) is relatively very high, but even Malaysia (5.2 times), the Philippines (4.1 times), and Indonesia (2.2 times) have a disadvantage in terms of labor cost. Although this paper does not seek to provide competing explanations for the decline of ASEAN countries *vis-à-vis* China in electronics export performance, the pattern seems to support the comparative costs argument.

This study looks at the export trends of China and ASEAN-5 into the United States markets for the period between 1989 and 2004. While limiting the study to the U.S. imports has its advantages, it would certainly be interesting to examine the patterns at the global level. Future studies should also explore the trends after 2004, and extend them to include other electronics product groups.

References

Chia, S.Y. (2004). ASEAN-China free trade area. Proceedings of the AEP Conference 2004. 12-13 April, Hong Kong, 1-31.

Chua, B.L. (2001). Declining global market shares of Singapore's electronics exports: is it a concern? *Thunderbird International Business Review*, 45(1), 1-13.

Kwan, C.H. (2003). The accelerating shift of Japanese direct investment to China – competition between ASEAN and China. RIETI, China in Transition Series.

Lall, S., Albaladejo, M. & Zhang, J. (2004). "Mapping fragmentation: electronics and automobiles in East Asia and Latin America." *Oxford Development* Studies, 32(3), 1-30, [Online] Available: http://www.manuelalbaladejo.com/ (July 7, 2005).

Ng, F. & Yeats, A. (2003). Major trends in East Asia: what are their implications for regional cooperation and growth? World Bank Policy Research Working Paper 3084, 1-93.

Ozawa, T. (2003). "Pax Americana-led macro-clustering and flying geese-style catch-up in East Asia: mechanisms of regionalized endogenous growth." *Journal of Asian Economics*, 13 (6), 699-713.

Reed Electronics Research (2006). "38% of global electronics output now produced in Asia Pacific." [Online] Available: www.instat.com/ (January, 2007).

Salleh, A. L. (1997). Competition, coalitions and coordination in the global personal computer industry. Unpublished PhD dissertation, Duke University.

Salleh, A. L. (2000). Global networks and regionalization: changing roles of SMEs in the global personal computer industry. In Harvie, C. & Boon, C.L. (Eds), Proceedings of conference on SMEs in a global economy, 16-17 June, Wollongong, Australia, 230-237.

UNCTAD World Investment Report (2006). [Online] Available: www.unctad.org/fdstatistics (May 5, 2005).

UNCTAD Trade and Development Report (2004). [Online] Available: www.unctad.org/ (May 5, 2005)

UNCTAD Trade and Development Report (2002). [Online] Available: www.unctad.org/ (May 5, 2005).

USITC (2005). ITC trade data web. [Online] Available: http://dataweb.usitc.gov/

USITC (2000). Shifts in U.S merchandise trade in 1999. investigation no: 332-345, publication 3353.

Woodall, P. (2004). The dragon and the eagle. The Economist, October.

Table 1. GDP Growth (%) by Countries

	1990-2000	2001	2002	2003	2004
China	10.3	7.5	8.0	9.1	8.5
Indonesia	4.2	3.4	3.7	4.1	4.5
Malaysia	7.0	0.3	4.1	5.2	7.0
Philippines	3.3	3.4	4.4	4.5	5.0
Singapore	7.7	(-2.4)	2.3	1.1	7.5
Thailand	4.2	1.8	5.4	6.7	6.5

Source: UNCTAD Trade and Development Report (2004).

Table 2. Inward FDI (USD billions)

	1994	2000	2001	2002	2003	2004	2005
	-1999						
China	40.7	40.7	46.9	52.7	53.5	60.6	72.4
Southeast Asia	27.4	23.5	19.6	15.8	19.9	25.7	37.1
World	548.1	1,409.6	832.2	617.7	557.9	710.8	916.3

Source: Adapted from UNCTAD World Investment Report (2006).

Table 3. US imports of SITC 751 (1989-2004)

Export Value (Export Value (US\$ '000)									
	1989	1992	1995	1998	2001	2004				
World ¹	2 913 606	2 930 652	4 500 995	4 498 388	2 249 330	4 290 154				
China	49 905	168 287	567 771	1 083 074	751 003	1 893 872				
ASEAN-5	181 363	322 063	503 481	429 278	320 383	278 184				
Indonesia	na	140	35 335	44 718	14 162	35 706				
Malaysia	19 840	73 454	123 059	104 839	94 680	119 554				
Philippines	na	11 888	3 610	6 716	2 964	8 056				
Singapore	137 929	118 105	1 04 733	91 112	63 451	85 763				
Thailand	23 594	118 476	236 744	181 893	145 126	29 105				
Growth Rate		<u>1989-92</u>	<u>1992-95</u>	<u>1995-98</u>	<u>1998-01</u>	<u>2001-04</u>				
World ¹		0.2%	15.4%	0.0%	-20.6%	24.0%				
China		50.0%	50.0%	24.0%	-11.5%	36.1%				
ASEAN-5		21.1%	16.1%	-5.2%	-9.3%	-4.6%				
Indonesia		na	532.0%	8.2%	-31.8%	36.1%				
Malaysia		54.7%	18.8%	-5.2%	-3.3%	8.1%				
Philippines		na	-32.8%	23.0%	-23.9%	39.6%				
Singapore		-5.0%	-3.9%	-4.5%	-11.4%	10.6%				
Thailand		71.2%	26.0%	-8.4%	-7.3%	-41.5%				

Source: Author's calculation from ITC dataWeb

Note: ¹World represents all the countries exporting to the US export including China and ASEAN-5 countries.

Table 4. Shares of US imports of SITC 751 (1989-2004)

Export Share	Export Share									
	1989	1992	1995	1998	2001	2004				
World	100%	100%	100%	100%	100%	100%				
China	1.71%	5.74%	12.61%	24.08%	33.39%	44.14%				
ASEAN-5	6.22%	10.99%	11.19%	9.54%	14.24%	6.48%				
Indonesia	0.00%	0.00%	0.79%	0.99%	0.63%	0.83%				
Malaysia	0.68%	2.51%	2.73%	2.33%	4.21%	2.79%				
Philippines	0.00%	0.41%	0.08%	0.15%	0.13%	0.19%				
Singapore	4.73%	4.03%	2.33%	2.03%	2.82%	2.00%				
Thailand	0.81%	4.04%	5.26%	4.04%	6.45%	0.68%				
Comparator Co	untries / China S	hares Ratio	·							
	1989	1992	1995	1998	2001	2004				
ASEAN-5	3.63	1.91	0.89	0.40	0.43	0.15				
Indonesia	na	0.00	0.06	0.04	0.02	0.02				
Malaysia	0.40	0.44	0.22	0.10	0.13	0.06				
Philippines	na	0.07	0.01	0.01	0.00	0.00				
Singapore	2.76	0.70	0.18	0.08	0.08	0.05				
Thailand	0.47	0.70	0.42	0.17	0.19	0.02				

Table 5. US imports of SITC 752 (1989-2004)

Export Value (US\$ '000)									
	1989	1992	1995	1998	2001	2004			
World	1 4070 515	22 527 462	34 779 139	44 137 369	47 595 999	59 708 126			
China	12 429	227 044	1 276 412	2809449	5 960 962	24 460 628			
ASEAN-5	3 160 120	6 003 543	12 665 030	16244899	14 708 794	16 422 202			
Indonesia	116	40 540	68 795	251585	441 543	423 214			
Malaysia	93 011	739 772	2 448 959	3008322	4 824 354	8 389 994			
Philippines	10 171	127 395	247 138	1249525	1 951 278	1 045 112			
Singapore	2 653 447	4 380 961	8 283 134	9288200	5 685 269	4 454 328			
Thailand	403 375	714 875	1 617 004	2447267	1 806 350	2 109 554			
Growth Rate	I			ł					
		<u>1989-92</u>	<u>1992-95</u>	<u>1995-98</u>	<u>1998-01</u>	<u>2001-04</u>			
World		17.0%	15.6%	8.3%	2.5%	7.9%			
China		163.4%	77.8%	30.1%	28.5%	60.1%			
ASEAN-5		23.9%	28.3%	8.7%	-3.3%	3.7%			
Indonesia		604.4%	19.3%	54.1%	20.6%	-1.4%			
Malaysia		99.6%	49.0%	7.1%	17.1%	20.3%			
Philippines		132.2%	24.7%	71.6%	16.0%	-18.8%			
Singapore		18.2%	23.7%	3.9%	-15.1%	-7.8%			
Thailand		21.0%	31.3%	14.8%	-9.6%	5.3%			

Table 6. Shares of US imports of SITC 752 (1989-2004)

Export Share						
	1989	1992	1995	1998	2001	2004
World	100%	100%	100%	100%	100%	100%
China	0.09%	1.01%	3.67%	6.37%	12.52%	40.97%
ASEAN-5	22.46%	26.65%	36.42%	36.81%	30.90%	27.50%
Indonesia	0.00%	0.18%	0.20%	0.57%	0.93%	0.71%
Malaysia	0.66%	3.28%	7.04%	6.82%	10.14%	14.05%
Philippines	0.07%	0.57%	0.71%	2.83%	4.10%	1.75%
Singapore	18.86%	19.45%	23.82%	21.04%	11.94%	7.46%
Thailand	2.87%	3.17%	4.65%	5.54%	3.80%	3.53%
Comparator Co	ountries/ China Sh	ares Ratio		I	I	
	1989	1992	1995	1998	2001	2004
ASEAN-5	254.25	26.44	9.92	5.78	2.47	0.67
Indonesia	0.01	0.18	0.05	0.09	0.07	0.02
Malaysia	7.48	3.26	1.92	1.07	0.81	0.34
Philippines	0.82	0.56	0.19	0.44	0.33	0.04
Singapore	213.49	19.30	6.49	3.31	0.95	0.18
Thailand	32.45	3.15	1.27	0.87	0.30	0.09

Table 7. US imports of SITC 764 (1989-2004)

Export Value (US\$ '000)									
	1989	1992	1995	1998	2001	2004			
World	11 577 310	12 845 017	18 290 870	22 127 035	37 937 117	50 581 010			
China	327 121	633 816	1 826 122	2 822 678	4 689 936	12 097 215			
ASEAN-5	1 076 332	1 841 903	2 523 298	2 367 652	3 584 573	6 732 433			
Indonesia	933	72 384	145 774	194 119	112 938	176 527			
Malaysia	280 218	699 505	1 072 491	968 891	229 4321	4 088 806			
Philippines	97 825	228 569	491 942	496 074	310 348	176 166			
Singapore	613516	496786	424608	203567	399332	695601			
Thailand	83840	344659	388483	505001	467634	1595333			
Growth Rat	e								
		1989-92	1992-95	1995-98	1998-01	2001-04			
World		3.5%	12.5%	6.6%	19.7%	10.1%			
China		24.7%	42.3%	15.6%	18.4%	37.1%			
ASEAN-5		19.6%	11.1%	-2.1%	14.8%	23.4%			
Indonesia		326.5%	26.3%	10.0%	-16.5%	16.1%			
Malaysia		35.7%	15.3%	-3.3%	33.3%	21.2%			
Philippines		32.7%	29.1%	0.3%	-14.5%	-17.2%			
Singapore		-6.8%	-5.1%	-21.7%	25.2%	20.3%			
Thailand		60.2%	4.1%	9.1%	-2.5%	50.5%			

Table 8. Shares of US imports of SITC 764 (1989-2004)

Export Share						
	1989	1992	1995	1998	2001	2004
World	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
China	2.83%	4.93%	9.98%	12.76%	12.36%	23.92%
ASEAN-5	9.30%	14.34%	13.80%	10.70%	9.45%	13.31%
Indonesia	0.01%	0.56%	0.80%	0.88%	0.30%	0.35%
Malaysia	2.42%	5.45%	5.86%	4.38%	6.05%	8.08%
Philippines	0.84%	1.78%	2.69%	2.24%	0.82%	0.35%
Singapore	5.30%	3.87%	2.32%	0.92%	1.05%	1.38%
Thailand	0.72%	2.68%	2.12%	2.28%	1.23%	3.15%
Comparator (Countries/ Chir	na Shares Ratio)			
	1989	1992	1995	1998	2001	2004
ASEAN-5	3.29	2.91	1.38	0.84	0.76	0.56
Indonesia	0.00	0.11	0.08	0.07	0.02	0.01
Malaysia	0.86	1.10	0.59	0.34	0.49	0.34
Philippines	0.30	0.36	0.27	0.18	0.07	0.01
Singapore	1.88	0.78	0.23	0.07	0.09	0.06
Thailand	0.26	0.54	0.21	0.18	0.10	0.13