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Export Specialization and Competitiveness of the Malaysian Manufacturing: Trends, Challenges and Prospects

By

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**Export Specialization and Competitiveness of the Malaysian Manufacturing:
Trends, Challenges, and Prospects**

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Abstract

This study provides an in-depth analysis of shifting export specialisation at the SITC 3-digit product category level and links this analysis to Malaysian export potential. The paper uses the revealed comparative advantage framework to analyse the extent of export competition between Malaysia and other ASEAN economies. It argues that the degree of competition among ASEAN countries will intensify with the implementation of ASEAN Free Trade Area (AFTA) and the emergence of other low cost producers in the region. It aims to explore how AFTA will influence Malaysian manufacturing. In the presence of growing trade liberalisation, competitive pressures, and the changing structure of world demand, this study calls for a reassessment of the factors that influence Malaysia's export competitiveness.

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Shifting Export Specialisation and the Competitiveness of the Malaysian Manufacturing: Trends and Analysis

1. Introduction:

The Malaysian economy has experienced rapid economic growth during the past three decades. This growth has been accompanied by low inflation, reduced unemployment, falling poverty, reductions in income inequality, and rising per capita income. The manufacturing sector has played a decisive role in Malaysian economic success, contributing significantly to output, investment, employment, and exports. Although the export sector has been at the forefront in transforming the Malaysian economy, it has also made the country highly dependent on the buoyancy of the external sector.

While the Malaysian manufacturing sector has experienced rapid export demand, this surge in demand has not been uniform across all industries. Further, rapid export growth from a set of industries does not imply that these industries are also displaying high demand growth in world markets. In an ideal situation, one would like to see the emergence of an export structure that has a heavy concentration of those industries that exhibit high growth in world markets. Such an industrial restructuring would indicate a country's success in contesting the dynamic segments of world trade. One way to ascertain that a country is indeed contesting the dynamic markets is to assess whether the manufacturing sector has been moving towards higher growth potential markets and has a higher concentration of industries experiencing high world demand growth.

This study provides an in-depth investigation of shifting export specialisation of the Malaysian manufacturing sector at three-digit Standard International Trade Classification (SITC) product category. The study uses the revealed comparative advantage (RCA) approach to examine export specialization trends in the Malaysian

manufacturing sector. The study also assesses the readiness of the manufacturing sector to contest the high growth world markets by participating in dynamic segments of the world trade. Further, the study explores how Malaysian exports would be influenced by trade liberalisation measures that are internal as well as external to ASEAN.

Another important issue is the impact of AFTA on export specialization and competitiveness of the Malaysian manufacturing sector. To address this question, this paper looks into the degree of association in manufacturing export specialization by estimating the Spearman's Rank Correlation Coefficients of revealed comparative advantage indices between Malaysia and a group of ASEAN countries.

Specifically, this paper examines the following questions: What are the leading Malaysian manufacturing industries in terms of their revealed comparative advantage and to what extent has manufacturing sector witnessed a shift in its export specialization over time? Which sub-sector(s) of the manufacturing promise improved comparative advantage over time? To what extent has the Malaysian export performance been a reflection of its manufacture sector specializing in industries with growing world demand? Does Malaysian manufacturing have the capacity to adapt to the changing structure of world demand? To what extent does competition or complementarities exist in world export markets between Malaysia and other ASEAN member countries? Is there any convergence of export specialization patterns between Malaysia and other ASEAN countries? To what extent has Malaysian export specialization shifted away from labor and natural resource intensive products to high value-added knowledge and technology intensive industries? What are the implications of changing comparative advantage in Malaysian manufacturing and how can Malaysia

sustain or enhance its export competitiveness at the macro as well as at the enterprise level?

The paper is organized into 6 sections. Section 2 provides an overview of structural transformation of the Malaysian economy. Particular attention is given to the nature and pace of industrial restructuring and diversification in export structure. Section 3 analyzes the changes in export specialization by estimating revealed comparative advantage indices for the Malaysian manufacturing sector between 1994-98. Special attention is given to key sub-sectors such as electronics and electrical, textile and clothing, and chemicals and chemical products. This section also assesses the extent to which Malaysian manufacturing has succeeded in moving away from low value-added unskilled labor intensive industries to high value-added knowledge and technology industries during the period studied. The intent is to provide a better understanding of export specialization trends in Malaysian manufacturing and to point out possible strategies to accelerate the pace of industrial restructuring. Section 4 analyzes the degree of export competition by estimating the Spearman's Rank Correlation (SRC) Coefficients of revealed comparative advantage indices between selected ASEAN economies and Malaysia in the world markets of manufacturing products. Such an investigation is important to draw future policy directions to enhance the export competitiveness of the Malaysian manufacturing sector in the presence of growing trade liberalization. Section 5 highlights the opportunities and challenges confronting Malaysian manufacturing and suggests possible course of action to sustain and enhance its export competitiveness. The last section is based on the conclusions drawn from the study.

2. Transformation of the Malaysian Economy: An Overview

The Malaysian economy has experienced rapid economic growth during the past few decades – averaging over 8.0% for 1970-80, 5.2 % for 1980-1990, and 8.7 for 1990-97 (Hoon and Muhamad, 1996), (WDI 1999). The rapid economic growth has been accompanied by low inflation, reduced unemployment, falling poverty, reductions in income inequality, and rising per capita income. Malaysian per capita income (current GNP per capita) rose from US\$ 380 in 1970 to US\$ 4, 370 in 1996. From 1980 to 1996, the per capita income grew at an annual average rate of 6.81 per cent (World Bank, 1999a).

The manufacturing sector has been a dominant force in the Malaysian growth experience, contributing significantly to output, employment, and exports. The manufacturing sector has been the fastest growing sector of the Malaysian economy, followed by industrial sector, which includes manufacturing plus mining; construction; electricity, water, and gas; and the services sector. After maintaining a growth rate of around 9 per cent during 1980-90, the manufacturing sector grew at an annual average rate of 13 per cent during 1990-96 (Table 1).

Table 1. Growth of Output

(Annual Average % Growth)

Gross domestic product		Agriculture		Industry		Manufacturing		Services	
1980-90	1990-96	1980-90	1990-96	1980-90	1990-96	1980-90	1990-96	1980-90	1990-96
5.2	8.7	3.8	1.9	7.2	11.2	8.9	13.2	4.2	8.5

Source: World Bank, 1999a

This unprecedented rapid economic growth has been accompanied by a marked structural transformation of the Malaysian economy. Whilst the agriculture sector's share in GDP declined from 28 per cent in 1975 to 12 per cent in 1997, the contribution of the industrial sector grew from 31 per cent in 1975 to 47 per cent in 1997 (Table 2). Most of this surge came from an expanding manufacturing sector, with its contribution to GDP doubling in a span of little over two decades. During the above period, the services sector grew in absolute terms. However, its contribution to the national economy remained steady (Table 2).

Table 2. Changing Structure of the Malaysian Economy

<i>(% of GDP)</i>	1975	1985	1995	1996	1997
Agriculture	28.0	19.3	13.0	12.8	12
Industry	31.3	35.5	43.2	46.2	47
Manufacturing	16.9	18.5	32.5	34.3	34
Services	40.7	45.2	43.8	41.0	41

Source: World Bank, 1999a, 1999b

Along with its declining significance in GDP, the role of agriculture as a major employer has also diminished, with the proportion of the total labor force in agriculture falling from 52 per cent in 1970 to 27 per cent in 1990 (World Bank, 1999a, 1999b). A continuation of this trend has seen this figure fall to 17 per cent in 1996. On the other hand, the growth of the manufacturing sector during the above period led to increased employment opportunities, employing 27 per cent of the labor force in 1996 (Ministry of Finance, 1997). The main reason for this surge in manufacturing sector employment has been the rapid growth performance of export and domestic market - oriented industries.

2.1 Manufacturing and Changing Trade Structure

The structural change in the Malaysian economy also turned the country from an exporter of primary commodities into an exporter of high value-added manufactured products.

Table 3. Changing Trade Structure

Merchandise Trade	Exports (% of total)			Imports (% of total)		
	1980	1996	Change	1980	1996	Change
Food	15	9	- 6	12	5	- 7
Agricultural raw material	31	5	- 26	2	1	-1
Fuels	25	8	- 17	15	3	-12
Ores & Metals	10	1	-9	4	3	- 1
Manufactures	19	76	+ 57	67	85	+ 18

Source: World Bank, 1999b; and author's calculations

The manufacture exports have been the main impetus for the changing composition of the Malaysian merchandise exports. From 1980 to 1996, the share of manufactures in merchandise exports rose from 19 per cent in 1980 to 76 percent in 1996. This period also witnessed a noticeable increase in manufacture imports and a decrease in the importance of the primary goods exports. The most significant change came during late 1980's when the share of the manufacture exports doubled in a span of five years. While exports from the manufacture sector led the charge, the role of the agriculture sector (food and agricultural raw material as a group) in merchandise exports declined from 46 per cent to in 1980 to only 14 percent in 1996 (Table 3). The robust export performance of manufacturing, combined with growth in manufacturing imports, confirms Malaysian success in pursuing an outward-oriented industrialization strategy helped by trade liberalization and strategic industry policy.

The growth in manufacturing imports during this period also reflects greater economic activity in the country leading to rising demand for capital, intermediate and consumer goods. A breakdown of imports by economic functions reveals that while imports of capital goods have shown a downward trend, the imports of

intermediate goods, to meet the domestic and foreign demand, have risen sharply. For instance, the share of intermediate goods in total imports has climbed from 41 per cent in 1992 to 66 per cent. This trend, among other factors, shows an increasing reliance of expanding domestic as well as export-oriented industries on the imported inputs (MITI: 1994; Ministry of Finance: 1997).

The above linkage between the import of intermediate goods and changes in export structure supports Hoekman and Djankov (1997) arguments that: (a) the import of intermediate inputs and capital goods are the major determinant of changes in export structure; and (b) trade liberalization measures enhance firms' ability to import the technology and intermediate inputs needed to adapt to changing global demand patterns¹. It is clear from Table 3 that changes in the structure of Malaysian exports are in line with the above observation, as the change in imports has coincided with the changes in the export structure.

3. Changing Manufacturing Export Structure and the Dynamics of World Demand

To analyze the shift in export specialization pattern of Malaysian manufacturing this paper uses the Revealed Comparative Advantage (RCA) approach, which manifest both post-trade relative prices and prevailing factor as well as product market distortions². Developed by Balassa (1965, 1979), the RCA index, (RCAI), of country i in product a is the ratio of the share of a in i 's total exports to the share of a in the world's total exports. Defined as such, it is the ratio of the share of particular industry (or product) in a country's total exports to the share of the industry's exports in world's total exports. The RCAI of country i in industry a , $(RCAI)_a^i$, can be presented as:

$$(RCAI^i)_a = (X^i_a / X^i_t) / (X^w_a / X^w_t) \quad (1)$$

Where

X^i_a = value of exports of commodity a by country i

X^i_t = value of total exports by country i

X^w_a = value of world exports of commodity a

X^w_t = value of total world exports

A rearrangement of (1) gives the following expression:

$$(RCAI^i)_a = (X^i_a / X^w_a) / (X^i_t / X^w_t) \quad (2)$$

(2) is the ratio of country i 's export share in the world's exports of a to the export share held by i in the world's total export. Defined as such, country i exhibit revealed comparative advantage or has a greater specialization in the export of product a then the world as whole if $(RCAI^i)_a$ is greater than one. In other words, a country has a revealed comparative advantage only in those products for which its market share of world exports is above its average share of world exports.

3.1 Export Specialization of Malaysian Manufacturing (1994-1998)

The RCA trends at SITC 3-digit product categories confirm the dominance of electronics, electric, textile, clothing, wood, rubber, and chemical industries in Malaysian manufacturing (Table 4). The RCA patterns during 1994-98 show that categories such as office equipment, electrical & electronic goods, and telecommunication products (SITC 75, 76, & 77) have succeeded in maintaining their comparative advantage in the 1990s. During the period studied, 9 out of the top 25 high RCA ranking categories were from the above group (Table 4). Further 4 of the highest-ranking RCA products in 1994 were from the clothing and textile groups (SITC 65 & 84). In 1998, this number had declined to 3. In the case of chemical and

related products, the number of highest RCA ranking products increased from 3 in 1994 to 4 in 1998 (Table 4).

While the changes in the export specialization patterns have been less drastic, the ranking of various product categories has varied during this period. For instance, the Radio Broadcast Receivers (SITC 762) industry has maintained its leading position. Other product categories, while dropping in RCA ranking, have maintained their revealed comparative advantage. This includes TV Receivers (SITC 761), Materials of Rubber (SITC 621), Telecommunication equipment (SITC 764) and Electric Power Transmission equipment (SITC 771). While some of the other categories such as Headgear/Non-Text Clothing (SITC 848), Furniture & Stuff Furnishing (SITC 821), Styrene Primary Polymers (SITC 572) and Electric Circuit equipment (SITC 772), have improved their RCA ranking over time. Further, some of the 3-digits SITC categories, such as, Industrial Heating & Cooling equipment (SITC 741), Women/Girl Knitwear (SITC 844), and Mineral Manufactures (SITC 663), have disappeared from the list (Table 4).

The changing pattern of Malaysian manufacturing export specialization also highlights the ability of Malaysian manufacturing to move into relatively technological and high-skill labor intensive areas. These trends are highlighted in Table 4 that lists the top 25 RCA ranking 3-digits SITC categories in terms of their relative factor intensities such as: unskilled-labor intensive (USLI); natural resource intensive (NRI); technology intensive (TI), and skilled-labor intensive (SLI)³.

The trend analysis of the top 25 three-digits SITC categories leads to some interesting observations: (a) the number of USLI industries among the top 25 have fallen from 6 in 1996 to 4 in 1998; (b) three major NRI industries have maintained their presence during 1994-98; (c) there might be an adverse impact of the Asian economic crisis on

the revealed comparative advantage of TI industries as their number, in the list of top 25 high RCAI ranking categories, dropped from 13 in 1996 to 10 in 1997-98; and (d) the number of SLI industries increased from 4 in 1994 to 7 in 1998. Above evidence points to a reorientation of the Malaysian manufacturing sector away from USLI industries and towards TI and SLI industries, while NRI industries have maintained their inherent advantages during the period studied.

Table 4. Revealed Comparative Advantage Ranking and Product Classification of Malaysian**Manufacturing**

1994	1996	1997	1998
<u>Skilled-Labor Intensive</u> 1.Radio Broadcast Receiver 2.Sound/TV Recorders 4.TV Receivers 15.Jewellery <u>Technology Intensive</u> 5.Valves/Transistors/etc 7. Office Equip Parts/Accs. 9.Telecomm Equip NEC 10.Photographic Equip 11.Elect Power Transm Equip 12. Indust Heat/Cool Equip 13. Alcohols/Phen Ols/Derivs 16. Aircraft/Space/etc 20. Styrene Primary Polymers 21. Electric Circuit Equip 22. Rotating Electr Plant 25. Office Machines <u>Natural Resource Intensive</u> 3.Veneer/Plywood etc 8. Materials of Rubber 17. Wood Manuf. NEC 23. Mineral Manuf NEC <u>Unskilled-Labor Intensive</u> 6. Headgear/Non-Text Clothg 14. Mens/Boy Wear Knit/Croch 18. Women/Girl Waer Knit/Cro 19. Furniture/Stuff Furnishg 24. Baby Carr/Toy/Game/Sport	<u>Skilled-Labor Intensive</u> 1.Radio Broadcast Receiver 2.Sound/TV Recorders 5.TV Receivers 15.Jewellery <u>Technology Intensive</u> 6.Valves/Transistors/etc 7. Office Equip Parts/Accs. 8. Photographic Equip 9.Telecomm Equip NEC 10.Photographic Equip 11. Computer Equip. 13. Electric Circuit Equip 16.Elect Power Transm Equip 17. Indust Heat/Cool Equip 18. Styrene Primary Polymers 21. Misc Chemical Prods NEC 23. Rotating Electr Plant 24. Alcohols/Phen Ols/Derivs <u>Natural Resource Intensive</u> 3.Veneer/Plywood etc 10. Materials of Rubber 20. Wood Manuf. NEC <u>Unskilled-Labor Intensive</u> 4. Headgear/Non-Text Clothg 12. Mens/Boy Wear Knit/Croch 14. Furniture/Stuff Furnishg 19. Textile Yarn 22.. Baby Carr/Toy/Game/Sport 25. Knit/Crochet Fabrics	<u>Skilled-Labor Intensive</u> 1.Radio Broadcast Receiver 2.Sound/TV Recorders 6.TV Receivers 19.Jewellery 22. Watches/Clocks 25. Nails/Screws/Nuts/Bolts <u>Technology Intensive</u> 5.Valves/Transistors/etc 7. Office Equip Parts/Accs. 8. Computer Equip. 9. Photographic Equip 11.Telecomm Equip NEC 12. Alcohols/Phen Ols/Derivs 14. . Styrene Primary Polymers 18. Elect Power Transm Equip 21. Misc Chemical Prods NEC 23. Rotating Electr Plant <u>Natural Resource Intensive</u> 3.Veneer/Plywood etc 10. Materials of Rubber 16. Wood Manuf. NEC <u>Unskilled-Labor Intensive</u> 4. Headgear/Non-Text Clothg 15. Furniture/Stuff Furnishg 17. Mens/Boy Wear Knit/Croch 20. Textile Yarn 24. Knit/Crochet Fabrics	<u>Skilled-Labor Intensive</u> 1.Radio Broadcast Receiver 3.Sound/TV Recorders 7.TV Receivers 18.Jewellery 22.Articles of Rubber NES 23. Soaps/Cleanser/Polishes 25. Watches/Clocks <u>Technology Intensive</u> 5.Valves/Transistors/etc 6. Office Equip Parts/Accs. 8. Photographic Equip 9. Computer Equip. 10. Electric Circuit Equip 11. Alcohols/Phen Ols/Derivs 12.Telecomm Equip NEC 14. . Styrene Primary Polymers 19. Elect Power Transm Equip 21. Rotating Electr Plant 24. Misc Chemical Prods NEC <u>Natural Resource Intensive</u> 4.Veneer/Plywood etc 13. Materials of Rubber 17. Wood Manuf. NEC <u>Unskilled-Labor Intensive</u> 2. Headgear/Non-Text Clothg 15. Mens/Boy Wear Knit/Croch 16. Furniture/Stuff Furnishg 20. Textile Yarn

Note: Number on the left shows position of corresponding industry in the overall RCA ranking of Malaysian manufacturing sector. The commodity classification system is based on Krause (1984)

Source: Author's calculations based on U.N. COMTRADE data base

3.2 Dynamics of Changing Comparative Advantage among Key Industries

The changes in RCA ranking over time point to shifting trends in manufacturing export specialization. This analysis, however, does not provide any insight into the extent of revealed comparative advantage exhibited by an industry category in absolute terms. For instance, an industry can drop in its RCA ranking over time, while still improving its revealed comparative advantage in absolute terms. The changes in the extent of revealed comparative advantage, therefore, can only be analyzed by examining the changes in the absolute values of RCAI over time. The following sub-sections analyze the export competitiveness of three major sub-sectors, i.e., electronics and electrical, textile and clothing, and chemicals and chemical products, at 3-digit SITC product category level.

3.2.1 Trends in Electronic & Electrical Products Industry:

The electric and electronic goods sub-sector (SITC 75, 76, 77), with electrical and electronic sub-sector contributing over 65 per cent to the total value of manufacturing exports in 1998 (MITI, 1999), has been playing the leading role in Malaysian manufacturing success in world markets. The output of the electrical, electronic and machinery industry as a group grew at an annual average rate of 18 per cent during 1991-1996 (World Bank, 1999a). The slowdown in 1996 reflects a drop in foreign orders for electronic products. This group remained the dominant sub-sector within manufacturing - contributing 48 per cent to total manufacturing output, with semiconductors and other electronic components contributing 57 per cent of the total sales value (Ministry of Finance: 1997). The significance of the electronics industry in the Malaysian economy can be seen from the fact that it accounts for 66 per cent of

total manufacturing exports (or 52 per cent of total Malaysian exports) and 25 per cent of the labor force in the manufacturing sector (NEAC: 1999). The electrical and electronic sub-sector has also been experiencing high world demand growth, making it imperative to analyze its position in the context of shifting comparative advantage of the Malaysian Manufacturing⁴.

In terms of its RCAI ranking, the electronic and electrical goods sub-sector remains the most important segment of the Malaysian manufacturing. However, a closer look of movements in absolute values of RCAI of individual categories of this group reveal some worrying trends.

(a). For instance, RCAI for office machines (SITC 751) has declined from 1.18 in 1994 to 0.72 in 1998 - making it a category with revealed comparative disadvantage (Table 5). The entire telecommunication and sound equipment division (SITC 76) has shown an uninterrupted downward trend in RCAI during the above period. It is interesting to note that while the absolute values of RCAI for individual categories in this division have declined over time, their relative ranking remain steady. For instance, the RCAI for radio broadcast receiver has declined from 13.05 in 1994 to 10.74 in 1998, without experiencing any change in its leading position in RCAI ranking (Table 5). Among other factors, these downward trends in absolute levels of RCAI point to rising competition due to regionalization (AFTA) and globalization, affecting price and non-price determinants of revealed comparative advantage.

(b). In the case of the electrical goods, products such as power transmission equipment, electric circuit equipment, valves, and transistors have increased the extent of their revealed comparative advantage during this period. The manufacturing sector has also shown strong performance in the area of

business and consumers electronics. This accomplishment is especially noticeable in the case of computer equipment (SITC 752) that exhibited revealed comparative disadvantage in 1994, but a RCAI of 2.68 in 1998. It is the contention of this paper that global demand for computers will accelerate further, providing further opportunities for this industry to improve its RCAI due to rising disposable incomes and increased use of information technology. A similar trend has been shown in the area of office equipment & parts industry, with its RCAI unaffected by the Asian economic crisis and rising from 3.86 in 1994 to 4.85 in 1998 (Table 5).

(c). While the economic crisis of 1997 might have dampened the comparative advantage position of some segments of the electrical and electronics sub-sector, the declining RCA trends in several industries in this sub-sector were already in place even before the economic crisis hit the region. For instance, industries such as office machines, television receivers, and telecommunication equipment have been experiencing declining RCAI since 1994 (Table5).

Table 5. RCA Indices for Electronics and Electrical Products (SITC 75, 76, 77)

SITC	Category	1994	1996	1997	1998
751	OFFICE MACHINES	1.18	1.02	0.82	0.72
752	COMPUTER EQUIPMENT	0.91	1.99	2.72	2.68
759	OFFICE EQUIP PARTS/ACCS.	3.86	3.73	3.95	4.85
761	TELEVISION RECEIVERS	6.66	6.38	5.44	4.78
762	RADIO BROADCAST RECEIVER	13.05	13.14	11.84	10.74
763	SOUND/TV RECORDERS ETC	8.58	9.91	8.88	7.70
764	TELECOMMS EQUIPMENT NES	2.56	2.33	2.22	2.11
771	ELECT POWER TRANSM EQUIP	2.35	1.63	1.56	1.41
772	ELECTRIC CIRCUIT EQUIPMT	1.28	1.68	1.86	2.67
773	ELECTRICAL DISTRIB EQUIP	0.89	0.93	0.80	0.76
774	MEDICAL ETC EL DIAG EQUI	0.02	0.04	0.05	0.07
775	DOMESTIC EQUIPMENT	0.57	0.58	0.59	0.55
776	VALVES/TRANSISTORS/ETC	5.90	5.68	5.81	6.16
778	ELECTRICAL EQUIPMENT NES	0.70	0.62	0.70	0.78

Source: Author's calculations based on U.N. COMTRADE data base.

The above evidence points to the dualistic structure of this industry, which exhibits relative strength in capital-intensive automated operations but structural weaknesses in the labor-intensive assembly line electronics and electrical goods industry, which has been losing its comparative advantage due to higher labor costs. The emerging trends also point to varying levels of market (geographical) diversification displayed by various industries in this sub-sector. An additional point of concern in this sub-sector has been the weak forward and backward linkages between small and medium enterprises and large multinationals that had led to overseas sourcing of parts and other inputs (Mahani, 1997). The emergence of strong domestic small and medium-sized industries is imperative to reap the benefits of forward and backward linkages and industrial clustering. Similarly, further emphasis on research and development in this sub-sector is needed to move from labor intensive low value-added assembly production to fast growing capital-intensive high value-added activities.

3.2.2 RCA Trends in Textile and Clothing Sector

The textile and clothing sub-sector is the fourth largest contributor to manufacturing exports (MITI, 1999). The textile and clothing sector has two main components: (a) manufactures of primary textile (SITC 65) and the manufactures of garments and clothing accessories (SITC 84). In the midst of rising labor and raw material costs and growing competition from low cost countries, the performance of the textile sector's during the 1990's has been dismal, with eight out of nine three-digit SITC categories exhibiting revealed comparative disadvantage (Table 6). Even the comparative advantage of textile yarn has shown signs of weakness, with its RCAI declining from 1.48 in 1996 to 1.35 in 1998 (Table 6). Relatively better trends are shown by man-

made woven fabrics (SITC 653), suggesting that the future performance of the textile sector will depend on the expansion of synthetic fibers as the production of natural fiber faces rising raw material costs and competition from traditional low-cost producers of raw fiber.

In the presence of vertical linkages between textile and clothing, the performance of clothing industry, among other factors, depends on the competitiveness of textile sector. In 1998, only two out of seven 3-digit SITC categories in the clothing sector exhibited revealed comparative advantage in 1998. However, compared to textiles, the clothing sub-sector has performed relatively better with headgear/non-text clothing (SITC 848) improving its RCAI from 5.51 in 1994 to 8.22 in 1998 (Table 6). It is important to note that the clothing sub-sector has shown improved RCAI in 1998, reflecting this industry's ability strength to quickly recover from the fallout of the Asian economic crisis. An improved post-crisis recovery may also be due to the favorable exchange rate and relatively higher degree of market diversification exhibited by this industry.

In the present climate of global and regional trade liberalization, Malaysian textile and clothing industries will come under increasing competitive pressure from low cost ASEAN as well as non-ASEAN producers. Further the Uruguay Round Agreement on Textiles and Clothing will put further competitive pressure on the Malaysian textile and clothing firms⁵. Therefore, among other factors, the export performance of this sub-sector will depend on the ability of the firms in these industries to add more value at competitive prices.

Table 6. RCA Indices for Textile and Clothing (SITC 65, 84)

SITC	Category	1994	1996	1997	1998
651	TEXTILE YARN	0.79	1.48	1.38	1.35
652	COTTON FABRICS, WOVEN	0.60	0.43	0.44	0.49
653	MAN-MADE WOVEN FABRICS	0.67	0.74	0.89	0.87
654	WOVEN TEXTILE FABRIC NES	0.01	0.01	0.01	0.01
655	KNIT/CROCHET FABRICS	1.12	1.22	1.11	0.91
656	TULLE/LACE/EMBR/TRIM ETC	0.19	0.14	0.12	0.10
657	SPECIAL YARNS/FABRICS	0.20	0.16	0.16	0.17
658	MADE-UP TEXTILE ARTICLES	0.20	0.14	0.14	0.12
659	FLOOR COVERINGS ETC.	0.07	0.08	0.06	0.08
841	MENS/BOYS WEAR, WOVEN	0.86	0.70	0.72	0.83
842	WOMEN/GIRL CLOTHING WVEN	0.51	0.39	0.33	0.38
843	MEN/BOY WEAR KNIT/CROCH	1.95	1.85	1.60	1.89
844	WOMEN/GIRL WEAR KNIT/CRO	1.58	1.05	0.73	0.92
845	ARTICLES OF APPAREL NES	0.60	0.50	0.50	0.51
846	CLOTHING ACCESSORIES	0.64	0.49	0.44	0.47
848	HEADGEAR/NON-TEXT CLOTHG	5.51	6.63	6.72	8.22

Source: Author's calculations based on U.N. COMTRADE data base.

3.2.3 The Case of Emerging Industries: Chemicals and Chemicals Products

The RCAI for chemicals and chemical products have shown a distinct improvement since 1994. For instance, the RCAI for primary ethylene polymer (SITC 571) RCAI increased from a mere 0.05 in 1994 to 0.61 in 1998 (Table 7). While still exhibiting comparative disadvantage, this category has improved its position notably. Similarly, plastic product industry, with its rising world as well as domestic demand, has shown improvement in its comparative advantage position during this period. Besides, apart from meeting the demand for non-traded sectors, this industry plays an important role in adding value to other export-oriented industries, such as electrical and electronic, automotive, office automation, computers and telecommunication. With its direct as well as indirect contribution to the export sector, this industry has the ability to achieve economies of scale and enhance its competitiveness. Assuming continued present trends, chemicals and chemical products sub-sector has the potential to

emerge as a major contributor to the Malaysian manufacturing exports. Such an outcome depends on the level of investment in this relatively capital-intensive sub-sector with a small domestic market.

Table 7. The Emerging Sector: RCA Indices for Chemicals and Chemicals

Products

SITC	Category	1994	1996	1997	1998
513	CARBOXYLIC ACID COMPOUND	0.35	0.50	0.70	0.80
522	ELEMENTS/OXIDES/HAL SALT	0.13	0.17	0.20	0.25
523	METAL SALTS OF INORG ACD	0.09	0.12	0.24	0.34
571	PRIMARY ETHYLENE POLYMER	0.05	0.52	0.62	0.61
574	POLYACETALS/POLYESTERS..	0.18	0.31	0.59	0.77
582	PLASTIC SHEETS/FILM/ETC	0.26	0.37	0.48	0.46

Source: Author's calculations based on U.N. COMTRADE data base.

4. Malaysian's Manufacturing Specialization in the ASEAN Context

In the present climate of trade liberalization, an important question is the extent of competition or complementarity in world export markets between Malaysia and other ASEAN economies. The degree and nature of export specialization association between Malaysia and ASEAN member countries is evaluated by estimating the Spearman's Rank Correlation (SRC) Coefficients of revealed comparative advantage indices between the ASEAN economies and Malaysia in the world markets of manufacturing products. The SRC coefficient compares the ranking of the two sets of RCAI by taking the differences of ranks, squaring these differences and then adding, and finally manipulating the measure so that its value will be +1 whenever there is a perfect positive association between two series of RCAI⁶ (Leu, 1999). A higher (positive) value of the coefficient indicates intense competition for export market between the two countries. Likewise, the SRC coefficient would be equal to -1 if the two series of RCAI are in perfect disagreement and zero if there is no relationship. Further, a higher negative SRC coefficient points to complementarity in export specialization of the two countries.

Table 8. Spearman's Rank Correlation Coefficients of RCAI between ASEAN-4 and Malaysia

Year	Singapore	Thailand	Indonesia	Philippines
1994	0.4559	0.5925	0.5391	0.5182
1995	0.4649	0.5996	0.5373	0.5364
1996	0.4603	0.6211	0.5314	0.5415
1997	0.4982	0.5758	0.4979	0.4891
1998	0.4764	-	0.4327	-

Note: The SRC coefficients are statistically significant at the 1 percent level and are computed using paired RCAI for 144 industries.

Source: Author's calculations based on U.N. COMTRADE data base.

As illustrated in Table 8, the SRC coefficients confirm that export specialization patterns in manufacturing of selected ASEAN economies are closely related with revealed comparative advantage of the Malaysian manufacturing. In 1994, the export pattern of Malaysia's manufacturing was more correlated with Thailand, Indonesia, and Philippines than Singapore. Since 1994, however, Malaysian manufacturing has been moving towards Singapore's revealed comparative advantage patterns as reflected by a higher value of SRC coefficients in 1998. It is important to note that manufacturing export patterns among the selected ASEAN economies, with the exception of Indonesia, have been becoming increasingly similar to that of Malaysia and that these economies are competing with Malaysia in the world markets for manufacturing products. A gradual decline in the SRC coefficient for Indonesia indicates the inability of its manufacturing sector to keep pace with changes in export specialization exhibited by the Malaysia and other ASEAN economies in the group. For instance, unlike other ASEAN countries that have successfully moved into skilled-labor and technology intensive electrical and electronic goods industries, Indonesia has lagged behind in penetrating this high-value added export area. The only exceptions have been in areas of radio broadcast receivers (SITC 762) and

sound/TV recorders (SITC 763). These industries have exhibited revealed comparative advantage over the period studied.

Table 8 also points to a noticeable change in the degree of association between export specialization of Malaysia and other member countries in the group after 1996. The SRC coefficient of RCAI between Malaysia and Thailand, Indonesia and the Philippines and between Malaysian and Singapore declined in 1997 and in 1998, respectively. This points to an adverse impact of the Asian economic crisis on the emerging similarities between export pattern of Malaysia and other selected ASEAN countries. A detailed analysis concerning the impact of the Asian economic crisis on revealed comparative advantage of ASEAN manufacturing is beyond the scope of this paper. Suffice to say that the crisis had a significant and an immediate impact on manufacturing export patterns of the member countries, reversing the convergence process between export specialization pattern of Malaysia and other ASEAN economies. The higher degree of association between export specialization pattern of Malaysia and other ASEAN economies not only reflects the fact these countries are contesting for market share in world markets, it also indicates the presence of intra-ASEAN competition in manufacturing. The latter observation can be validated by examining the level of intra-industry trade in manufacturing between Malaysia and other ASEAN economies.

As noted above, comparative advantage patterns in manufacturing indicate significant export competition between Malaysia and the selected ASEAN economies. This emergence of evidently similar export specialization patterns has far reaching implications for both static and dynamic gains flowing from trade liberalization under AFTA. There are also clear indications that, with the exception of Indonesia, manufacturing export patterns between Malaysia and other ASEAN countries in the

group are becoming more contestable. This outcome poses an important question. To what extent have these trends in export specialization been shaped by a gradual implementation of AFTA? Before making any attempt to answer this question, it is important to note that revealed export specialization patterns in ASEAN-5 reflect both differences in resource endowments of the individual countries and the impact of industry and trade policy distortions and/or corrections on their export structure. The evidence provided in this paper suggests that, among other factors, the implementation of trade liberalization measure under AFTA might have reinforced similarities in manufacturing export specialization between Malaysia and other ASEAN countries in the group.

5. Malaysian Manufacturing: Challenges Ahead

The changes in manufacturing export structure reflect the Malaysian government's success in providing conducive settings at the macro level for an export-led industrial reorientation. These environments were shaped by factors such as high savings and investment rates, human capital formation, investment in physical infrastructure, price and exchange rate stability, low lending rates, inflow of foreign direct investment, a relatively flexible labor market, implementation of institutional reforms including trade liberalization, establishment of free-trade zones, low inflation rates, good macro management, export promotion measures, market friendly policies, and political stability.

With the Malaysian economy showing strong signs of recovery, "Vision 2020", which envisages an eight fold increase in GDP and achievement of industrialized country status by the year 2020, is an attainable target. This seemingly difficult but achievable vision would require an average annual growth rate of over 7 per cent (DFAT-

Country Brief). As Malaysian economic success has evolved around the performance of the manufacturing sector, the realization of “Vision 2020” depends on the extent to which this sector remains competitive and contributes to economic growth, exports, investment, and employment. Given the small domestic market, these outcomes in turn depend on (a) an industrial restructuring of the Malaysian manufacturing, enabling it to contest high growth sectors of world trade; and (b) the ability of the manufacturing sector to create, sustain and enhance its export competitiveness.

The observed export trends and relative similarity of export patterns in selected ASEAN and other low cost emerging Asian economies pose new challenges for Malaysian manufacturing. First, with its relatively tight labor market, Malaysia will require increased labor productivity to keep unit labor costs low in order to sustain and to enhance competitiveness of its manufacturing sector.

Secondly, in some instances, industrial restructuring will require moving away from areas of decreasing revealed comparative advantage and the allocation of these resources to the segments of manufacturing with greater export potential. As our analysis indicates, such an industrial reorientation implies a shift towards knowledge and technology intensive activities. This move, however, would require vigorous efforts to develop and upgrade workforce capabilities through education, retraining, and skill acquisition programs. In some other areas of manufacturing, such as, clothing and textile, creating or maintaining export competitiveness would necessitate adding more value through non-price measures to offset high-cost disadvantages. It is important to note that pressure for industrial restructuring would become increasingly important with full implementation of AFTA commitments and with growing trade liberalization that is external to ASEAN (Mahani, 1997). Furthermore, the successful conclusion of the Uruguay Round of Multilateral Trade Negotiations has led to an

improvement in market access of ASEAN manufacturing exports to its traditional markets, such as United States, European Union, and Japan. This development provides both opportunities as well as challenges for Malaysian manufacturing.

Thirdly, the extent to which Malaysia can succeed in its drive to move into high-value added export industries, in which knowledge and technology intensive industries play a central role, depends on its emphasis on research and development, technology capabilities, and the pace of technology transfer. Fourthly, the ability of Malaysian institutional and socio-economic infrastructure to provide helpful conditions for industrial restructuring can not be underestimated. The quality and the type of human capital needed for such an industrial transformation would become an important issue to tackle.

Fifthly, given the weak inter-industrial forward and backward linkages between small and medium industries and large multinationals, there is a need to foster these linkages to curtail overseas sourcing of parts and other inputs. The above sources of competitiveness at the macro level will also play an important role in attracting foreign direct investment in to manufacturing to support industrial restructuring.

Industrial transformation and structural change in export patterns also rely on the ability of the manufacturing sector to exploit its competitive advantages at the enterprise level by adjusting to global market conditions. Here, it is important to emphasize that international competitiveness at the micro level depends upon firms' ability to exploit their competitive advantages under a given set of macro environments. While it is beyond the scope of this paper to analyze firm-specific determinants of international competitiveness, this study takes the position that the value-adding process profoundly affects firms' ability to acquire and sustain international competitiveness.

At the firm level, factors such as worker's motivation and skill levels, the nature of the product and technology in use, the scale of production, the internal organization of the firm, strategic alliances between local and foreign firms, and ownership of other unique assets, e.g., quality, reliability, and service, are all instrumental in the value adding process. The above factors, while interacting with a given macro environment, play an important role in raising the value-added productivity by influencing labor productivity and price-cost margins at the enterprise level.

7. Conclusions

The Malaysian economy has witnessed a remarkable period of economic growth, accompanied by a profound structural change with the manufacturing sector leading the charge in bringing about this noticeable transformation. The share of export-oriented manufacturing in value added, employment, and export has risen at the expense of the agriculture sector.

The competitiveness of the Malaysian economy at the macro level is shaped by political stability, investment in human and physical infrastructure, sound macroeconomic management, strategic industry policy, deregulation and privatization of the domestic economy, relatively competent bureaucracy, and a visionary leadership. This has provided a favorable environment for local firms and MNC to achieve competitiveness at the enterprise level. Externally, the unprecedented regional and world economic growth, trade liberalization, globalization of industries, and changing composition of world demand proved equally helpful for Malaysia to capitalize on the changing structure of global demand.

This paper argues that Malaysia's export specialization patterns, reflected by changes in RCAI, have been a manifestation of its ability to restructure its manufacturing sector in order to participate in markets with rising world demand. The extent to

which Malaysia can sustain or enhance its share in world's manufacturing trade, however, depends on the capacity of its manufacturing sector to adjust to changing composition of world trade and compete on the basis of both price as well as non-price factors. These factors will play a crucial role in sustaining export competitiveness in those product categories that promise high growth trends in world markets. Further, whether or not Malaysia succeeds in its bid to continue playing an active role in world trade will also rely on the impact of trade liberalization, internal as well as external to ASEAN, and on the competitiveness of its manufacturing sector. While Malaysian manufacturing has been successful in moving towards knowledge and technology-intensive industries, the emerging similarities in manufacturing export specialization patterns between Malaysia and other ASEAN countries add further competitive pressure on Malaysian manufacturing. With the removal of tariffs and non-tariff barriers by 2003 in the ASEAN region, under a common effective preferential tariff scheme (CEPT), the pressure to achieve and enhance export competitiveness will gain further momentum. It is envisaged that the level of intra-ASEAN trade would accelerate under CEPT. The liberalization of the ASEAN trade, however, presents both challenges as well as opportunities for Malaysian manufacturing.

This paper contends that competitiveness at the macro level is a necessary but not a sufficient condition to contest the high growth world markets in the presence of trade liberalization. The study argues that competitiveness at the macro level needs to be complemented by the ability of the manufacturing sector to exploit the competitive advantages at the industry and at the enterprise level by responding to the changing global market conditions and adding more value than its competitors. The paper takes the position that, among other factors, firm-specific advantages play an important role

in the value-adding process that has a profound impact on firms' ability to acquire international competitiveness at the enterprise level.

Notes

¹ For more on the determinants of the export structure, see Hoekman and Djankov (1997).

² For a detailed overview and application of RCA approach, see for example, Balassa (1965, 1979), Jean-Michel (1998), Hockman et.al. (1997), Ray (1999), Lee (1995), Maule (1996), Sheehan, et al. (1994), and Jones, et al. (1993).

³ For more on this commodity classification system, see, Krause (1984, pp. 307-11).

⁴ The average annual world demand growth rates (1980-95) for computers, electronics, and electrical sub-sector were, respectively, 15.2 %, 13%, and 10% (Ray, 1999, p.288).

⁵ This agreement provides a 10-year transition period before integration of the textiles and clothing trade in to normal GATT rules.

⁶ The Spearman 's Rank Correlation Coefficient is given by:

$$r_s = 1 - \frac{6}{N(N^2 - 1)} \sum_{i=1}^N D^2_{RCAi} , \text{ Where } D_{RCAi} \text{ is the difference between any pair of}$$

RCAI ranks.

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