PROSIDING PERKEM VIII, JILID 1 (2013) 119 - 129
ISSN: 2231-962X

Intra-Industry Trade in Malaysian Manufacturing Sector

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ABSTRACT

As a result of rapid economic growth and increased influence of globalization in international trade activities, intra-industry trade (IIT) becomes prominent across Asia including Malaysia. Free trade agreements and creations of free trade areas have encourage increased cross border investments through production networking as well as fragmentation of production, especially in manufacturing sector. This paper attempts to examine trends and patterns of Malaysia's IIT in manufacturing sector using the 9-digit Standard International Trade Classification (SITC) codes from 1990 - 2010. The IIT trends and patterns are investigated using the Grubel Lloyd (GL) Index adapted from Greenaway et. al (1995) and Fontagne and Freudenberg (1997). The result indicates that the trends and patterns of Malaysia's manufacturing sector had gradually migrated from traditional inter-industry to intra-industry kind of trade. The average GL index of Malaysia's manufacturing sector had been gradually increasing from a mere 0.27 in 1990 to 0.51 in 2007 before it slightly dropped to 0.46 in 2010. In terms of quality (high quality vertical IIT), the composition of Malaysia's IIT in manufacturing sector had slightly increased from only 28.0% in 1990 to 31.5% in 2010 against other two types of IIT namely horizontal IIT and low quality IIT. Many factors contributed to changes in the trends and patterns in Malaysia's IIT over the last 2 decades. Apart from import substitution and industrialization policies implemented by the government, increased international fragmentation of production, production networks, creation of ASEAN Free Trade Area (AFTA) and other regional trade agreements are the dominant factors that influenced IIT in Malaysia's manufacturing activities.

Key Words: Intra-industry trade, international trade, horizontal intra-industry trade, vertical intra-industry trade, high quality/low quality intra-industry trade.

INTRODUCTION

Trade occurs at many different levels and categories of goods and services, and traditionally a country produces and exports goods most suited to its factor endowment, technology and climate and imports goods that are least suited to the nation's natural and physical endowments and characteristics. Such trade is called inter-industry trade because countries export and import products from different levels and categories of economic activities within the country. However during the last five decades, countries around the world, especially developed countries are focusing on exports and imports of particular products within the same industry. This form of trade is called intra-industry trade (IIT). IIT is the simultaneous export and import of products belonging to the same industry as opposed to inter-industry trade where exchange of products are done from across different industries of the economy. There are three types of IIT which are IIT in homogeneous goods, horizontally differentiated goods or HIIT and vertically differentiated goods or VIIT.

Initially IIT is only prevalent among developed Western nations due to their advanced technological abilities to produce varied high quality products within the same industry as well as their industry's ability to operate in scale economies. Though it is more common in developed countries, IIT

has gained prominence among Asian as well as developing countries like Malaysia. Malaysia is considered as exhibiting relatively high levels of IIT and heavily involved in trade in intermediate goods (Sawyer et. al., 2010). Malaysia, being a developing country has been enjoying a buoyant economic growth averaging 6.5% per annum for the past 5 decades. And according to the Central Bank (Bank Negara Malaysia), the economic growth of the country is to be sustained between 5-6% in 2013, quite similar to last year's GDP growth of 5.6%. This year's growth will be led by private investment growth amid improving external trade scenario (Bank Negara Malaysia, 2012).

Manufacturing sector contributes vastly to the country's economic growth, contributing as much as 25.1% and 25.0% of the country's GDP for 2011 and 2012 respectively. In 2013 the sector's contribution is projected to be within the same percentage (25.0%) as well (Malaysia Economic Report, 2012/2013). Due to the strong influence of manufacturing sector to the Malaysian economy, and the increasing importance of intra-industry trade in Malaysia's external trade landscape, this paper attempts to discusses the trend and pattern of intra industry trade in Malaysia's manufacturing sector from 1990-2010. The analysis is based on the actual data of intra-industry trade in Malaysia's manufacturing sector for 20 years from 1990-2010. Unlike other previous researches in this field that useddata with 6 or less digits SITC codes, this research is based on 9-digit SITC codes instead. By using 9-digit SITC trade data this study is attempting to go as detail as possible in analysing the differences in quality among goods traded. Since product may differ in quality, it is assumed that differences in prices, which will be reflected in unit values at 9-digit will reflect quality differences.

This study will investigate the pattern of IIT in Malaysia's manufacturing sector, focusing on top 1000 products using 9-digit SITC codes in each of the sub sections of manufacturing category. Throughout that period, the total number of export items is 55,151 and the number of import items is 64,017. Data management, calculation and analysis for the trends and patterns of IIT in Malaysian manufacturing sector are done using Windows Excel. Throughout the process, all the yearly export and import data are compiled and aligned with each other based on the matching 9-digit SITC codes to determine whether they fall under the category of having traded in IIT manner, and if so how is the intensity or the level of IIT of the goods. Otherwise any exported good which does not match any imported good (or vice versa) will be omitted from the analysis because it is said to be not traded in IIT.

PAST RESEARCHES

Intra-industry trade is a relatively new and exciting way of examining patterns of international trade and it was first observed in the 1960s by Verdoorn (1960), Balassa (1963, 1966) and Grubel (1967) (Lloyd and Lee, 2002). Grubel and Lloyd (1975) developed the most widely used index for intra-industry trade. Throughout the evolution of time, the concept of intra-industry trade has expanded to incorporate marginal intra-industry trade, intra-firm trade, intra-industry trade in new geography models and intra-industry trade in services. In most developed and developing countries, large portions of the international goods traded is in intra-industry trade (Lloyd and Lee, 2002).

The growth of intra-industry trade and adjustments implications of East Asian trade expansion has become more important than before. Several researches have been conducted by prominent economists to investigate intra-industry patterns experienced by East Asian countries. Murshed (2001) in his study on selected East Asian countries' trade in manufacturing with the rest of Asia and the West concluded that share of IIT as a proportion of total manufactured trade has risen since 1980 on all Asian country studied, namely Malaysia, Singapore, Thailand, Indonesia, the Philippines, South Korea and Hong Kong. His study also confirms findings that there has been considerable increase in inter-regional trade within Asia. Azhar and Elliot's (2006) study combines several measures of IIT and they provide a new exciting perspective on smooth adjustment hypothesis by suggesting the use of marginal product quality index.

Sawyer et. al. (2010) claims that rapid economic growth of Asian countries has been contributed by export-oriented industrialization and the international fragmentation of production of those Asian countries. His study indicated that ASEAN and developed East Asian economies exhibit the highest levels of IIT with China and India are ranked equally high with other South and Central Asian countries slightly lagging behind in terms of intra-industry trade involvement. Factors like increasing globalization, international production fragmentation and the continued dynamism of regional economies are likely to further boost the importance of IIT in the future.

While most studies on the relationship between FDI and intra-industry trade are initially focused on developed Western countries, recently the interest on intra-industry trade is making headway among Asian countries as well. Trade patterns within Asian region are displaying an ever-

greater complexity, with intra-industry trade is growing rapidly though inter-industry trade still accounts for the majority of international trade among Asian countries. Among one of the most recent studies is the research conducted by Fukao (2003). In his research on the relationships between vertical IIT and FDI in selected East Asian countries, Fukao (2003) had developed a model to capture the main determinants of vertical intra-industry trade that explicitly includes the role of FDI. His findings shows that FDI plays a significant role in in the rapid increase in vertical IIT in east Asia.

Undoubtedly manufacturing sector has become the major engine of growth and industrialization in most developing countries. The rise of IIT in manufacturing sector indirectly replace the country's domestic industries. This will certainly have some policy implications in handling socio-economic issues in the country. Veeramani (2004) raised this issue in his study and concluded that while the rise of IIT is motivated by efficiency seeking behaviour of firms and exploitation of scale economies, IIT amounted to better performance of national industries with more efficient allocation of resources and lower adjustment costs.

METHODOLOGY

The measure used incalculating the intra-industry trade index of Malaysian manufacturing sector is the Grubel Lloyd index (GL). While several alternative measures of intra-industry trade have been proposed in the literature, GL is the most widely used and the most appropriate measure for documenting an industry's trade pattern in a single point of time. GL index measures the difference between the country's trade (export - import) against the country's total trade (export plus imports) or intra-industry trade as the percentage of a country's total trade (exports plus imports) which was matched or balanced, that is exports equal imports. The GL approach is based on measuring the trade overlap for a given industry. Data used in this study is Malaysia's 9-digit SITC exports and imports data for 1990-2010 obtained from the Department of Statistics, Malaysia.

Following Greenaway et. al (1995), the model specification for the GL index calculation will be organised as follows. Letting X_{ij} stand for the export of goods of industry*i* to country *j* and M_{ij} stand for the import of this good for industry *i*from country *j*, the GL index for i^{th} good is obtained as follows:

$$GL_{ij} = 1 - \frac{|X_{ij} - M_{ij}|}{X_{ij} + M_{ij}}, \; i = 1,...,n; \; j = 1,...,N \qquad (1)$$

The value of GL lies between 0 and 1, with values close to unity indicating a high rate of intra-industry trade for good *i* and vice versa if the value is close to zero, indicating low rate of intra-industry trade. Thus if all trade in industry *i* is intra-industry trade, then $X_{ij} = M_{ij}$, then IIT = $GL_{ijt} = 1$. Similarly, if all trade in industry *i* is inter-industry trade, that is, either $X_{ij} = 0$ or $M_{ij} = 0$, then IIT = $GL_{ij} = 0$.

To determine next selection process, there must be a reference point which index is said to be meaningful to intra-industry trade. Following Erlatet. al (2007) who used the model formulated by Fontagne and Freudenberg (FF) (1997), or only known as FF index. FF index is used to establish the extent the minimum and the maximum of value the goods is exported and imported to which the industry, say j^{th} is to be classified. The j^{th} good is said to exhibit a meaningful level of intra-industry trade if

$$FF = \frac{\min(X_{ij}, M_{ij})}{\max(X_{ij}, M_{ij})} \geq \xi \qquad (2)$$

where ξ is suggested by Fontagne and Freudenberg (1997) to be 10%.

According to Greenaway, Hine and Milner (1994), the total intra-industry trade has been divided into horizontal and vertical using "product similarity criterion". This criterion is based on the

ratio between the unit value in exports and the unit value in imports in trade between two trading partners. In other words, in decomposing intra-industry trade (IIT) into vertical intra-industry trade (VIIT) and horizontal intra-industry trade (HIIT) we must first obtain the unit values of X_{ij} and M_{ij}, which we shall denote by UVX_{ij} and UVM_{ij}, then forming their ratios UVX_{ij}/UVM_{ij} and based on dispersion factor, α. The parameter α is fixed and according to Greenaway, Hine and Milner (1994) it assumes the value 0.15.

Thus we shall then categorise the industry as Horizontal Intra-industry Trade (HIIT) if the value satisfied the following terms:

$$1-\alpha \leq \frac{UVX_{ij}}{UVM_{ij}} \leq 1+\alpha \qquad (3)$$

Otherwise the commodity or goods will be classified as having Vertical Intra-industry Trade (VIIT) and it falls in one of the two categories either Low Quality Vertical Intra-industry Trade (LQVIIT) or High Quality Vertical Intra-industry Trade (HQVIIT).

It is said to be demonstrating LQVIIT if it satisfied the following conditions in equation (4):

$$\frac{UVX_{ij}}{UVM_{ij}} \langle 1-\alpha \qquad (4)$$

Otherwise it can be said the commodity is demonstrating HQVIIT if it satisfied the following conditions in equation (5):

$$\frac{UVX_{ij}}{UVM_{ij}} \rangle 1+\alpha \qquad (5)$$

In other words the first inequality in (Eq. 4) implies that VIIT is low-quality (LQVIIT) while the second inequality as in (Eq. 5) implies that the commodity is high-quality VIIT (HQVIIT).

FINDINGS

Based on SITC classification, the manufactured goods are divided into four distinct sections namely Section 5 (Chemicals and related products), Section 6 (Manufactured goods classified chiefly by material), Section 7 (Machinery and transport equipment) and Section 8 (Miscellaneous manufactured articles). The yearly composition of the types of Malaysian manufacturing imports and exports based on sections is spelled out in the TABLE 1. For the past 20 years from 1990 until 2010, culmulatively based on the 9-digit SITC trade data, Malaysia imported more manufactured goods than she exported. On the import side the composition were spread almost evenly among those 4 categories of manufactured goods. Meanwhile on the export side Malaysia seemed to export more from Section 6 and Section 8 (manufactured goods and other miscellaneous manufactured articles respectively) over Section 5 and 7 (chemical products and machinery respectively). Year on year from 1990, the numbers of goods exported and imported are on the increase until 2008 where it reached the peak with the total number of goods exported and imported stood at 4,755 items and 4,721 items respectively.

There after the number of goods traded experienced a decline both in imports and exports side of the trade. This might be attributed to the fact that over the years there are some changes in the status of the goods which are no longer demanded for both export and import markets. Some of the goods might experience changes in their importance and some might have become obsolete and thus no longer demanded by the people locally (for imports) or abroad (for exports). Even though from the number of items exported, it looked like that Malaysian trade was dominated by Section 6 and Section 8 of the manufacturing sector, the same cannot be hold as the case if we looked at the actual value of the trade. Based on the summary of the top 3 export and import items of manufacturing products (see TABLE 2), Section 7 (machinery and transport equipment) contributed more dominantly in both the export as well as the import side in terms of the real value in dollar and cents.

Based on TABLE 2 in the import side, except for the years 2002 and 2005-2008 all top 3 in terms of value of the imported products are all from Section 7 (machinery and transport equipment). This is the reflection of that Malaysia is a developing country that require a lot of machinery and equipment and spare parts for transportation from abroad. On the export side, Section 7 also dominated the top earner for the country for the last 20 years, except for some minimal appearance of products from section 6 (manufactured goods) within the top 3 of the exported goods.

The overall trend and pattern of IIT in Malaysia's manufacturing sector for the past 20 years can be observed from CHART 1.For the overall analysis of the trend and pattern of IIT in Malaysia's manufacturing sector, the GL index for each of the matched SITC is calculated. Next, the average index for all of the goods is obtained by dividing the total value of the index with the number of goods that are said to be traded in IIT in that particular year. The value obtained through the process is then taken as the average GL index of IIT for that year. Generally the overall movement of the GL index in Malaysia's manufacturing sector is on increasing trend for the past 20 years. Beginning from only 0.27 point, which reflects a very low level of IIT in the composition of the nation's export-import items in 1990, the average IIT index of Malaysia's manufacturing sector roseto 0.46 in 2010. In other words the level of IIT in the manufacturing sector has moved Malaysia from low-level IIT country to a medium-level IIT country. This phenomenon is good to the country because increased IIT suggests that Malaysia and her trading partners are specializing along ranges of qualities within products. Thus gains to trade are created not only through a larger choice of varieties but a broader choice among different qualities of products as well. Increase in IIT level experienced by Malaysia and her trading partners especially among ASEAN countries is also influenced by the increased manufacturing activities within this region especially due to the setting up of cross border production networks in the region.

An increase in IIT level reflects the increase in technological advancement of manufacturing activities in this country for the past 20 years until 2010. However it must be noted that there were also some fluctuations of the level of IIT experienced by Malaysia. For example in 1991, 2003 and 2009 the IIT index suffered a drop from the higher index in the previous year. The fluctuation may be caused by global economic situation during that time that warranted changes in the composition of Malaysia's trade. For example in 1991 as well as in 2008 there were economic and currency crisis that affected most of Malaysia's trading partnersin ASEAN, South Asian, European and South American countries.

Among the sections of the manufactured products, the intensity of the IIT between the products are also different. Some sections appear to be more highly traded in IIT than the others and some sections appear to register a rather volatile trend. The average GL Index based on the section of the manufactured goods can be observed from CHART 2.Generally, for all the previous 20 years until 2010, all 5 sections of manufacturing and manufacturing related products recorded an increasing trend ofIIT. Save for some fluctuations in 1991, 2003 and 2008 all manufacturing products recorded a healthy upward trend of increasing GL index. The general pattern recorded based on individual section of the 4 sections of goods under the manufacturing category is somewhat similar to the general pattern recorded in the overall average pattern of IIT levels in Malaysia's manufacturing sector. However it worthnoting that unlike in the years of 2003 and 2008 the economic crisis in 1991 affected manufactured goods the most compared to the rest of the sections in manufacturing sector.

Of all the 4 sections concerned, Section 6, 7 and 8recorded a rather similar level of GL index and also similar trend of development. Section 5 however, though posting a similar trend of development for that 20 year durationposted a relatively lower GL index. The level of GL index represented the intensity of the goods/products within that sections traded in the same category. This means that Chemical products are experiencing lesser IIT than the other 3 sections of manufacturing sector. This is in fact the essence of IIT where goods are traded simultaneously within the same category.

The 3 sections mentioned above (Sections 6,7,8) started out in 1990 as having recorded a low reading of GL index at around 0.3 whereas Section 5 started out even lower at a mere 0.2 point. Chemical products (Section 5) and machinery products (Section 7) enjoyed a gradual increase in IIT over the next 20 years and only experienced a slide decline in 2003 and 2008. On the other hand Manufactured goods (Section 6) and Miscellaneous manufactured goods (Section 8) while enjoying gradual increase in the level of IIT stumbled down during economic and financial crisis in 1991, 2003 and 2008.

Basically the types of IIT are closely related to the quality and variety of goods and services concerned. As earlier explained in the previous chapter, the types of IIT can be obtained through the aggregation process of the GL index using the procedure used by Greenaway, Hine and Milner (1994). The trend and development of the types of IIT in Malaysia's manufacturing sector can be seen in

CHART 3**.**There are 3 types of IIT namely Horizontal IIT (HIIT), which is merely goods and services which are similar but they have features that make them appear different from other competing goods in the same market. Goods which fall under this category is similar in quality and price. The second type of IIT is low quality Vertical IIT (LQVIIT) and the third one is High Quality IIT (HQVIIT). As implied by the term both vertically differentiated goods are different in terms of quality, characteristics and prices, even though the goods and services category still falls within the same category of industry. The only difference is that those in HQVIIT product are more superior than LQVIIT in terms of product quality, value-addition and technology. The composition of the type of IIT in Malaysian manufacturing sector is summarised in TABLE 3.

On overall for the past 20 years, there is a significant increase in the number of all three IIT types. This is largely due to the increased number of products exported and imported inevery year. It can be clearly observed from CHART 3that HIIT and HQVIIT are in the same trend while LQVIIT have a rather fluctuating trend in their development for the past 20 years. From CHART 3 and TABLE 3 it is clear that while there are considerable increase in the total involvement of IIT in Malaysian manufacturing trade, there is no significant shift in increasing the quality content of the goods and products traded. In other words there is no strong evident that Malaysia is moving towards importing and exporting higher quality products more than the lesser quality ones.Manufacturing products that occupy top rating as being HQVIIT, LQVIIT and HIIT are different from one year to another. It is obvious from TABLE 4 that top product based on the value of GL index are different from from one year to another.

CONCLUSION

Malaysia's constant and rapid economic development and its participation in increasing global and regional trade agreements for the past 20 years have raised the importance of IIT in Malaysia. Coupled with increasing international fragmentation of productions and inflows of foreign direct investment (FDI) to the country, Malaysia's trade in manufacturing sector has moved from traditional inter-industry trade to intra-industry trade. The average GL Index for the IIT in manufactured goods has increased to medium level for the past 20 years.

On the product side, manufactured goods (intermediate and unfinished products) , machinery and transport equipment dominated most of the highly traded with IIT and recorded the highest score of GL index. This finding is related to the increased demand for those products due to international fragmentation of productions globally and regionally. Increased international fragmentation of productions is mainly encouraged by FDI inflow to the country. On the other hand finished products mainly based from wood, rubber, fabric and glass dominated most of the non-IIT manufactured goods.

On the quality of the products, there is no significant improvement in the quality content of the goods and products traded. Entrepreneurs and related government agencies alike do have rooms for improvement in this area. Policies need to be designed or even redesigned in tandem with the firms' needs to specialise, operating in efficient manner with high value-add products incorporated with hi-tech capabilities. This could be one of those challenges that need to be addressed in order to jump start our country's aspiration of becoming a high income nation in no time.

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CHARTS AND TABLE

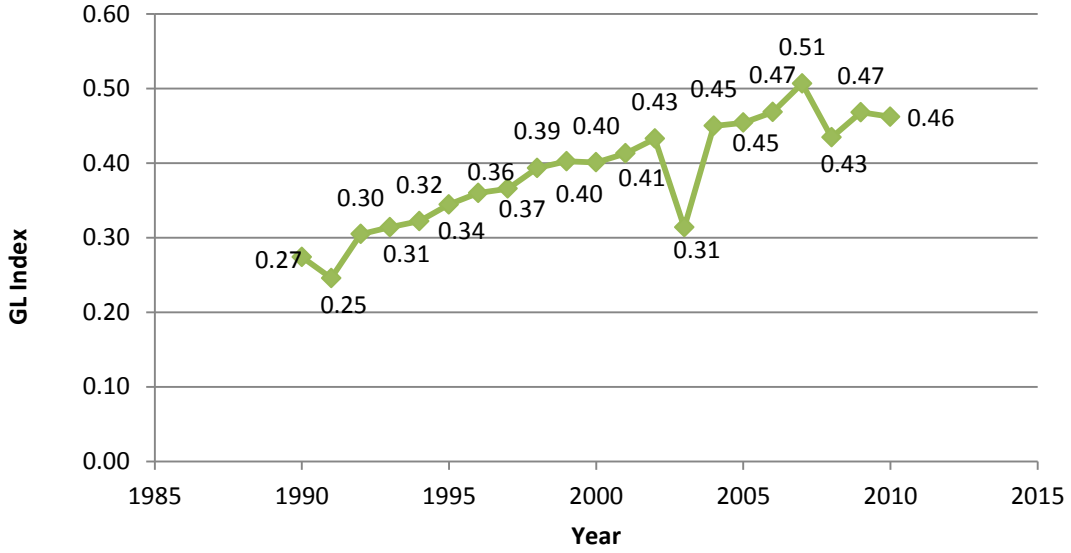

CHART 1: GL Index for IIT in Malaysia Manufacturing Sector, 1990-2010

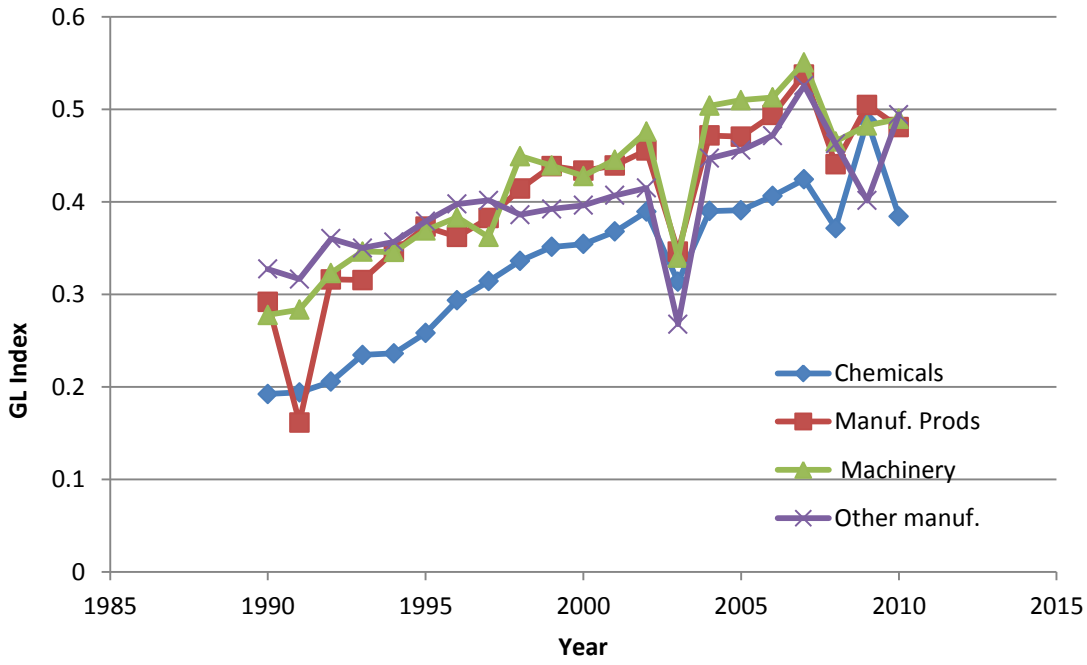

CHART 2: Average GL Index Based on Section of Manufacturing Goods, 1990-2010

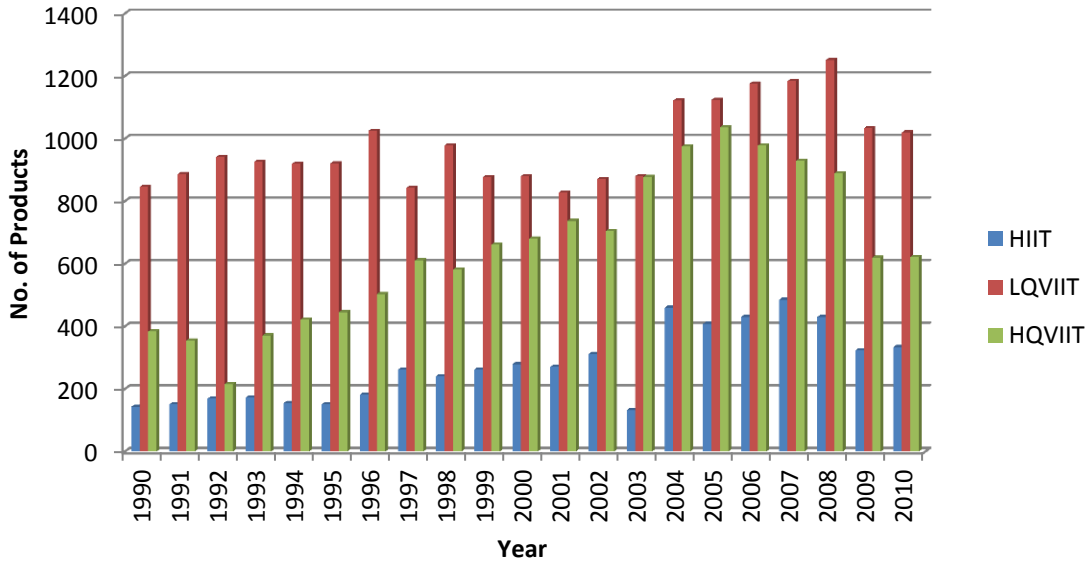

CHART 3: Type of IIT in Malaysia's manufacturing sector, 1990-2010.

TABLE 1: Composition Based On SITC Sections Of The Exports And Imports Of Malaysia's Manufactured Goods, 1990-2010.

YEAR	EXPORT					IMPORT				
	No of exported goods					No of imported goods				
	Sec 5	Sec 6	Sec 7	Sec 8	Total	Sec 5	Sec 6	Sec 7	Sec 8	Total
1990	403	438	423	474	1738	599	549	584	540	2272
1991	401	451	424	488	1764	595	557	587	551	2290
1992	407	469	431	511	1818	598	565	595	576	2334
1993	416	460	439	525	1840	602	564	601	598	2365
1994	434	479	441	525	1879	623	586	603	600	2412
1995	452	491	445	515	1903	646	583	607	598	2434
1996	499	599	499	570	2167	711	725	673	651	2760
1997	505	602	501	578	2186	710	723	672	651	2756
1998	452	595	525	631	2203	732	697	699	721	2849
1999	543	601	523	631	2298	735	698	707	720	2860
2000	552	618	530	633	2333	737	746	729	727	2939
2001	551	628	530	637	2346	738	748	730	725	2941
2002	569	657	540	644	2410	751	788	733	738	3010
2003	568	668	542	640	2418	751	785	737	737	3010
2004	984	959	969	969	3881	996	988	971	990	3945
2005	980	976	973	974	3903	995	993	990	997	3975
2006	985	988	987	989	3949	996	996	996	997	3985
2007	1000	1001	1031	1000	4032	1000	1000	1000	1000	4000
2008	1062	1357	1152	1184	4755	1081	1436	1084	1120	4721
2009	644	699	630	707	2680	767	782	760	773	3082
2010	631	703	633	711	2678	766	781	760	770	3077
Total	13038	14439	13168	14536	55181	16129	16290	15818	15780	64017
%	23.6	26.2	23.9	26.3	100	25.19	25.5	24.7	24.65	100

TABLE 2: Summary Of Malaysia's Top 3 Exports And Imports Of Manufacturing Products 1990-2010.

YEAR	EXPORT			IMPORT		
	SITC	DESCRIPTION	VALUE (RM)	SITC	DESCRIPTION	VALUE (RM)
1990	776490000	ELECTRONIC MICROASSEMBLIES	2,147,483,647	776890000	PARTS FOR ELECTRONIC INTEGRATED CIRC	2,147,483,647
	776450000	HYBRID INTEGRATED CIRCUITS	2,071,351,410	776490000	OTHER HYBRID INTEGRATED CIRCUITS	1,991,021,883
	759970000	PARTS & ACCESSORIES FOR AUTOMA	1,514,591,786	759970000	PARTS & ACC FOR AUTOMATICDATA PROC	1,128,021,134
1991	759970000	PARTS & ACCESSORIES FOR AUTOMA	2,147,483,647	77649000	OTHER INTEGRATED CIRCUITS, OTHER THAN	2,147,483,647
	776450000	HYBRID INTEGRATED CIRCUITS	2,147,483,647	77689000	PARTS FOR ELECTRONIC INTEGRATED CIRC	2,147,483,647
	776490000	ELECTRONIC MICROASSEMBLIES	2,147,483,647	75997000	PARTS & ACC FOR AUTOMATICDATA PROC	1,941,473,183
1992	759970000	PARTS & ACCESSORIES FOR AUTOMA	2,147,483,647	759970000	PARTS & ACC FOR AUTOMATICDATA PROC	2,147,483,647
	776450000	HYBRID INTEGRATED CIRCUITS	2,147,483,647	776890000	PARTS FOR ELECTRONIC INTEGRATED CIRC	2,147,483,647
	776490000	ELECTRONIC MICROASSEMBLIES	2,147,483,647	776490000	OTHER INTEGRATED CIRCUITS, OTHER THAN	1,894,547,704
1993	759970000	PARTS & ACCESSORIES FOR AUTOMA	2,147,483,647	759970000	PARTS & ACC FOR AUTOMATICDATA PROC	2,147,483,647
	776450000	HYBRID INTEGRATED CIRCUITS	2,147,483,647	776490000	OTHER INTEGRATED CIRCUITS, OTHER THAN	2,147,483,647
	776490000	ELECTRONIC MICROASSEMBLIES	2,147,483,647	776890000	PARTS FOR ELECTRONIC INTEGRATED CIRC	2,147,483,647
1994	752600000	INPUT OR OUTPUT UNITS, WHETHER O	2,147,483,647	759970000	PARTS & ACC FOR AUTOMATICDATA PROC	2,147,483,647
	759970000	PARTS & ACCESSORIES FOR AUTOMA	2,147,483,647	772200000	PRINTED CIRCUITS	2,147,483,647
	776450000	HYBRID INTEGRATED CIRCUITS	2,147,483,647	776490000	OTHER INTEGRATED CIRCUITS, OTHER THAN	2,147,483,647
1995	752600000	INPUT OR OUTPUT UNITS WHETHER OI	2,147,483,647	759970000	PARTS & ACC FOR AUTOMATICDATA PROC	2,147,483,647
	759970000	PARTS & ACC FOR AUTOMATICDATA	2,147,483,647	772200000	PRINTED CIRCUITS	2,147,483,647
	762810190	RADIO RECEIVERS WITH SOUND RECO	2,147,483,647	776490000	OTHER INTEGRATED CIRCUITS, OTHER THAN	2,147,483,647
1996	752600000	INPUT OR OUTPUT UNITS WHETHER OI	2,147,483,647	759970000	PARTS & ACC FOR AUTOMATICDATA PROC	2,147,483,647
	759970000	PARTS & ACC FOR AUTOMATICDATA	2,147,483,647	772200000	PRINTED CIRCUITS	2,147,483,647
	762810190	RADIO RECEIVERS WITH SOUND RECO	2,147,483,647	776110000	CATHODE-RAY TELEVISION PICTURE TUBES	2,147,483,647
1997	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	759970000	PARTS & ACCESSORIES FOR AUTOMA	2,147,483,647	764999000	OTHER PARTS AND ACC SUITABLE FOR USE	2,147,483,647
	761102119	COLOUR TELEVISION RECEIVERS,MAII	2,147,483,647	772200000	PRINTED CIRCUITS	2,147,483,647
1998	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	752600000	INPUT OR OUTPUT UNITS, WHETHER O	2,147,483,647	764999000	OTHER PARTS AND ACC SUITABLE FOR USE	2,147,483,647
	752700000	STORAGE UNITS	2,147,483,647	772200000	PRINTED CIRCUITS	2,147,483,647
1999	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	752600000	ANALOGUE OR HYBRID AUTOMATIC D	2,147,483,647	764999000	OTHER PARTS AND ACC SUITABLE FOR USE	2,147,483,647
	752700000	ANALOGUE OR HYBRID AUTOMATIC D	2,147,483,647	772200000	PRINTED CIRCUITS	2,147,483,647
2000	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	728493900	OTHER MACHINES & MECHANI-CAL APPLIAN	2,147,483,647
	752600000	INPUT OR OUTPUT UNITS, WHETHER O	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	752700000	STORAGE UNITS	2,147,483,647	764939900	PARTS O/T AERIALS AND AERIAL REFLECTO	2,147,483,647
2001	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	728493900	OTHER MACHINES & MECHANI-CAL APPLIAN	2,147,483,647
	752200000	PORTABLE DIGITAL AUTOMATIC DATA	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	752600000	INPUT OR OUTPUT UNITS, WHETHER O	2,147,483,647	764320900	OTHER TRANSMISSION APPARATUS INCORP	2,147,483,647
2002	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	772590900	OTHER APPARATUS FOR OTHER USES	2,131,612,049
	761102119	COLOUR TELEVISION RECEIVERS,MAII	2,147,483,647	679311000	LINE PIPE OF A KIND USED FOR OIL OR GAS P	1,359,388,275
	776370000	PHOTOSENSITIVE SEMICON- DUCTOR	2,147,483,647	776370000	PHOTOSENSITIVE SEMICON- DUCTOR DEVIC	1,083,718,615
2003	611424900	TANNED OR CRUST HIDES ANDSKINS (	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	711910000	PARTS FOR STEAM GENERA- TING BO	2,147,483,647	764320900	OTHER TRANSMISSION APPARATUS INCORP	2,147,483,647
	712800000	PARTS FOR STEAM OR OTHER VAPOU	2,147,483,647	764939900	PARTS O/T AERIALS AND AERIAL REFLECTO	2,147,483,647
2004	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	728493900	OTHER MACHINES & MECHANI-CAL APPLIAN	2,147,483,647
	752200000	PORTABLE DIGITAL AUTOMATIC DATA	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	752600000	INPUT OR OUTPUT UNITS, WHETHER O	2,147,483,647	759970050	COMPUTER PARTS OTHER THAN PCB AND E	2,147,483,647
2005	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	679311000	LINE PIPE OF A KIND USED FOR OIL OR GAS P	2,147,483,647
	752200000	PORTABLE DIGITAL AUTOMATIC DATA	2,147,483,647	682121000	CATHODES AND SECTIONS OF CATHODES O	2,147,483,647
	752600000	INPUT OR OUTPUT UNITS, WHETHER O	2,147,483,647	752200000	PORTABLE DIGITAL AUTOMATIC DATA PRO	2,147,483,647
2006	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	682121000	CATHODES AND SECTIONS OF CATHODES O	2,147,483,647
	679311000	LINE PIPE OF A KIND USED FOR OIL OR	2,147,483,647	728493900	OTHER MACHINES & MECHANI-CAL APPLIAN	2,147,483,647
	752200000	PORTABLE DIGITAL AUTOMATIC DATA	2,147,483,647	752700030	STORAGE UNITS; HARD DISK DRIVES	2,147,483,647
2007	634314900	PLYWOOD, WITH AT LEAST ONE OUTEI	2,147,483,647	682121000	CATHODES AND SECTIONS OF CATHODES O	2,147,483,647
	741510000	AIR CONDITIONING MACHINESWINDOV	2,147,483,647	759970000	PARTS & ACCESSORIES FOR AUTOMATIC DA	2,147,483,647
	752200000	PORTABLE DIGITAL AUTOMATIC DATA	2,147,483,647	759970050	COMPUTER PARTS OTHER THAN PCB AND E	2,147,483,647
2008	741510000	AIR CONDITIONING MACHINES; WINDO	2,147,483,647	562310000	FERTILIZERS, MINERAL OR CHEMICAL; POTA	2,147,483,647
	752200000	DATA PROCESSING MACHINES; PORTA	2,147,483,647	682121000	COPPER, REFINED, UNWROUGHT; CATHODE	2,147,483,647
	752600000	DATA PROCESSING MACHINES,INPUT	2,147,483,647	714910000	TURBINES; PARTS OF TURBO-JETS AND TUR	2,147,483,647
2009	759970000	PARTS AND ACCESSORIES; FOR MAC	23,010,871,942	776890000	ELECTRONIC INTEGRATED CIRCUITS; PARTS	32,407,454,111
	752700000	DATA PROCESSING MACHINES; STORA	9,305,873,356	759970000	PARTS AND ACCESSORIES; FOR MACHINES	15,901,448,454
	752200000	DATA PROCESSING MACHINES; PORTA	8,686,241,498	772200000	CIRCUITS; PRINTED	4,416,628,095
2010	759970000	PARTS AND ACCESSORIES; FOR MAC	22,884,888,955	776890000	ELECTRONIC INTEGRATED CIRCUITS; PARTS	42,487,805,358
	752700000	DATA PROCESSING MACHINES; STORA	13,396,983,099	759970000	PARTS AND ACCESSORIES; FOR MACHINES	12,227,502,266
	752900000	DATA PROCESSING MACHINES; AUTO	10,876,146,318	764939100	TELEVISION BROADCAST RECEIVERS; NOT E	7,134,010,042

TABLE 3: The Composition Of IIT InMalaysia's Manufacturing Sector, 1990-2010.

YEAR	HIIT		LQVIIT		HQVIIT	
	No.	%	No.	%	No.	%
1990	143	10.42	846	61.62	384	27.97
1991	151	10.84	887	63.68	355	25.48
1992	169	12.75	941	71.02	215	16.23
1993	172	11.71	926	63.04	371	25.26
1994	155	10.35	920	61.46	422	28.19
1995	151	9.95	921	60.71	445	29.33
1996	182	10.64	1025	59.94	503	29.42
1997	262	15.27	843	49.13	611	35.61
1998	241	13.37	979	54.33	582	32.30
1999	262	14.56	877	48.72	661	36.72
2000	279	15.16	880	47.83	681	37.01
2001	271	14.76	828	45.10	737	40.14
2002	312	16.53	871	46.16	704	37.31
2003	132	6.98	880	46.56	878	46.46
2004	460	17.99	1122	43.88	975	38.13
2005	408	15.89	1124	43.77	1036	40.34
2006	430	16.64	1176	45.51	978	37.85
2007	485	18.67	1184	45.57	929	35.76
2008	430	16.73	1251	48.68	889	34.59
2009	323	16.35	1033	52.28	620	31.38
2010	334	16.90	1020	51.62	622	31.48