

THE FACTORS INFLUENCING MALAYSIA'S ELECTRICAL & ELECTRONICS

(E&E) EXPORTS 1970 - 2010

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DECLARATION

I hereby declare that the project is based on my original work except for quotations and citation which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at USM or any other institutions.



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ABSTRAK

Tujuan kajian ini dilakukan adalah untuk menentukan factor-faktor yang mempengaruhi eksport elektrik & elektroniks (E&E) di Malaysia. Walaupun terdapat banyak kajian sebelum ini yang mengkaji factor-faktor mempengaruhi eksport keseluruhan tetapi kajian terhadap eksport E&E sahaja amatlah sedikit. Sedangkan eksport E&E merupakan antara penyumbang terpenting terhadap pertumbuhan keseluruhan eksport Malaysia, kajian terhadap eksport E&E sahaja haruslah dilakukan. Dengan menggunakan data siri masa dari 1970 – 2010, factor-faktor “real effective exchange rate”, pelaburan asing dan GDP dunia dikaji dengan menggunakan Vector Error Correction Model (VECM) dan Johansen-Juselius cointegration test untuk menentukan sama ada terdapat hubungan jangka pendek dan jangka panjang dengan eksport E&E. Data ini juga dikaji dengan menggunakan Granger Causality test berdasarkan VECM untuk menentukan jika factor-faktor tersebut “Granger cause” eksport E&E. Keputusan empirikal menunjukkan bahawa kedua-dua hubungan jangka pendek dan jangka panjang wujud antara factor-faktor yang dikaji dengan eksport E&E. Keputusan itu menunjukkan bahawa pelaburan asing dan GDP dunia mempunyai hubungan positif dengan eksport E&E manakala “real effective exchange rate” mempunyai hubungan songsang yang amat ketara dengan eksport E&E. Walaupun kajian ini dilakukan terhadap salah satu sub-sektor eksport, keputusan kajian adalah konsisten dengan kajian yang pernah dilakukan terhadap factor-faktor yang mempengaruhi eksport keseluruhan.

ABSTRACT

The purpose of this study is to identify the determinants of Malaysia's Electrical & Electronics (E&E) exports. Although literature on export determinants is bountiful, the available research done on E&E exports per se seems to be lacking. Since E&E exports has been and still is the pillar of growth for Malaysia's overall export growth, it only seems right to dedicate a purposeful research on this sub-sector. Using time series data from 1970 – 2010, the short run and long run relationships between the variables real effective exchange rate, foreign direct investments and world GDP with E&E exports are tested using the Vector Error Correction Model (VECM) and Johansen-Juselius cointegration test procedures respectively. The data are also tested using the Granger Causality test based on VECM to identify if these explanatory variables Granger cause E&E exports. The empirical results reveal that both short-run and long-run relationships exist among the independent and dependent variables with foreign direct investments and world GDP having a positive relationship with E&E exports while real effective exchange rate showed an inverse relationship with E&E exports. In fact, the results show that the effect of real effective exchange rate on E&E exports is very significant. Although this study focuses on a sub-sector of total exports, the findings are consistent with previous literature on the determinants of exports.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The early years of Malaysia's economic growth was built upon agricultural- and resource-based industries. Malaysia had its roots planted in the agricultural sector by its past colonial masters that were embarking on the Industrial Revolution. Products like rubber and tin brought great wealth to this young nation. Even up to the early 1980s, Malaysia's industrial production was dominated by low-tech and resource-based products such as food, textile, wood products, petrochemicals and rubber. Domestic demand was the principal source of economic growth. However, as technology evolved and brought about the discovery of the semiconductor, the world of electronics began to flourish and move towards an electronics revolution. Coupled with the diminishing demand for Malaysia's once glorious commodities and the volatility of world market prices for commodities, Malaysia's economic landscape shifted towards an export-driven growth strategy.

The 1970s brought about a great change which would herald a new era that would transform Malaysia's economic landscape. The loss of Penang's free-port status in the 1970s led the then Chief Minister of Penang, the late Tun Dr Lim Chong Eu to embark on a mission to entice the young and growing multinationals such as Intel, Agilent, National Semiconductor to name a few to set up a manufacturing presence in what is today the Bayan

Lepas Industrial Park in Penang. The predominantly agricultural- and resource-based Malaysian economy began a transition towards a more multi-sector economy. That turn of events steered Malaysia's economic structure towards an export-based economy. From the 1980s onwards, the industrial sector has led Malaysia's growth. High levels of investment played a significant role in this. In the following two decades, the flow of foreign direct investments (FDIs) into the country transformed the composition of Malaysia's industrial output. Medium and high-tech electrical and electronics (E&E) goods displaced resource-based goods as the primary drivers of growth. And in a matter of years, Malaysian exports specifically E&E exports became the country's primary growth engine. Malaysia consistently achieved more than 7% GDP growth along with low inflation in the 1980s and the 1990s.

This study examines the roles played by several factors namely foreign direct investments, world GDP and real effective exchange rate in spurring the growth of E&E exports in Malaysia.

1.1.1 Malaysia's Economic Landscape

Since the 1970s, Malaysia's economic performance has been nothing but a marvel. On average, Malaysia's gross GDP grew by approximately 6.4% per year from 1970 to 2010. Serious growth was registered from 1988 to 1996 when the annual GDP growth registered an astounding 9% per year only to be cut short by the 1997 crisis. (Ministry of Finance, 2010)

This growth was mainly fueled by high levels of foreign direct investment and also domestic investment. The aggregate effect of these investments significantly changed the façade of the economy from an agricultural- and resource-based industry to an economy that is modern and diversified. Today, Malaysia is one of the fastest developing economies having a strong foothold in both the services and manufacturing industry. Not surprisingly, Malaysia is one of the world's largest exporters of semiconductor devices, electrical goods, solar panels, and information and communication technology (ICT) products.

However, Malaysia's impressive growth was brought to an abrupt halt when it was hit by the 1997 Asian Financial Crisis. In 1997, GDP growth slowed to 7.3% but the full brunt of the recession was seen in the subsequent year when GDP contracted by 7.4%. Fortunately, recovery was swift when the economy was back in the black in 1999 with a 6.1% GDP growth. These valuable lessons in economic recovery came to good use when the global credit crunch hit in 2008. The Malaysian economy showed noteworthy resilience as the GDP had only contracted by 1.7% in 2009 but again was followed by a swift recovery when the economy rebounded with a strong 7.2% growth in 2010. (Ministry of Finance, 2010) One reason for this resilience is the lack of exposure to the US subprime market. The Central Bank of Malaysia has always maintained a more conservative regulatory environment by prohibiting investment in riskier assets that seem to be the norm in other foreign markets.

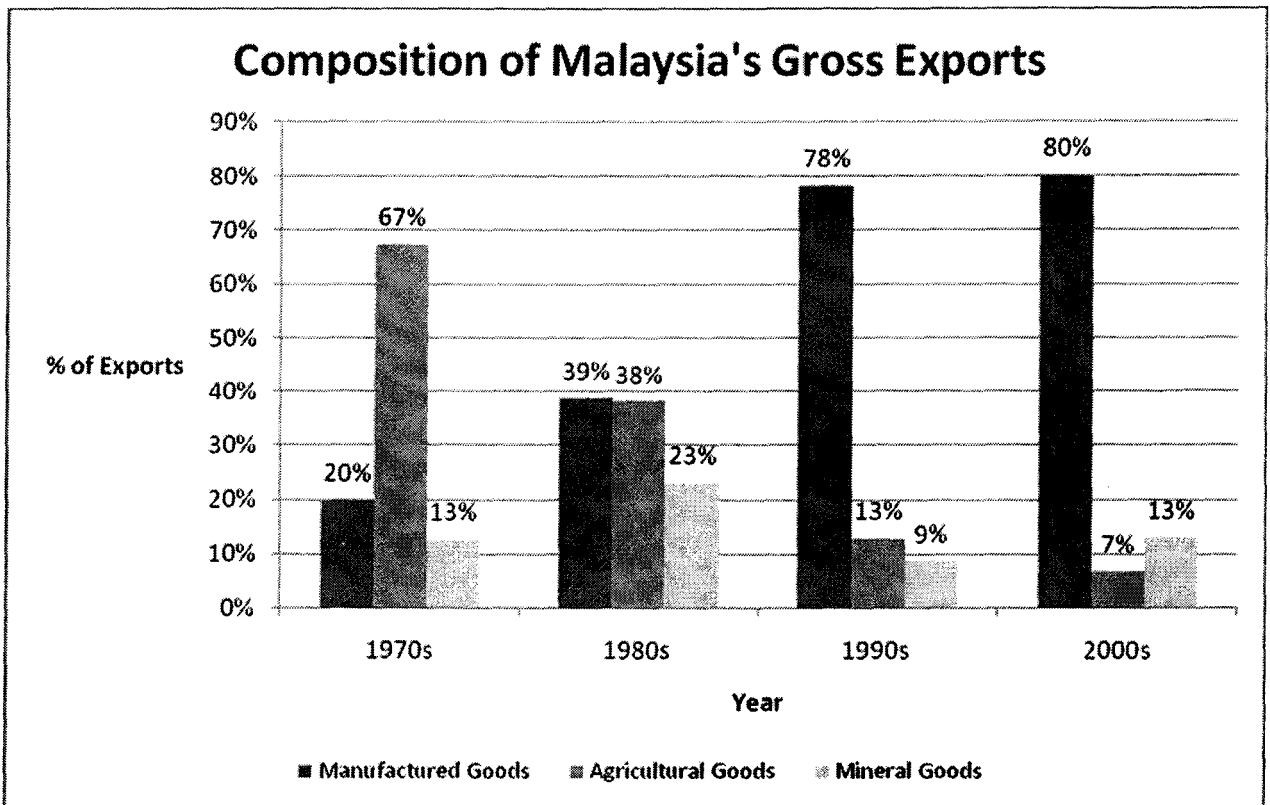
Since the ringgit peg to the US dollar was removed in 2005, the ringgit has been allowed to float in a managed manner. This regime gives Malaysia the flexibility to adjust the ringgit according to prevailing global economic and financial developments.

1.1.2 Growth of E&E exports

Malaysia's economic landscape has transformed from that of an agricultural- and resource-based economy to one which is based on exports. The growth of the nation's exports has been the backbone of its economic achievement that has brought about wealth and modernization to this country. In the 1970s, almost 70 per cent of exports were agricultural products. By the 1980s, the agricultural exports had dropped to about 38 per cent; and by 1990s, it was only approximately 13 per cent.

Manufacturing exports on the other hand has been steadily growing in the 1970s and 80s accounting for between 20 to 40 per cent of nation's exports. However, tremendous growth in the sector during the 1990s pushed total manufacturing exports to account for more than 70 per cent of the country's total exports. Malaysia's total manufacturing peaked at 80 per cent of total exports in the period of 1996 – 2000 before slightly tapering off to about 75 per cent in the period 2001 – 2005.

Figure 1.1 below shows the composition of Malaysia's gross exports by sector from the 1970s up till the 2000s.



Source: Own computation

Figure 1.1: Composition of Malaysia's Gross Exports from the 1970s to 2000s

Electrical and electronics (E&E) exports have been the major catalyst for the growth of Malaysia's manufacturing exports. In the 1970s when Malaysia initially embarked on a more export-oriented economy, E&E exports accounted for a measly 5% of Malaysia's total exports. This has slowly but steadily grown throughout the years and by the end of the 1980s, the proportion of E&E exports to total exports breached the 30% level for the first

time. The 1990s and 2000s were marked by an unprecedented growth for the E&E industry. From the period of 1994 – 2006, E&E exports accounted for more than 50% of the nation's total exports.

To visualize the importance of E&E exports to the economy, the 2010/11 Economic Report (Ministry of Finance, 2010) reports that the export of manufactured goods accounted for 77.3% of the nation's total exports and out of that the export of electrical & electronics (E&E) products made up 51.6% of the total export of manufactured goods. This shows that Malaysia is definitely very reliant on the export of E&E products as a base for the country's economic growth.

Figure 1.2 shows that the growth trend of E&E exports have been in tandem with the growth trend of Malaysia's GDP implying a strong connection between the performance of E&E exports and GDP growth.



Source: Own computation

Figure 1.2: Trend of E&E exports, Manufacturing exports, and GDP in Malaysia

E&E Exports in Malaysia from 1970 - 2010							
Year	E&E Exports (RM mil)	Year	E&E Exports (RM mil)	Year	E&E Exports (RM mil)	Year	E&E Exports (RM mil)
1970	237.50	1980	3,015.60	1990	26,502.40	2000	230,429.30
1971	230.77	1981	3,242.10	1991	35,586.70	2001	200,307.20
1972	223.28	1982	4,135.00	1992	41,578.70	2002	212,297.60
1973	339.12	1983	5,309.70	1993	55,128.90	2003	222,850.60
1974	468.96	1984	6,732.50	1994	76,367.30	2004	257,221.10
1975	506.80	1985	6,492.90	1995	96,747.80	2005	282,796.30
1976	656.80	1986	8,492.40	1996	104,272.00	2006	300,784.94
1977	918.90	1987	11,000.00	1997	119,025.00	2007	287,696.36
1978	1,687.40	1988	15,161.60	1998	161,732.60	2008	276,922.60
1979	2,410.60	1989	20,799.50	1999	195,047.10	2009	248,948.04
						2010	271,251.35

Source: Bank Negara Malaysia, 2011

Table 1.1: E&E Exports in Malaysia from 1970 – 2010

This strategy of improving and building upon its already strong export base looked like the perfect strategy to bring the country towards a developed nation status by 2020. However, all is not as rosy as it looks when the country was affected by two major recessions in recent memory. Once was the Asian Financial Crisis in 1997 and the most recent global recession brought about by the subprime crisis that hit in 2008.

Before the 1997 crisis, Malaysia was a choice destination among investors worldwide. During that time, high expectations were placed on the tremendous growth rate to transform Malaysia into being a high income nation. However, when the crisis hit in 1997, the tremendous growth from 1988 to 1996 came to a screeching halt. In 1998, the real GDP contracted by as much as 7.4% and plunged the country into its first recession since 1985. The value of the ringgit fell by almost 50%, falling from 2.50 to 4.40 to the US dollar at one point. In a move to halt the further slide of the ringgit, the then Prime Minister of Malaysia, Tun Dr. Mahathir Mohammad introduced a currency peg where the ringgit was fixed at RM3.80 against the US dollar and strict capital controls were imposed.

In 2008 when another bout of global recession hit, Malaysia again was not spared. Malaysia, being an open-economy heavily reliant upon its major trading partners namely the US which was badly affected by the subprime crisis, saw its exports plummet in 2009 registering a negative growth of 16.5% (Ministry of Finance, 2010). Of course, this reduction in growth brought about a chain of events that affected the E&E manufacturing industry. Most companies reported retrenchments in an effort to cut costs in view of falling revenues

and margins. Even mighty MNCs like Intel and Agilent were not spared from the wrath of the global recession. Overall, the recession resulted in approximately 120,000 job cuts across the industry. Clearly, for a nation like Malaysia that is heavily reliant of the export of manufactured goods especially E&E products, it would be very important to understand the workings and determinants of its E&E exports.

The main competitive edge of Malaysia's export market in its early years was due to the abundance of cheap and well-trained labour that the country provided. This was due to the fact that the products manufactured by the E&E manufacturing industry was mainly labour-intensive. The evolution of the electronics industry in Malaysia illustrates how FDI can affect industrial development. In the 1970s, when MNCs started investing in Malaysia, the electronic firms that were established were engaged primarily in basic assembly-type, labour-intensive operations. Value added was minimal, little or no technology transfer took place, and the jobs created were mostly of a low-level nature. As such, Malaysia competed mainly on a low cost model that has served it well for the past four decades or so.

After forty years, the industry has matured and climbed far up the value chain. Assembly-type operations have been replaced by sophisticated high-tech manufacturing. Malaysians are employed at senior levels in operations and management. High level research and development work is being undertaken in a number of companies. The impact of these developments on the local economy has been far reaching. A number of local companies

have sprung up to service the bigger MNCs and to manufacture parts for them. And some have developed into independent technology companies in their own right.

However, as the E&E industry flourished over the decades and brought about greater affluence to the nation, the income levels of the people have also increased. Historically, investors have been attracted to Malaysia because of its geographical location, its low-cost advantage, and the availability of good support infrastructure. Today, however, many other locations in Asia and elsewhere offer similar or comparable incentives. In a very real sense, therefore, MNCs are now spoilt for choice, and countries like ours must travel the extra mile to attract FDI.

The emergence of other developing economies like China, India and Vietnam, all of whom are hungry for a piece of the E&E world market has brought about greater pressure to Malaysia's E&E exports. As the new emerging markets are now way more competitive than Malaysia in terms of providing low cost labour and raw materials, Malaysia can no longer rely on the labour-intensive E&E products such as electrical appliances, electronics products and semiconductors. But rather, the nation needs to move up the value chain to provide more capital-intensive and technology-based products like solar panels, and LEDs as its new source of competitive advantage.

1.2 Background of the Study

Since the 1970s, Malaysia has imitated the four Asian Tiger economies of Hong Kong, Singapore, Taiwan and South Korea to pursue an export-based strategy to boost the growth of its economy. It cannot be denied that the economic success of these Asian countries is nothing short of a miracle. And because of that, there is no shortage of literature that aims to capture this phenomenon as well as describe the factors and determinants that led to such success. And because of that, export-led growth is no longer a new area of research but rather an accepted syllabus in the guide to economic growth for young budding developing economies.

On the contrary, not much has been said about specific areas of the export market such as the E&E export market which is a shame; seeing that more than half of Malaysia's manufacturing exports are derived from this branch of products. In fact, E&E products has been one of the biggest contributors to Malaysia's export growth. Seeing that E&E exports play such an important role in Malaysia's economic growth, it would surely be justifiable to determine the factors that would drive the growth of E&E exports. With the country still relying on E&E exports to drive the growth for the foreseeable future, it would then be useful that this study provides the guidelines needed so that favourable policies can be put in place to further spur the industry and subsequently lead to greater economic growth.

As discussed earlier, Malaysia's economy in the 1970s was predominantly agricultural and resource based but Malaysia vowed to reduce its reliance on agriculture and

resources and to pursue a more multi-sector economy that focuses on export-oriented manufacturing.

1.3 Problem Statement

Although there have been previous research that were conducted in the area of the determinants of exports, the researcher feels that a research to identify the determinants of E&E exports per se will do greater justice to an industry which has been the driving force for Malaysia's economic achievement and growth over the past four decades. Seeing that the export of E&E products will continue to be the driving force for Malaysia's growth in the foreseeable future, it would be a great service to identify the factors in order for Malaysia to remain competitive in the area of E&E exports.

Foreign direct investment (FDI) is a significant source of growth for many developing countries, including Malaysia. As much research has been done on the determinants of exports, FDI is believed to be a major contributor towards export growth. Hence, the same is being of the role of FDI towards E&E products' export growth. Therefore, if this is proven then the government should accelerate on its promotions to attract more FDI on the area of capital-intensive E&E products.

On the area of price determinants, the real effective exchange rate (REER) plays a significant role as an indicator of the relative competitiveness of Malaysia's E&E products against its major competitors. For REER, Malaysia can use monetary policies to affect changes on its currency rate to stimulate export growth. Based on the theory of demand, a lower price would result in a higher quantity demanded. However, caution should be taken on the price elasticity as this will have an effect on the overall export revenue.

Another area to consider is on income determinants, in the absence of available data for the world market size for E&E products, the world GDP is used as a proxy to determine the world market size of E&E products. This is because the world GDP provides an indication as to the demand for E&E products in Malaysia. It is believed that a higher world GDP would in turn mean a larger market size for E&E products and hence would result in more E&E export growth for Malaysia.

1.4 Research Objectives

The objectives of the study are:

1. To study the effect of Malaysia's exchange rate on the level of E&E exports.
2. To study the effect of FDI on the level of E&E exports

3. To study the relationship that the world GDP has on the export of E&E products.

1.5 Research Questions

In view of the increased competition that Malaysia is facing for its E&E exports, herein lie the questions that this research intends to answer:

1. Does Malaysia's exchange rate affect its E&E exports?
2. To what extent does the level of foreign direct investments (FDI) influence the export of E&E products?
3. Does the world GDP affect the level of Malaysia's E&E exports?

1.6 Significance of the Study

In the context of the Malaysian economy, much research has been done to identify the variables that affect the level of aggregate exports. However, a more in-depth study is

required into the E&E industry as its importance in the economy justifies a separate research that caters specially to the needs of making the industry more competitive.

The importance of E&E exports to the GDP of Malaysia's economy is a given fact. The rapid growth of the industry, attributed to the adoption of a series of industrialization programs and export-push strategies coupled with FDI promotion has resulted in an open economy that is manufacturing-focused and has led to the transformation of the Malaysian economy from one which relies on primary production to the production of manufactured goods.

By identifying the primary factors that influences the export of E&E products in the country, Malaysia will be better positioned to exploit these factors in order to move up the value chain and reap the benefits from a more capital-intensive approach which will help differentiate its economy from the other emerging markets which are also vying for a piece of the E&E world market. The country stands well to leverage from its four decades of experience in the E&E sector and to capitalize on its advantage as the destination of choice among foreign investors.

This research does not aim to provide an exhaustive list of variables affecting the export of E&E products but rather be the springboard for future research that might place greater emphasis on areas that are deemed to be more significant to build a stronger economy based on the E&E exports.

1.7 Organization of the Remaining Chapters

This study is structured into five chapters. The introduction and background of the study are covered in Chapter 1. Also covered within the first chapter are the problem statement, the research objectives, the research questions to be answered, and the significance of the study. Chapter 2 meanwhile examines the available literature pertaining to this study. The development of the theoretical framework and the hypotheses will also be covered in this second chapter. Chapter 3 details the research methodology to be used for the research and subsequently the empirical findings are discussed in Chapter 4. Chapter 5 concludes the study with a discussion of the contributions and implications. The limitations of the study and recommendations for future research concludes are also covered within this chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The literature review is structured with respect to the variables of the study, both dependent and independent. The review covers the literature around the relationship that each explanatory variable, that is, the real effective exchange rate, foreign direct investment and world GDP has on the growth of E&E exports of Malaysia. The chapter then concludes with the theoretical framework and the development of a set of hypotheses.

2.2 Electrical & Electronics (E&E) Exports

Malaysia's economy has experienced a critical structural transformation over the past four decades from an economy strictly reliant on primary commodity trading and import substitution to one that is highly diversified and export-led. Of the various export-based industries in Malaysia, the E&E sector has been the major catalyst for the country's economic growth since the 70s.

As is common for the New Industrialized Economies (NIEs) i.e. Hong Kong, Singapore, Taiwan and South Korea, exports specifically E&E exports have played a

significant role in the transformation of those countries from third to first world status. It is therefore not surprising that Malaysia's effort to push towards a developed nation status is to embark on an export-oriented and investor-friendly policy. As such, the government has always been effective in providing the necessary support system and important infrastructure critical for industrial development. The government has also embarked on skills training programs for the development of high-end industrial areas where Malaysia is deemed to be lacking in terms of workforce skills.

The adoption of outward-oriented policy that Malaysia has implemented has resulted in rapid growth in electrical & electronics exports that have raised the country's long-run economic growth. This piece of evidence is consistent with the notion that has been widely argued that export trade plays a very important role in the development of the country's growth prospects in the foreseeable future.

In 2010, the gross export of the E&E industry amounted to RM271.3 billion. The major export destinations are the US, China and Singapore. Throughout the years, significant skills and capabilities has been developed for the manufacture of a wide range of E&E products. These products include high-end consumer electronics, semiconductor devices like photovoltaic cells and modules, and information and communication technology products.

By intensifying their efforts into research and development and outsourcing non-core activities domestically, local E&E manufacturers in the country have continuously move up the value chain to produce higher value-added products.

Malaysia's E&E industry can be categorised into three sub-sectors namely:

1) Semiconductor products

Semiconductor products are one of the major components in E&E exports constituting an export value RM97.9 billion. It contributes 39.7 per cent of the total E&E exports for 2010. (Bank Negara Malaysia, 2011) This subsector consists mainly of large semiconductor MNCs whose principal activities are the assembly and testing of semiconductor products. However, these MNCs have gradually diversified their principal activities by branching out towards research and development as well as design activities. As a result, lesser emphasis is placed on the manufacturing of low end products. With greater demand towards miniaturization and need for higher performance for mobile devices, automotive and green technology, the semiconductor industry has seen an increase in outsourcing activities.

2) Electronic equipment and parts

This subsector is made up of information technology and multimedia products such as computers, peripherals, telecommunication products and office equipment. In 2010,

Electronic Manufacturing Services (EMS) companies made up the majority of approved investments with total investments amounting to RM2.6billion. These EMS companies are into the production of low volume high mix products for all sorts of applications which includes medical devices, oil and gas industry, telecommunications and the aerospace industry.

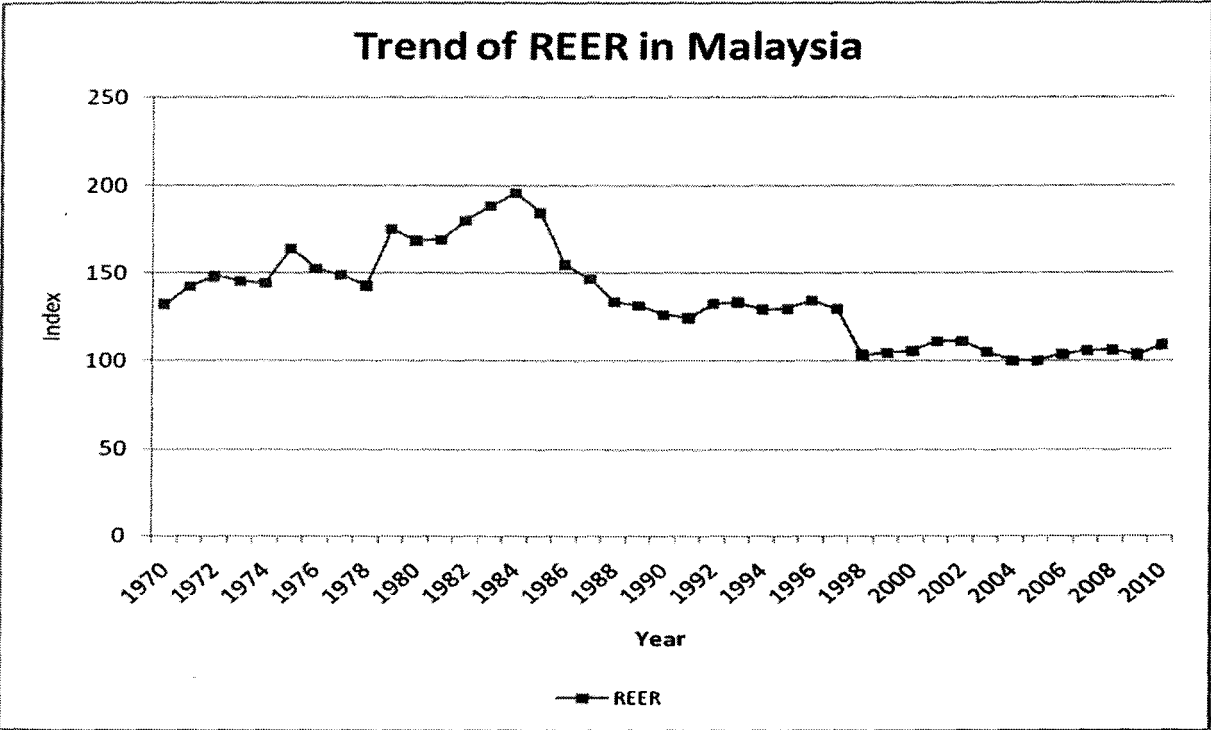
3) Machinery and electrical products

Most of the electrical products produced in Malaysia consist of everyday household appliances like refrigerators, vacuum cleaners, washing machines and other electrical appliances. The companies producing these household appliances also produce a wide range of other products such as electrical industrial equipment and wire and cables. These companies have evolved from merely product assembly to more sophisticated activities like the design and marketing of local Malaysian brands to regional and worldwide markets. Exports of consumer electronic products in 2010 amounted to RM55.4 billion. (Bank Negara Malaysia, 2011)

2.3 Real Effective Exchange Rate

The real effective exchange rate (REER) is an important determinant for Malaysia's E&E export performance. As a proxy for the price variable, REER represents the affordability of Malaysia's E&E exports as compared to other competing countries.

Therefore, when the REER increases, it is expected that Malaysia's E&E exports being comparatively more expensive would suffer from a drop in demand. Figure 2.1 shows the trend of REER from 1970 till 2010. From 1986 onwards, Malaysia's REER have generally remained stable except during the 1997 Asian Financial Crisis that resulted in the general depreciation of the ringgit compared to other major currencies like the US dollar, Pound Sterling and Japanese Yen.



Source: Own computation

Figure 2.1: Trend of REER in Malaysia

The effects of the exchange rate on the level of exports are widely documented in various researches. Tham (2001) concluded that the exchange rate policy of Malaysia has to

be managed sustainably as a permanent ringgit peg will cause the ringgit to lose its competitiveness if other currencies within the region begin to depreciate. This reinforces the notion that the real effective exchange rate has a profound effect on the exports of a country. This view was subsequently supported by Jongwanich (2007) in a study which found that the relationship between long-run exchange rate and total value of exports to be significantly high. It was concluded that there was an inverse relationship between the 2 variables. In both studies, the value of exports tended to move in opposite directions of the real effective exchange rate whereby an increase in the real effective exchange rate would cause the value of exports to decrease and vice versa.

Fugazza (2004) did a study on the determinants of exports by using bilateral trade flows for 84 countries obtained from the UN COMTRADE database. Results from the analysis gave an objective indication whereby the value of exports on average can be increased by 6% to 10% from 1% depreciation of the exporting country's currency. He concluded that an overvalued currency is detrimental to a country's export because it means that the exports would then lose their competitive pricing edge which he added is particularly important for labour-intensive products.

Research done by Sharma (2003) investigates the factors affecting India's export performance using annual data from 1970 – 1998. The results of the study showed that the demand for Indian exports decreases when its export price increases relative to world export prices. Consequently, the appreciation of the rupee resulted in a decrease in India's exports.

Results from the research indicated that a 10% appreciation in the rupee would cause a 3.39% drop in export demand. As such, for exports to remain competitive, policies are needed to ensure that the country's currency rate does not appreciate excessively against its competitors. However, the sensitivity of E&E exports to REER movement might vary significantly compared to aggregate exports because aggregate exports consists of many sub-sectors and therefore the sensitivity is the average sensitivity of all sub-sectors instead of just one sub-sector like E&E exports.

Thorbecke's (2011) research looks at the call by economists and policymakers worldwide for the Chinese economy to rely less on exports. China – whose economy has largely relied on exports to spur the sterling economic growth it has enjoyed in the past 40 years – has a global current account surplus averaging 9% of its GDP between 2007 and 2009. It is claimed that an appreciation of the Renmimbi would help rebalance China's current account surplus. Empirical results of the research supports this notion as an appreciation of the Renmimbi would result in a drop in exports for China's processed goods.

An interesting study was conducted by Eichengreen and Hatase (2005) on the possibility of a rapidly growing export-oriented economy exiting smoothly from a currency peg. The study focusing on Japan's removal of its currency peg during its high-growth era showed that once the currency peg was removed in 1971, the yen appreciated sharply and this was followed by a dramatic reduction in Japan's exports which resulted in a steep recession towards the end of 1971. The dramatic reduction in exports was obvious because the yen had

then appreciated from 360 yen to the dollar to 308 yen to the dollar which represented a 14.4% appreciation. In turn, Japan's exports became 14.4% more expensive than before the appreciation which therefore resulted in lower demand for Japan's exports.

Wong and Tang (2007b) examined the effects of exchange rate variability on E&E exports at a disaggregated level. Using data from quarterly period of 1990-2001, they conducted their research using the "bounds" test developed by Pesaran, Shin and Smith (2001). They found an inverse long-run relationship on the effects of exchange rates on Malaysia's top three electrical exports at a disaggregated level. Clearly, the real exchange rate affects the level of exports and more specifically E&E exports at a disaggregated level. The real exchange rate effectively plays the role as a proxy for the price of a product whereby the theory of demand shows an inverse relationship between the price of a product and the quantity demanded. They also gave evidence that exchange rate variability also causes the exporting firm to shift away from markets which are exposed to exchange rate volatility. This in essence would also affect the overall exports as firms involved in international transactions would find that their foreign trade would be decreasing as a result of lesser available markets to export to.

However, as Malaysia also relies quite heavily on imported raw materials to build its E&E products, some researchers are doubtful as to the effects of the real exchange rate on increasing the country's exports. For example, a depreciation of a currency lowers the price of exports thus increasing exports because importing countries deem it to be cheaper.