UNIVERSITAS INDONESIA

ASSESSING INDONESIA'S ELECTRONIC PRODUCTS COMPETITIVENESS IN INTRA-ASEAN TRADE

THESIS

A Thesis submitted in partial fulfillment of the requirements for the degree of
Master of Economics in Planning and Public Policy
Universitas Indonesia

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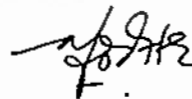|	
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ABSTRACT

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This research analyzes the competitiveness of Indonesia electronic products export and identify Indonesia electronic products which is potential to be exported in intra-ASEAN trade for intra-ASEAN trade using Constant Market Share (CMS) approach, Revealed Comparative Advantage (RCA) and Competitiveness Matrix. The research period is divided into 2 sub period, period 1 (2000-2004) and period 2 (2004-2008). From the CMS analysis result, this research find that total change of Indonesia's export value for period 2000-2004 and 2004-2008 was contributed by structural effect, which encompasses of the growth effect, market effect, commodity effect and interaction effect. Meanwhile the competitive residual and second order effects have insignificant influenced. It is proved that mostly of the CMS result show negative sign and if positive the value is less than 1 %. In other words, the export value was increased due to the increase in the world demand not because of competitiveness on Indonesia's electronic products.

In the terms of performance export ratio (RCA), Product that Indonesia has the highest comparative advantage result is for HS 853120 (indicator panels incorporating electronic displays) in 2008. Moreover, other products that have comparative advantages are HS 847330, HS 847130, HS 847170, HS 853400, HS 854430 and HS 853120. However, although those products have comparative advantage, Indonesia has not the highest RCA value for those products.

According to the competitiveness matrix, product of HS 853120 (indicator panels incorporating electronic displays) have the best performance in intra-ASEAN trade since in the product is classified as rising star in both observed periods.

In summary from the CMS result, RCA result and competitive matrix, Indonesia have good competitiveness performance on products HS 853120 (Indicator panels incorporating electronic displays), HS 854430 (Ignition/other wiring sets for vehicles/aircraft/ship) and HS 852520 (Transmit-receive apparatus for radio, TV, etc.).

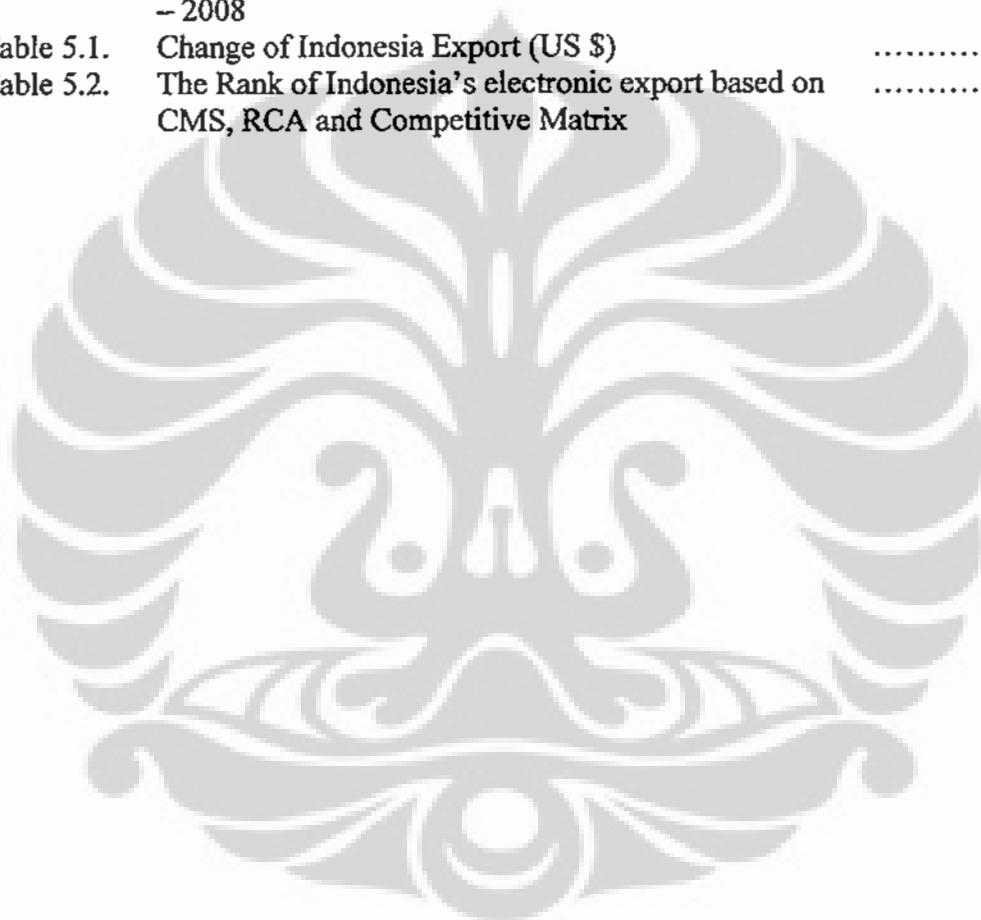Keywords: Indonesia's Electronic products export, CMS Analysis, RCA, Competitiveness Matrix

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CHAPTER I
INTRODUCTION

1.1. BACKGROUND

In 2003, ASEAN leaders have agreed and signed the agreement to integrate their economies as stated in the ASEAN vision 2020. The ASEAN economic community targeted to be realized in 2015 which objectives to create single market and production base where there is free flow of goods, services, investments, capital and skilled labor. Based on the ASEAN leaders there are 12 priority sectors that highlighted in building the ASEAN economic community for economic integration, namely electronics, e-ASEAN, healthcare, wood-based products, automotives, rubber-based product, textile and apparels, agro-based product, fisheries, air travel, tourism and logistic. This research will focus on Indonesia's electronic sector competitiveness as electronic sector is one of the Ministry of Trade Republic of Indonesia's road map[1].

The electronic sector has become one of the potential markets in international trade. Electronic industry is an alternative for a country to get added value through the development of the industry. The development of electronics industry recently can be derived from the development of the electronic world trade in the last 8 years (2000 – 2008). The growth of world electronics export and import has been increasing during the last 8 years. Over period 2000 – 2004 the export growth have positive sign with the value about 27.04% of the total world trade, moreover in the next period the 2004 – 2008 the export growth slightly increase to be 32.48%, the change of export growth during period 1 and period 2 is about 5.44 %. The export growth tend to increase every year, with the

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[1] The Ministry of Trade's road map was focused on 10 main products: shrimp, coffee, palm oil, cacao, rubber and rubber product, textile and product textile, footwear, electronics, automotive component, and furniture , 10 potential products: handicraft, fish and fish product, medicine herbs, leather and leather products, processed food, jewelry, essential oils, spices, stationary non paper, and medical instrument and appliances and 3 services product : design ,information technology and construction , which reflected the potency of Indonesian products (known as project 10-10-3).

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average export growth is about 32.76 % per year. On the import side, the growth also tend to increase, it increases from 31.43 % in the first period to be 41.64% in the next period, with the average import trend 36.53%. Therefore, the electronics industry plays an important role in the economy.

The importer of electronic product is still dominated by powerful country. According to the importer rank, electronics world trade is influenced mainly by three countries, namely European Union, United States and China. The world average electronic import tariff that imposed to Malaysia, the Philippines, Thailand and Singapore compare to the world average import tariff that imposed to Indonesia by the non-ASEAN member importer countries actually only slightly differences. However, Malaysia, the Philippines, Singapore and Thailand have higher import shares to the world compare to Indonesia. Regarding to this situation, it shows that tariff is not the only matters in export but also the competitiveness of the products itself.

Electronic products which have the highest import value in the world is HS 847330 (parts and accessories of data processing equipment), HS 852520 (transmit-receive apparatus for radio, TV, etc.), HS 847130 (portable digital data processing), HS 847170 (storage units), HS 854290 (parts of electronic integrated circuits etc), HS 853400 (electronic printed circuits), HS 852990 (Parts for radio/tv transmit/receive equipment), HS 850440 (static converters), HS 854430 (ignition/other wiring sets for vehicles/aircraft/ship), HS 853120 (indicator panels incorporating electronic displays). The electronic products mentioned above will be used as the research object analysis in this study.

ASEAN members have diversity, but also the similarity in the characteristics of the region. Most of them produce and consume similar products. However, their quantities vary. Some countries have a surplus of production while others suffer from a deficit. By creating economic integration is expected to turn a weakness into a tool to open trade between members, especially to increase trade volume. Because with the economic integration will create competitiveness among the members that will create efficiency gains.

ASEAN GDP reached more than U.S. $ 1 trillion, this shows that ASEAN is a prospective market. GDP can be considered as a macroeconomic indicator to

measure the prosperity of a State. Thus, we need to create an integrated production base that can enhance intra-regional trade and investment flows in ASEAN.

The intra-ASEAN export trade is less intensive to intra-ASEAN itself compare to extra-ASEAN. Countries that have high dependence on ASEAN export market are Lao PDR and Myanmar, where the value of intensity is about 87.5 % and 58.2 % respectively. Meanwhile, other ASEAN members' intensity of intra-ASEAN export trade is less than 50 %.

However, the intra-ASEAN import trade has higher intensity to intra-ASEAN itself compare to extra-ASEAN. Thailand has the highest import intensity, which import more than 80 % from ASEAN. Meanwhile, other ASEAN members' intensity of intra-ASEAN import trade is more than 50 %, excluding Brunei, Lao PDR and Myanmar. In brief, the degree of intra-ASEAN import intensity is higher than the degree of intra-ASEAN export intensity. ASEAN members are more dependent on each other as their import sources compare to as their export destination.

In conclusions, to win the intra-ASEAN trade competition, we need competitiveness. Competitiveness is defined as the ability of an industry to gain market share for its products in domestic and global markets. Member countries that have the ability in choosing the right product, choosing the right market (export destination) which have high import and have competing product, will be the winner of this battle. Therefore, to measure above requirement, this research will analyze the export growth of electronic sector in the intra ASEAN.

1.2. PROBLEM STATEMENT

At this present time, Indonesia has less competitiveness in the world market compare to some ASEAN members, namely Singapore, Malaysia, Thailand and the Philippines which have contributed larger value for world total electronic trade. It was argued that the agreement to create ASEAN economic integration would intensify the competitiveness of Indonesia's electronic export.

Then it becomes question, does the agreement imply threats to Indonesia's electronic sector?

1.3.RESEARCH OBJECTIVES

To answer the question, this research tries to investigate the performance of Indonesian electronic export and its competitiveness. Therefore the objectives of this research are:

1.3.1. To analyze the competitiveness of Indonesia electronic products export for intra-ASEAN trade

1.3.2. To identify Indonesia's competitive position of electronic products export in ASEAN

1.4.RESEARCH COVERAGE

1.4.1. This research is focusing to electronic products based on 10 highest ranks export values in electronic product.

1.4.2. This research is taking 8 years period (2000 – 2008). The period divided into 2 sub period, period 1 (2000-2004) and period 2 (2004-2008). The two periods represent five years average. A five years average is choose in order to avoid year to year fluctuations.

1.5.RESEARCH METHODOLOGY

There are numerous methodologies of research that could be used to measure competitiveness. This research analyzes the obstacles by quantitative and qualitative methods. To analyze qualitative analysis this research use literature study. To analyze the competitiveness of Indonesia electronic products export for intra-ASEAN trade this research use Constant Market Share (CMS)

approach and Revealed Comparative Advantage (RCA). Meanwhile, to find the overview of Indonesia electronic products export position this research use the competitiveness matrix which developed by O. Mandeng.

The CMS provides information of competitiveness export in intra-ASEAN market. The decomposition method can identify the source of export growth of a country among ASEAN members. Therefore, in this research the two level of CMS decomposition is appropriated. At the first level, the CMS model decomposes the change in export into three components: The Structural Effect, Competitive effect and Second order Effect. And the formula further decomposed into: growth effect, market effect, commodity effect, structural interaction effect, general competitive effect, specific competitive effect, pure second order effect and dynamic structural residual.

As the comparison, the RCA model use to measure export competitiveness of Indonesia's electronic selected products. RCA provides index measure of changes in comparative advantage.

The competitiveness matrix use to find Indonesian electronic exports position by categorizing the products into four categories: the Rising Stars, the Declining Stars, Retreat and Missed Opportunity.

The data that used in this research based on secondary data which obtained from UN COMTRADE and ASEAN secretariat. This research is focusing only trade in goods, and uses the 6 digits Harmonized System (HS) 1996 as classification for data analysis.

CHAPTER II
THEORY OF INTERNATIONAL TRADE, ECONOMIC INTEGRATION
AND INTRA-INDUSTRY TRADE

1.6. THEORY OF INTERNATIONAL TRADE

Countries do trade in order to engage gains from trade. They need to trade because they are different from each other. Moreover, they need trade to reach economies of scale in production (Krugman, 2006, p.24).

2.1.1. Theory of Absolute and Comparative Advantage

International trade theory has been developing since it was introduced in the seventeenth and eighteenth centuries. The first theory was the mercantilism, where the welfare of a country was definite by the amount of gold and silver. They stated that a country will be rich and powerful if they have export more goods than import goods. They believe that state power is best to create wealth. The role of government was significant in stimulate the nation exports and also to restrict or discourage imported goods. However, they cannot ensure that they will always have export surplus and also the availability of gold and silver are fixed, therefore they need other country to sacrifice. This though assume that world economy was static or zero sum game. They believe that one country would have advantage by sacrificing other country (Salvatore, 2007: p.32-33).

This though was denied by Adam Smith (1723-1790) by his famous writing in *The Wealth of Nations* (1776) which emerge the concept of competitiveness. He believes that trade between two countries based by absolute advantage (assumed that there is only two countries and two commodity). If one country is more efficient in producing one commodity, but less efficient in producing other commodity compared to other country, both country should specialize in the production of commodity of its absolute advantage and

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exchanging part of its output with another country for the commodity of its absolute disadvantage. Each country will be utilized in the most efficient way and the output of both commodities will rise (Salvatore, 2007: p.35).

However, this theory did not explain if one country has absolute advantage of the two commodities whether the two countries still have gain on trade each other, for example trade between developed country and developing or less developed country.

About 40 years later, in 1817, David Ricardo (1772 – 1823) published the *Principles of political Economy and Taxation*, in which he introduced the theory of comparative advantage to truly explain the pattern of and the gains from trade. According to the law of comparative advantage, although one country is less efficient compare to other in producing both commodity but they still can have advantage by specializing in production and exporting commodity which more efficient and do import for inefficient goods, because there is still have different ratio of prices in both country. The comparative advantage theory is the main rational of international trade. Ricardo assumes that world economy not as a zero sum game but the harmony of interest where trade is based on specialization on comparative advantage.

Salvatore (2007) describe Ricardo's law assumptions as follow: (1) Supposed that there only two countries (i.e Country A and Country B) and countries can only produce and consume two commodities (i.e oranges and apples), (2) Free trade, (3) Perfect mobility of labor within each nations but immobility between the two nations, (4) productivity is constant across time, (5) no transportation cost, (6) no technical change and (7) Labor is the only factor of production (this assumption consider as invalids since labor is not the only factor of production).

Assumed that in two-countries, two commodity worlds, one country has comparative advantage in one commodity, and then the other country must have comparative advantage in other commodity.

The best explanation of comparative advantage is using the concepts of comparative advantage based on the opportunity cost. Therefore, the law of comparative advantage sometimes referred to as the law of comparative cost.

Opportunity cost is the cost of a commodity which associated with opportunities that forgone by not putting the commodity to their best alternative use (Pindyck and Rubinfeld,2005,p.214).

Country faces opportunity cost when it employs resources to produce commodities and services. A country has a comparative advantage in producing commodity if the opportunity cost of producing that commodity is lower than other country. According to Ricardian model, international trade happens due to international differences in the productivity of labor.

Unfortunately, Ricardo assumptions that comparative advantage arise only because of international differences in productivity, weakens the correlation of theory and the real world. His assumption that labor is the only factor of production is not relevant. In the real world, beside reflected by differences in labor productivity, trade is also reflected by the differences of country resources (endowment). In short, trade is influenced not just of labor, but of other factor production such as land, capital and mineral resources (Krugman and Obstfeld, 2006).

2.1.2. Factor Endowment and The Heckscher-Ohlin Theory

Two Swedish economists, Eli Hecksher (1919) and Bertil Ohlin (1933), try to solve the weaknesses of Ricardo theory of comparative advantage. The theory is known as the H-O (Hecksher-Ohlin) theory. This theory emphasized the interplay between the proportion in which different factors of production are available in different countries and the proportion in which they are used in producing different commodities. It is also referred to as the factor-proportions theory. Briefly, one country would export commodity that intensively used raw material which largely produce in the country and imported raw material which scarce in the country. The H-O theory based on some assumption, Salvatore (2007) describes the H-O theory as follows:

1. Supposed that there only two countries (i.e Country A and Country B), two commodities (i.e oranges and apples), and two factors of production (labor and capital)
2. Technology in production between the two countries is the same
3. One country is labor intensive, while other country is capital intensive
4. Both countries produce their commodity under constant return to scale
5. Both countries have incomplete specialization
6. Both countries have similar tastes
7. Perfect competition
8. Perfect factor mobility within the countries but no international factor mobility
9. Did not consider the transportation cost, tariffs or other related to free flow of international trade.
10. Both countries have used all their resources
11. International trade is balanced.

However this theory did not anticipate if there is trade agreement between nations, such as trade blocs (AFTA, etc). Moreover, the volume of trade in developing country to developed country is lower than between the developed country to developed country, which by the theory of factor endowment suppose to be in opposite (Jamli and Rizaldy,1998,p.6).

2.1.3. Product Life Cycle

The failure of H-O theory explains the phenomenon where factor endowment is not mainly moved international trade in the real life, emerge the theory of Product life cycle (PLC) which introduced by Raymond Vernon in his writing of *International Investment and International Trade in the Product Cycle*.

The theory explains that at the first time the new product introduced, the new product requires highly skilled labor. After the product becomes adopted and used in the world markets, the product gradually produces in mass production which requires less skilled labor. In some situations, the product becomes an item

that is imported by its original country of invention. It shows that comparative advantage in the products has shifted from advanced country (the inventor) to less advanced country that has less skilled labor which relatively paid cheaper. In other words, the country that has the comparative advantage in the production of the product changes from the developed country to the developing countries. The model demonstrates dynamic comparative advantage.

Trade in this model basically created through new technology which developed by the relatively abundant factors in industrialized country (such as highly skilled labor) where then through imitation and product standardization less developed country also have gain in comparative advantage by their cheap less skilled labor. The product life cycle model explains dynamic comparative advantage for new products and new production process (Salvatore, 2007,p.189)

According to technology development, Vernon divided a product life cycle into five stages:

1. Stage I or Introduction or new-product phase

    In this stage, they introduced the new products to meet local needs. The cost of a unit production is high, thus the production is limited. Trade is limited in local market. Products is produced and consume by the innovating country.

2. Stage II or Product-growth phase

    In this stage, they begin to make copy of products, the demand is increasing and they capture growth in the home market as they have profit. If they want to export the new products, they will export new products to similar countries, such as similar needs, preferences, and incomes. At this stage, the innovating country has a monopoly both in domestic and foreign since there is not yet any foreign production of the product.

3. Stage III or Product-maturity phase

    In this stage, they start to promote the product in foreign market. The product already accepted in home country which emerge new competitor. The innovating firm may have profit by license other domestic and foreign

firms to also manufacture the products. Thus the imitating countries start to produce for domestic consumption.

4. Stage IV

In this stage the imitating countries which have lower production cost begins to undersell the innovating countries in the third market where the production in innovating country decline. Brand takes an important role.

5. Stage V

In this stage the imitating countries start underselling the innovating country in latter's market since the production in innovating country declines rapidly or collapsed.

Stage IV and stage V also called as Product-decline-phase. By the emerging of new competitors in their home country, there will be additional cost in order to keep their competitiveness. However if the production cost getting bigger they will have less profit. To reduce the additional cost, producer needs to seek other countries which have big market. They also invest to other country to minimize the production cost.

The advantage of PLC theory is, it can explain trade pattern between countries which have similar factor endowments, and it also explains the phenomenon of emerging multinational companies (MNCs), particularly to developing countries.
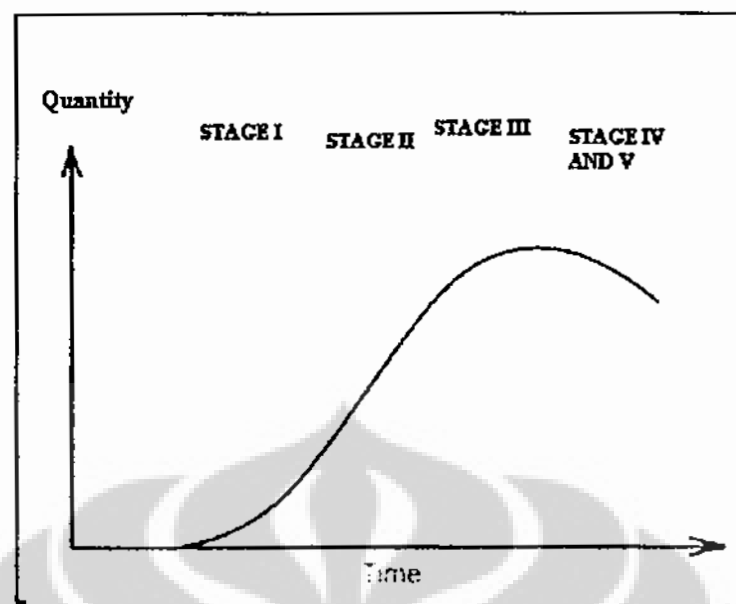
Figure 2.1. Illustrations of Product Life Cycle

In 1990, Michael Porter introduced the competitive advantage theory. According to Porter, national prosperity is created, not inherited. Nations' competitiveness depends on the capacity of its industry to innovate and upgrade, it does not grow from natural endowments for instance labor pool, interest rates, or currency's value as classical economist thinks. Firms gain advantage against world's best competitors because of pressure and challenge. Potter said that countries benefit from having strong domestic rivals, aggressive home based suppliers and demanding local customers.

Strategy of developing competitiveness and government policy was the main idea of competitiveness theory. International trade was one factor to boost national productivity. International trade causes a country to specialize and chooses markets which have high productivity to produce the products. Country will importing product where they have less productivity. The selection of activity must be properly chosen to boost market access in global trade. This action will increases export value yet national domestic income. (Jamli and Rizaldy,1998,p.5).

2.2.ECONOMIC INTEGRATION

There is variety of reasons why countries willing to integrate their economic policy. The theory of economic integration refers to the commercial policies of discriminatively reducing or eliminating trade barrier only among the member countries. It objectives to create single market and production base where there is free flow of goods from tariff barriers and non tariff barriers, to increase volume of trade, economic growth and national welfare. Economic integration is a term used to describe how different aspects between economies are integrated. Any type of arrangement where countries agree to coordinate their trade, fiscal and monetary policy may be indicates as economic integration (Suranovic, 1998).

Theoretically there are six stages of the degree of economic integration:

1. Preferential Trade Arrangements (PTA)

   PTA is the weakest form of economic integration. PTA established by participating countries (members) to provide lower barrier on trade, such as tariff reduction, for trade among members than trade with non-member countries. The example of PTA is the British Commonwealth Preference Scheme which established in1932.

2. Free Trade Area (FTA),

   FTA is a form of economic integration which established by a group of countries wherein all barriers are removed among them. However, members can maintain their own barriers to trade with non-member countries. The example of FTA is ASEAN Free Trade Area (AFTA).

3. Custom Union,

   Custom Union established by a group of countries as in free trade area where all barriers among members are removed, moreover, members also have to harmonize its trade policies towards the rest of the world. Custom unions avoid problems of developing complicated rules of origin, but make problem of policy coordination. We should differentiated free trade to custom union, free trade allows member to fix their own separated

tariff rates on import from non-members, while they remove tariff on trade among themselves and they also have freedom to determine and modify their commercial policies. The example of custom union is European Union (EU).

4. Common Market

A common market establishes free trade of goods and services as in a custom union but also allowing the free movement of labor and capital among member nations. The example of common market is European Union (EU).

5. Economic Union

Economic Union goes still further by harmonizing or even unifying the monetary and fiscal policies of member states. This is the most advanced of economic integration. The example of economic union is Benelux.

6. Monetary Union

Monetary union establishes a common currency among members. This situation needs a central monetary authority to determine monetary policy for the entire groups. The example of monetary union is the implementation of single European currency (the Euro).

The best explanation of an economic and monetary union is the United States. It consist several states which have its own regulation. However, the federal government still controls some policies.

Briefly, the benefits of economic integration can be describes as follows:

1. Efficiency of production which possible the product specialization, thus the product will have comparative advantage. A country import from member country may be able to compete to other supply sources because of discriminatory arrangement such as: information exchange, human resources development cooperation, cooperation on custom matters, standard and conformance, investment facilitation and promotion,

cooperation on competition policies and industrial cooperation between member countries.

2. A country import from member country may concentrate in commodities which have high demand. Increasing production which caused by increasing volume of trade. A country import from member country may grow due to the general increase in its import demand.

3. Better bargaining position in international forum

4. Better quality and factor of production by technology development

5. Labor movement

6. Coordination between members in monetary and fiscal policies.

An integrated market and production base would clearly boost intra-regional trade and investment flows across the region and could be lucrative place for companies to do business (Hew, 2007, p.3).

2.3. INTRA-INDUSTRY TRADE

The intra-industry trade refers to exchange of differentiated products that belonging to the same industry or broad product group. The term is usually applied to international trade for countries and its partner that have similar export profile where the same kinds of goods and services are both imported and exported.

The intra-industry trade arises in order to reach economies of scale in production. The intra-industry trade benefits international trade since it forces firms to produce more specialized product with comparative advantage of larger market. Through intra-industry country can simultaneously reduce the number of similar goods it produces while increasing the variety of products for consumer. Then consumer will have wider variety of differentiated products available at the lower price made possible by economies of scale in production. Balasa (Salvatore, 2007) also found that intra industry trade become more apparent where there is remove of tariff barriers.

The traditional model of trade was set out by the model of the Hecksher-Ohlin, where they tried to explain the occurrence of international trade. The

models use the idea of comparative advantage as the theory, where the difference in factor endowment would increases trade among countries. Intra-industry trade is based on product differentiation and economies of scale. Krugman and other economist have made the point of claiming that Hecksher- Ohlin models provide no explanation about intra-industry trade, since intra industry trade likely to be larger among industrial economies of similar size and factor proportion.

Krugman argues that economies specialize to take advantage of increasing returns, not following differences in regional endowments. In particular, trade allows countries to specialized in a limited variety of production and thus reap the advantages of increasing return (i.e economies of scale) but without reducing the variety of goods available for consumption.

In summary, comparative advantage seems to determine the pattern of inter-industry trade (completely different products), while economies of scale in differentiated product give rise to intra industry trade.

2.4.PREVIOUS STUDY

Many studies have assessed the competitiveness of Indonesian commodity exports. Jamli and Rizaldy (1998) was trying to examines the comparative advantage of Indonesian electronic commodities using RCA, net export, the world export share, and the export import ratio in period 1981-1995. They found that from period 1981 -1995 there are only three commodities show good performance: SITC 761(television receiver), 762 (radio broadcast receiver) and 763 (sound recorder or reproducer).

Juswanto and Mulyanti (2003) try to find determinant factor that affect Indonesia's manufactured export growth using the CMS analysis. They found that Commodity composition is the main problem for Indonesia's manufacture export growth. Indonesia export concentrates to country that have slow demand. The market distribution also concentrated in Japan, US, NIE and ASEAN countries.

Prajogo Hadi and Sudi Mardianto (2004) also try to explain the competitiveness of Indonesia's agricultural product using CMS analysis. They try

to analyze whether intra-ASEAN comparative advantage related to: (1) Export growth agriculture product to ASEAN region and (2) Commodity composition effect, Market distribution effect, competitiveness effect to Indonesian agriculture export to ASEAN region. And the findings are: (1) on period 1997-1999 Indonesia agriculture export grow positive, and reach the highest in ASEAN even higher than world standard growth, however, in 1999-2001 the export grow getting slower than Thailand, the Philippines and world. This situation happened due to the fluctuation of rupiah against dollar, (2) Commodity composition is the best among the ASEAN although getting slower, (3) Market distribution still weak compare to Singapore and Vietnam, (4) Have positive competitiveness but getting slower.

Rina Oktaviani, Amzul Rifin, Henny Reinhardt (2007) provide an overview of trade performance and tariff rates in the priority sector of ASEAN economies they also try to examine the degree of integration using RCA and IIT index. First, they found that all ASEAN countries show a low interdependence between the members. The low interdependence caused due to non tariff barrier against member. Second, they found that the largest values of intra-ASEAN trade are in electronic, ICT and automotives. However, the RCA is low except for Malaysia.

Nik Maheran Nik Muhammad and Haslina Yaacob (2008) is studying on Export Competitiveness of Malaysian electrical and Electronic (E&E) product. He try to analyze the competitiveness of Malaysian E&E, Identify the Malaysian competitive position of E&E exports in the major importing countries between 1990-2004 and to Examine whether the decline in Malaysia E&E export performance over 1990-2004 was associated with the decline in Malaysian competitiveness or not. The findings are Malaysian export increases not due to structural effect but due to an increase in the world import, RCA perform highly in SITC 776, SITC 764, SITC 772, SITC 759, SITC 752, and Malaysia have comparative advantage than Indonesia, Thailand and china.

CHAPTER III

THE ELECTRONIC PRODUCT INDUSTRY IN ASEAN

3.1. ASEAN

The Association of South East Asia Nation (ASEAN) was established on 8 August 1967. At the first time ASEAN only consist of five member countries, they are Indonesia, Malaysia, the Philippines, Singapore, and Thailand (ASEAN 5). Later, countries which lie in South East Asia region interested to join this group. Brunei Darussalam joined on 8 January 1984, Vietnam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. Now, it consists of ten member countries. Total population of ASEAN is about US$ 567 million, lies in total area 4.5 million square kilometers.

In 2003, the ASEAN leaders emerged the idea of ASEAN economic integration which also known as the Bali Concord II. The objective of ASEAN economic integration establishment is to accelerate the economic growth, social progress and cultural development. It also meant to make more stability for the relationship among the countries in the region. In order to achieve the objectives, the ASEAN leaders agreed that they need three pillars to achieve the goals. The pillars are ASEAN Security Community, ASEAN Economic Community and ASEAN Socio-Cultural Community.

The first pillar is ASEAN Security Community. It constructed for the field of political and security cooperation. It shall ensure that member countries have peace relationship among other, to create conducive environment. Members pledge to have peaceful process in settlement of differences among them and regard their security as fundamentally linked to one another and bound by geographic location, common vision and objectives

Second is the ASEAN Economic Community. It played as the end-goal of economic integration measures. It will create ASEAN as a single market and production base. To achieve it the ASEAN agreed on the following:

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- Creates mechanism and measures for the implementation by ASEAN Free Trade Area (AFTA), ASEAN Framework Agreement on Services (AFAS) and ASEAN Investment Area (AIA);
- Accelerates regional integration for 12 priority sectors by 2015, namely: air travel, agro-based products, automotives, e-commerce, electronics, fisheries, healthcare, rubber-based products, textiles and apparels, tourism, wood-based products and logistic.
- Facilitates movement of business persons, skilled labor and talents; and
- Strengthen the institutional mechanisms of ASEAN

The ASEAN Free Trade Area (AFTA) was launched in 1993which also introduced the Agreement on the Common Effective Preferential Tariff (CEPT) Scheme. AFTA established with a view to integrate ASEAN economies by eliminating tariff and non-tariff barriers among the Southeast Asian countries. The requirement was to levied tariff rates no more than five percent. As a result, more than 60 percent of these products have zero tariffs. Compare to when AFTA was started, the average tariff for ASEAN-6 has been reduce from more than 12 per cent to 2 per cent. For Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV), 81 per cent of their Inclusion List products tariffs have been reduced within the 0-5 percent range.

The third pillar is ASEAN Socio-Cultural Community. In consonance with the previous two pillars, the Community foster cooperation in social development which purpose to raise the standard of living of poor people, rural population and involve in all sectors of society, in particular women, youth, and local communities.

ASEAN members have diversity but also similarity in the characteristic of the region. Most of them produce and consume similar product. However, the amounts of consumption are different. Some of the country have surplus in production while other suffer deficit. By creating AFTA, it was hope to turn the disadvantages into opportunity tools to energize open trade between the members, moreover to increase import volume. Then, it will emerge competitiveness between the members so it will create efficiency gains.

The amount of ASEAN GDP which reaches more than US$ 1 trillion shows that ASEAN is a prospective market to consider. GDP can be a macroeconomic indicator to measure prosperity of a country. Referring to today situation, ASEAN suffered loss in economic competitiveness. Therefore we need to create an integrated and production base which could boost intra-regional trade and investment flows to the region.

The comparison between intra and extra ASEAN trade for period 2008, describe in the Figure 3.1 and 3.2. The figures show the trade intensity of export and import shares to the total trade.

Source: ASEAN Secretariat, 2009, Processed
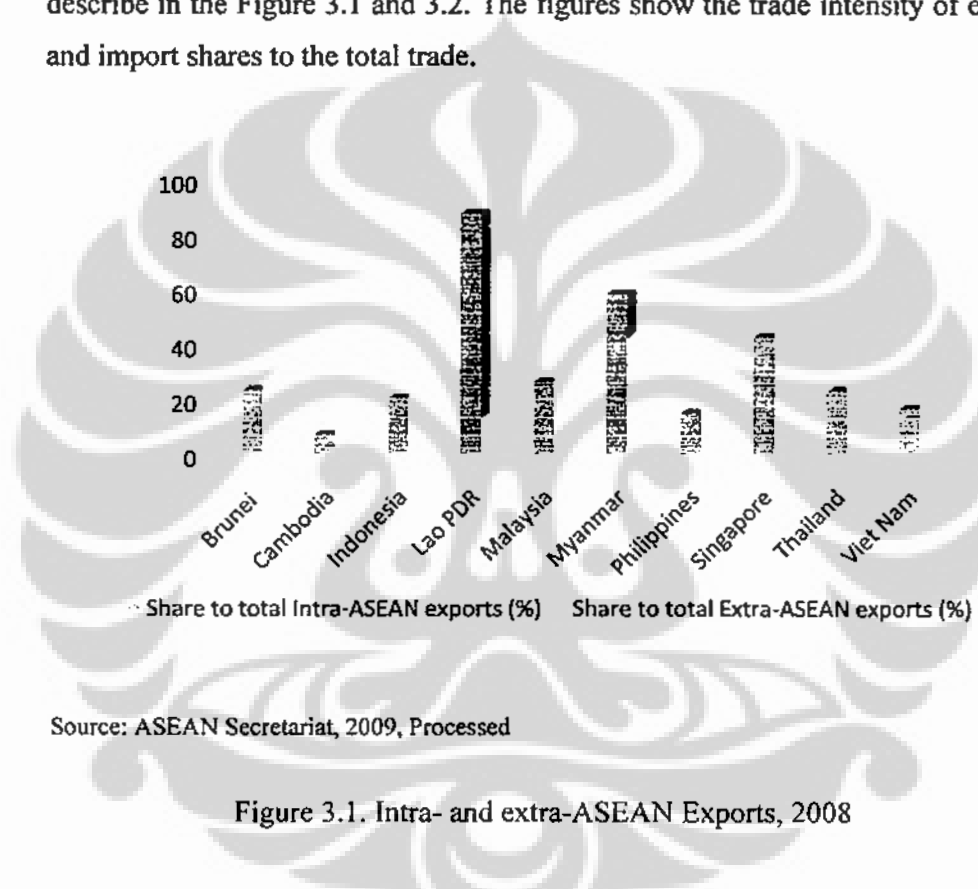
Figure 3.1. Intra- and extra-ASEAN Exports, 2008

Figure 3.1 shows that the intra-ASEAN export trade is less intensive with extra-ASEAN export. The countries with high dependence on ASEAN export market are Lao PDR about 87.5 % and Myanmar about 58.2 %. Meanwhile, other ASEAN members' intensity of intra-ASEAN export trade is less than 50 %. The lowest dependence is Cambodia more than 90% of its export destination is exported to the non ASEAN members.

Nonetheless, the intra-ASEAN import trade has higher intensity compare to the extra-ASEAN import. Thailand has the highest import intensity, which

import more than 80 % from ASEAN. Except Brunei, Lao PDR and Myanmar, the other ASEAN members' intra-ASEAN import intensity is more than 50 %.

Briefly, from the description above it shows that the degree of intra-ASEAN import intensity is higher than the degree of intra-ASEAN export intensity. ASEAN members are more dependent on each other as their import sources compare to as their export destination.
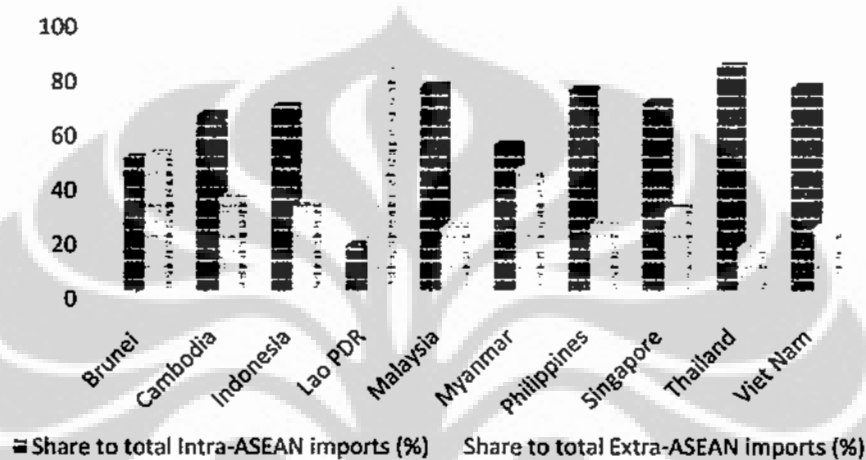
Source: ASEAN Secretariat, 2009, Processed

Figure 3.2. Intra- and extra-ASEAN Imports, 2008

3.2. ASEAN ELECTRONIC INDUSTRY

The electronic industry is one of the potential markets in the recent international trade. It has become an alternative for a country to have value added in industrial development. The electronic industry plays an essential role in the economy. Electronic is one of the commodity groups that contributed to the national income. The up-downturn in the electronic industry, which affected changing in production and trade in electronic, becomes crucial since it affected the economic growth. Electronics' share to total employment in the manufacturing posted an average of 14 % during the period 2000-2008 and employment in the industry grew at annual average 10% from the period 2000 –

2008. The main source of employment in the electronic industry comes in the manufacture and apparatus. The average share of the manufacturing sector of 10 % or an average of 75% of total employment is generated in the electronic industry (Goboleo,2009, p.2).

The growth of world electronics export and import has been increasing during the last 8 years (2000 – 2008). As provided in table 3.1, over period 2000 – 2004 the export growth have positive sign with the value about 27.04% of the total world trade, moreover in the next period the 2004 – 2008 the export growth slightly increase to be 32.48%, the change of export growth during period 1 and period 2 is about 5.44 %. The export growth tend to increase every year, with the average export growth is about 32.76 % per year, which derived from period 2000 – 2008. On the import side, the growth also tend to increase, it increases from 31.43 % in the first period to be 41.64% in the next period, with the average import trend 36.53%.

Table 3.1. World Export - Import Growth for Electronic Products, 2000 – 2008 (%)

TRADE FLOW	Period 2000-2004	Period 2004-2008	AVERAGE
EXPORT	27.04	38.48	32.76
IMPORT	31.43	41.64	36.53

source : UN Comtrade, Processed

The total trade for electronic products in 2007 reached US$ 3.507 billion with the value of export US$ 1.683 billion and the value of import US $1.825 billion. In 2008, the world total trade for electronic products slightly declines to be US$ 3.449 billion with the value of export US$ 1.660 billion and the value of import US $1.788 billion. However, the declined is not significant, only about - 0.2 %, it slightly decline may be due to the global crisis. However, the average growth it still shows increasing growth trends.

Over the past years, The ASEAN economies have achieved consistently high economic growth rates. The ASEAN has shifted their economies into services and manufactures. This shift in economic structured is also reflected in the composition of ASEAN exports. The share of manufactured products was already more than 50% of the region's total exports, where 29% is electronic which followed by mineral fuels, mineral oils and products etc about 25% and machinery about 21 %, while the other sector contributes less than 5 %, it shows in Picture 3.3. During 2008, the total trade of ASEAN for electronic sector was US $ 341 billion, with the value of export US$ 175 billion and the value of import US $ 165 billion.
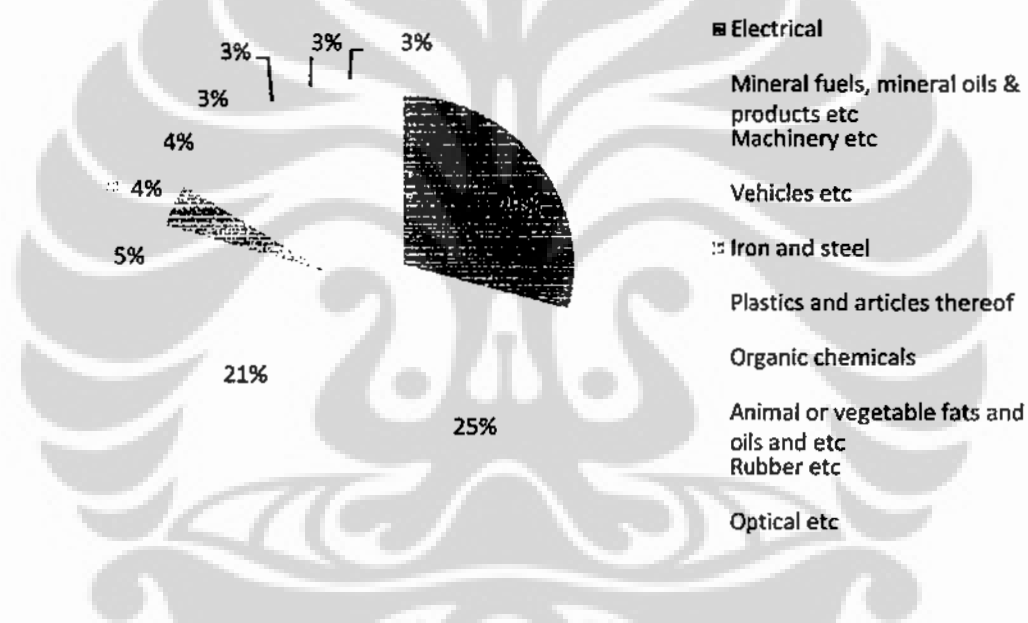
Figure 3.3. ASEAN Trade Commodity Groups, 2008

Among the ASEAN members, Indonesia has less competitiveness in exporting electronic products compare to Singapore, Malaysia, Thailand and the Philippines. In period 2000-2008, Indonesia's position of the world electronic importer is in the 34th rank only about 0.54%. Meanwhile, the average Singapore, Malaysia, Thailand and the Philippines import share are 3.88%, 2.16%, 1.38 % and 0.93% respectively.

Among the ASEAN, Singapore has the biggest import share, which make Singapore placed in the 8th rank of importer. Accordingly, besides competing to EU, the United States and China, Indonesia also have to compete other ASEAN members. The illustration provided in Figure 3.4.
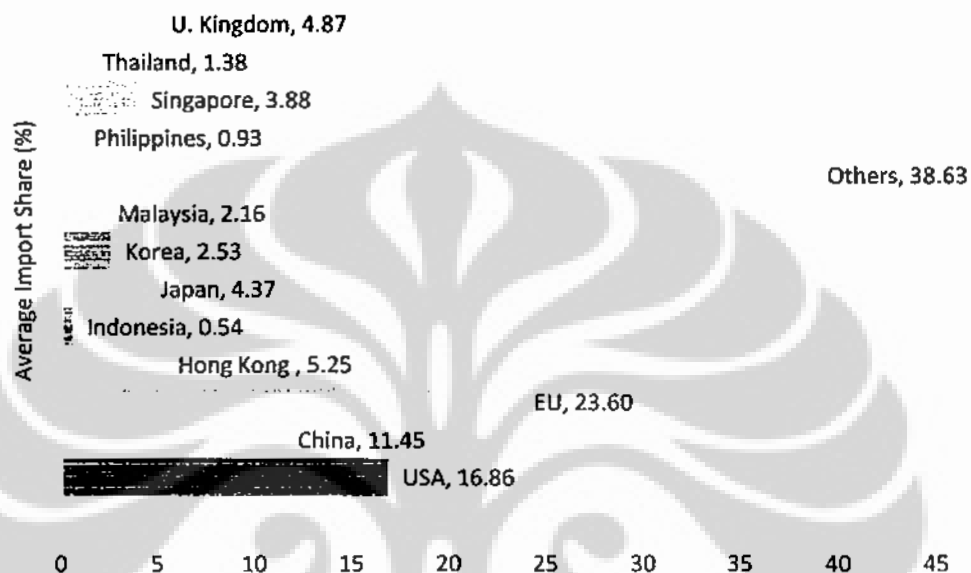
Source: UNComtrade, Processed

Figure 3.4. Average importer countries shares for electronic world trade, for the period 2000, 2004 and 2008 (%)

The exporter of electronic product is still dominated by powerful county. According to the importer rank, electronics world trade is mainly influenced by three countries, namely European Union, United States and China. The chart of the importer rank shown in the Figure 3.4, it shows the average percentage of world importer countries shares for electronic products, for the period 2000, 2004 and 2008. European Union reached 23.60 %. Germany is contributes the biggest share of the EU's exporter, it share about 7.15% from the total EU import to the world. USA still has big share to the total world import, however the import share to decline during period 2000 – 2008. China is in the third position, has a robust

economic growth from 2000 – 2008, with the average import share 11.45%. The three of them controlled almost 50% of the total trade in electronic sector. Other Asia pacific, including ASEAN region countries following as the world top 40's biggest import source.

Based on top 10 world imported product in 2008, Table 3.2 shows exported electronic products with the largest value of export to the world. The products are HS 847330 (parts and accessories of data processing equipment), HS 852520 (transmit-receive apparatus for radio, TV, etc.), HS 847130 (portable digital data processing), HS 847170 (storage units), HS 854290 (parts of electronic integrated circuits etc), HS 853400 (electronic printed circuits), HS 852990 (Parts for radio/tv transmit/receive equipment), HS 850440 (static converters), HS 854430 (ignition/other wiring sets for vehicles/aircraft/ship), HS 853120 (indicator panels incorporating electronic displays).

Table 3.2. Top 10 Exported Electronics Products, 2000 - 2008

No	HS CODE	Description
1	847330	Parts and accessories of data processing equipment nes
2	852520	Transmit-receive apparatus for radio, TV, etc.
3	847130	Portable digital data processing
4	847170	Storage units
5	854290	Parts of electronic integrated circuits etc
6	853400	Electronic printed circuits
7	852990	Parts for radio/tv transmit/receive equipment
8	850440	Static converters
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship
10	853120	Indicator panels incorporating electronic displays

source : UN Comtrade, Processed

From the calculation of average import share by selected product, as mentioned before (the 10th highest export value of electronic products), among the ASEAN-5, Malaysia and Singapore has the biggest import share, more than 60 %, meanwhile Indonesia has the least import share, most of them below 0.1% except for HS 853120 or indicator panels incorporating electronic displays about 5.49% . It shows in Table 3.3.

Table 3.3 ASEAN-5 Average Import Share of World by Products, 2000 – 2008

HS CODE	World Import US$ (Million)	Share Import (%)				
		Indonesia	Malaysia	The Philippines	Singapore	Thailand
847330	215,000	0.01	37.53	0.86	6.78	1.49
852520	133,891	0.26	1.21	0.08	3.73	0.08
847130	91,853	0.78	5.66	1.58	0.94	0.09
847170	73,966	0.02	3.65	2.23	8.90	15.76
854290	35,646	0.28	5.95	5.80	1.90	1.44
853400	36,257	0.72	3.15	0.34	2.60	2.60
852990	69,428	0.07	2.50	0.84	2.76	1.06
850440	36,369	0.15	0.66	2.44	2.80	1.65
854430	21,653	0.13	0.10	4.17	0.20	1.82
853120	8,830	5.49	1.50	4.31	4.64	1.98

Source : UN Comtrade, Processed

Furthermore, electronic industry is divided into three categories, in order to differentiate the electronic products movement. The categories are as the following:

1. Electronic products for household.

    Electronic products for household are electronic products that use in households needed. For example: radio, television, refrigerator, washing machine and etc

2. Electronic products for Industry/Business.

    Electronic products for industry/business are electronic product that functioned for business or industry. For example: computer, calculator and medical equipment

3. Electronic products component.

    Wikipedia describes an electronic component is physical entity in an electronic system which are use to affect the electrons or their associated fields in a desired manner consistent with the intended function of the electronic system. Components are generally intended to be connected together, usually by being soldered to a printed circuit board (PCB), to create an electronic circuit with a particular function (for example an amplifier, radio receiver, or oscillator).

    Components may be packaged singly or in more complex groups as integrated circuits. Some common electronic components are capacitors, resistors, diodes, transistors, etc. Components are often categorized as active (e.g. transistors and thyristors) or passive (e.g. resistors and capacitors).

    This research will try to find what factor that might be influence of Indonesia less competitiveness compare to other ASEAN member. In order to find out, next section will briefly describe the ASEAN Countries electronic industry profile. However, besides Indonesia, the descriptions are for Malaysia, The Philippines, and Thailand since they are the competitor of Indonesian electronic in ASEAN.

3.2.1. Indonesia's Electronic Industry

Industrial Policy

Indonesia's electronic industry emerged in the 1960's. At that time, the company only gave service and reparation. Moreover, all the electronic products were imported products. The Government considered the situation as unprofitable. In order to supply the imported product the Government had to spend Indonesia's foreign exchange for facilitating the imported products. By 1970 – 1985, the Government imposed import substitution policy. This policy was made in order to encourage national industry. Many electronic industries emerged by this policy.

However, the real growth in Indonesia's electronic industry began in May 1986 with the announcement of a comprehensive economic policy package aimed to promote the introduction of foreign capital. This package represented a shift from restrictive government policies to more relaxed regulations on foreign capital inflows. As a result of the implementation of a series of deregulatory measures pertaining to foreign capital, there was a rush of overseas investment in the electric and electronic industry, which resulted in an unprecedented investment boom in the early.

Many of the foreign assemblers that began to sweep into the country at that time were export-oriented firms attracted to Indonesia by its inexpensive labor force. Because high-quality parts were not being produced domestically, foreign firms imported the majority of their parts and only assembled them locally. The Indonesia's electronic industry has been growing since then.

Industry Profile

During 2000 – 2008, the Statistic Indonesia (BPS) record that Indonesia's electronic exports still showing moderate growth. Based on product category, over that period, electronic component contributes the biggest share of Indonesia's total electronic export.

TOTAL EXPORTED ELECTRONIC PRODUCTS

44%

24%

Electronic products for household

Electronic products for Industry/Business.

Electronic component.

Source: Statistic Indonesia (BPS), Processed

Figure 3.5 Indonesia's Electronic Export Share By Product Categories, 2000-2008 (%)

About 44 % of the total electronic export is electronic component, meanwhile 32% of the electronic export share contributes from electronic for household and 24 % of the electronic export share contributes from electronic for business or industry. The proportion of electronic product export share by category of product shows in Figure 3.5

Differed to the export electronic product share, the biggest import share of Indonesia's total electronic trade is the electronic products for industry/ business. Over the period 2000 – 2008, more than 50 per cent or for precisely 55.47% of Indonesia electronic import is for electronic industry/ business. Meanwhile 15% of the electronic import share contributes from electronic for household and 29.53 % of the electronic export share contributes from electronic component. Figure 3.6 provided the chart of Indonesia electronic import share by category

TOTAL IMPORTED ELECTRONIC PRODUCTS

29.53%   15%   Electronic products for household

Electronic products for Industry/Business.

Electronic products component.

55.47%

Source: Statistic Indonesia (BPS), Processed
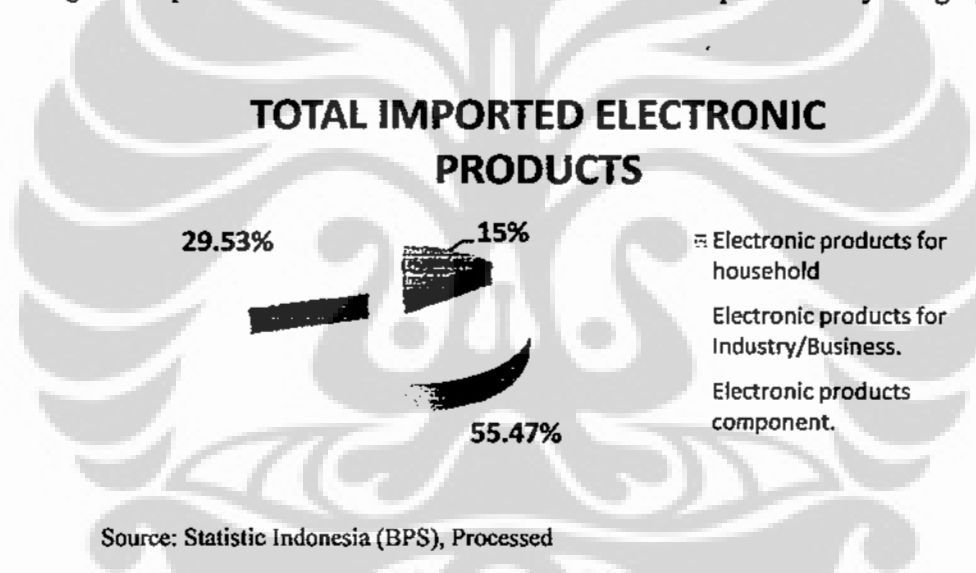
Figure 3.6 Indonesia's Electronic Import Share By Product Categories, 2000-2008 (%)

The export destination countries for Indonesia's electronic product are Singapore, Japan, USA, EU (Netherlands, Belgium), Thailand, China and Malaysia. Singapore is the main destination of Indonesia's electronic export, with the export value US$ 1704 million. Followed by Japan US$ 990 million and USA US$ 701 million over the period 2008.

Meanwhile the import sources of Indonesia's electronic product are Japan, China, Singapore, Japan, USA, Thailand, EU and Malaysia. The main import sources is Japan, with the value of import US$ 4240 million, followed by China and Singapore with the import value US$ 3581 million and US$2546 million. The illustration shows in Figure 3.7.

Source: UNComtrade, Processed

Figure 3.7 Indonesia's Electronic Export Destination and Import Sources, 2008

During 2000 – 2008, overall Indonesia's electronic product is in the position of expanding the market. This is shown by the Trade Specialization Index (TSI) range between 0 - 0.8.TSI value, range between minus one to positive one (–1 to +1), it can be differentiated as follows: (1). if TSI range more than 0.5 to 1, tends to be an exporter; (2). if TSI range more than -0.5 to -1 tends to be an importer; (3). if TSI range between -1 to -0.5 tend to be promoted ; (4). if TSI range between -0.5 to 0, tends in import substitution stage; (5). if TSI range between 0 s/d +0.8 tends in market expansion ;(6) if TSI +1 tends to ripenning.

Electronic for household tend to be an exporter. It is shown by Figure 3.8 that TSI value for electronic household and component more than 0.5. Electronic

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component tend in market expansion and electronic for business is tends to be an importer since the TSI value more than -0.5 to -1.

Trade Specialization Index (TSI)
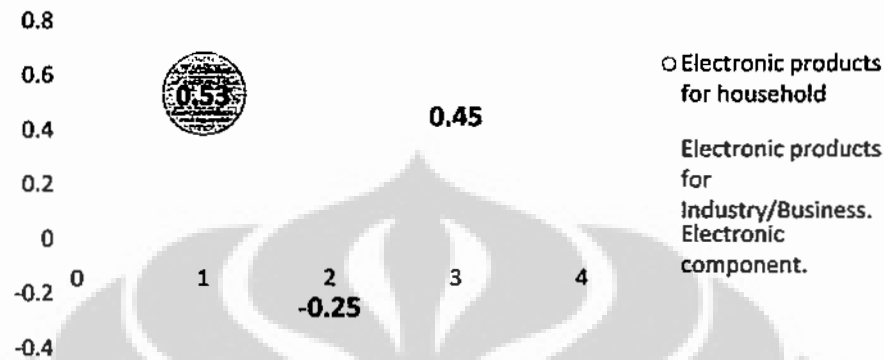
Source: Surveyor Indonesia, Ministry of Trade

Figure 3.8 Map of Indonesia's Electronic Industry, 2007

3.2.2.   Malaysia's Electronic Industry

Industrial Policy

The Government of Malaysia by the Ministry of Industry Development Authority (MIDA) has executed industrial policy comprised of the development of natural resources, to the attract foreign companies in the electric and electronics and related industries, and the domestic production of automobiles. Under the "Look East" policy, the government strongly promoted the policy of export promotion through the attraction of foreign investment and successfully created a vast clustering of the electric and electronics industry.

During the economic crisis in 1997, the government was forced to reform its industrial structure. Malaysia has overcome the difficulties by adopting an independent foreign exchange rate policy (a fixed exchange rate) against the will of the IMF. The economic policy based on the absorption of foreign capital proved successful, and Malaysia has become an economic forerunner in the

Universitas Indonesia

Assessing Indonesia's..., Duma Olivia Bernadette, FE UI, 2010

ASEAN region (Hisami Mitarai, 2005).

Industry Profile

The electronic industry in Malaysia plays an essential role of Malaysia's economy. It posted 3.5 percent of employment, 56 percent of exports and 49 percent of imports. Originally, foreign manufacturing companies came to Malaysia because the conditions for low-cost production by various incentive schemes, availability of low-cost labor force, export processing zones (EPZs) and infrastructure such as roads, harbors, airports, and communications.

Furthermore, the sustained increase in investment for over 30 years under political stability, transparency, policy consistency, the ability for English communication and a favorable living environment has transformed Malaysia into a major production center for the electronics industry. Also at the local government level, individual local governments have fine-tuned their policies to bring in foreign companies most suitable to their conditions and provided relatively appropriate follow-up services to those which actually came

3.2.3.   The Philippines's Electronic Industry

Industrial Policy

By the mid 1980's the government of the Philippines has implemented the policy to attract foreign direct investment (FDI) to meet the nation's top-priority, namely job creation. In the mid 1990s, there was a sharp increase in FDI in the electronic industry. The Board of Investments (BOI) and the Philippines Economic Zone Authority (PEZA) play an important role to promote FDI which have create industrial parks and the development of infrastructure such as electric power and communications. The official policy does not aim to develop the electronics industry in particular.

Since the mid1990s, policy measures have promoted the shift away from import-substitution such as labor-intensive assembly in semi-conductor or household appliances to creating clusters of producers of HDDs and other peripheral PC equipment and related parts.

More recently, the clusters for the production of electronic parts, modules and IT products are emerging.. The aggressive entry of foreign companies into the Philippines since the beginning of the1990s can be attributed to reduced country risk and the country's aggressive effort to develop and make available the former U.S. military bases as new industrial parks. Another very important factor is favorable investment conditions such as people's proficiency in English and the availability of a large number of college-graduate engineers. The very generous FDI promotion policy for small and medium-sized foreign companies is another important factor in the increase of FDI (Hisami Mitarai, 2005).

Industry Profile

The electronic industry in Philippines deals with the manufacture of electronic component and semiconductors for export to various developed countries. Industry players are mostly composed of multinational companies (MNCs) specialized in the manufacture of various electronic products. At the end of 2008, there were 926 electronics companies registered with export processing zones operated by PEZA/BOI. Wherein 72% are foreign and 28% are locally owned. The number of Japanese companies was the largest (30 percent) followed by indigenous Filipino companies (28 percent), Korean companies (10 percent), U.S. (9 percent), European (7 percent) and Taiwanese (4percent). The total number of employees stood at 462,000. The amount of investment by Japanese firms was as big as that of the United States, making the Japanese companies an important part of the Filipino economy (Hisami Mitarai, 2005).

3.2.4.   Thailand's Electronic Industry

Industrial Policy

Thailand has adopted an export promotion policy for the electronics industry by tax incentives for exports since 1970. In 1985, they developed electric power supply, industrial parks and other infrastructure while carrying out legal reforms, including the law concerning the ratio of capital participation, which objectives to ensure free manufacturing environment for foreign

companies, also known as the Plaza Agreement. This resulted in a large inflow of export-oriented manufacturers from Japan and elsewhere. Foreign investment increased steadily through the mid 1990s but the country was hit by a serious economic crisis in the wake of the collapse of the baht in 1997. Since then, the Thai Ministry of Industry has been working on a radical reform of the country's industrial structure and the development of small and medium-sized enterprises.

From the second half of the 1990s and onward, the prevailing view was that the investment outlook for Thailand was bleak due to the damage caused by the economic crisis and the emergence and intensification of competition from China. Incentive policies for foreign investors have been implemented by the Board of Investment (BOI). The Incentive policies was meant as a manner that strikes a balance between indigenous and foreign firms (Hisami Mitarai, 2005).

Industry Profile

The foreign electronic industry in Thailand deals with electronic for household or consumer such as TV sets, video-recorders and information equipment, and there are also many parts-makers for AV products and information and communications. The feature of electronics industry in Thailand is that these firms operate mostly independently from one another. At the same time, there are more clusters of companies making electrical and mechanical products, such as printers, and their parts than the clusters of companies making electronics products. Thailand has a large demand for machinery products and parts, which accounts for its relatively high level of machinery processing technology (Hisami Mitarai, 2005).

3.2.5. Singapore's Electronic Industry

Industrial Policy

The electronics industry in Singapore was an emerging industry in the late 1960s, with foreign companies coming to Singapore to set up assembly plants for products such as transistors and low-end consumer electronics. The industry led Singapore on a growth path and provided employment to almost one-third of the

labor force. Early investors included National Semiconductor, Texas Instrument, Hewlett Packard, Philips, Matsushita and STMicroelectronics, all attracted mainly by Singapore's low production costs.

From the early 1980s to the early 1990s, Singapore became a key manufacturing base for original equipment manufacturers (OEMs) as production costs increased in the OEMs' home base. The Singapore Government encouraged the sector's development through investments in state-owned enterprises like Chartered Semiconductor, NatSteel Electronics. A host of smaller private-sector Singapore firms emerged, many as suppliers to the MNCs, but others as innovators themselves (Creative Technology and its soundcards). In the 1990s, several large contract assemblers grew, including Venture and NatSteel Broadway. By the mid-1990s, electronics was contributing over half the economy's manufacturing output, up from 23.6% in 1985 and 10.7% in 1975.

Industry Profile

The semiconductor sector is the most important segment for Singapore's electronics industry, accounted for nearly 30% of the total electronics output. The three key areas of the semiconductor industry - wafer, assembly and test centers, and integrated circuit (IC) design centers - comprised mainly foreign MNCs, with some large local companies as well. Singapore accounts for storage, nearly a third of the global hard disk drive (HDD) output. Printed circuit boards (PCBs) production and PCB assembly have shifted from low-end to high-end production, with output today concentrated in multi-layered boards and multi-layered flex-rigid boards. About 40 companies are involved in production and 35 companies in assembly.

Singapore's move from low-wage assembly operations has been most pronounced in the consumer electronics/telecom equipment segment of the electronics industry. Collectively, the value-added for these segments has been declining, but still represents over 10% of total manufacturing, compared with 12.4% for semiconductors or 5.5% for data storage. Yet even though the bulk of consumer electronics assembly operations had already moved offshore, exports of consumer electronics and computer printers have expanded slightly.

CHAPTER IV
RESEARCH METHODOLOGY

4.1. CONSTANT MARKET SHARE (CMS)

This research will use the Constant Market Share (CMS) analysis to examine Indonesia's electronic export growth. The idea behind CMS analysis is use to identify export performance and competitiveness, assumed given the same level of competitiveness an industry market share should remain constant. Thus, the change of export is influenced by the change of competitiveness. The competitiveness is attributable to world trade effect, commodity-composition (initial) effects, market-distribution (adaptation) effects and competitiveness effects.

The CMS method was introduced as a measure of international trade flow by Tyszynski (1951), where they use to examine the determinant of trade or export growth. The background of the CMS usage is this model possible that one country may have declining export growth in a period to the world (as the standard).

Leamer and Stern (1970) assumed that a country's exports may fail to grow as rapidly as the world average for three reasons: (1) exports may concentrate in commodities in which the demand is growing relatively slow; (2) exports destination countries may relatively stagnant; (3) the country in question may have been unable to compete effectively with other sources of supply (Hadi and Mardianto, 2004,p.50).

Another assumption is of this method is that the market share of an exporter country in the world or in certain region such as ASEAN should remain unchanged over time. Accordingly, the difference between the export growth, which is the difference between constant exports market share and the actual export market share, can be attributed by the effects of demand in the world market, shifting commodity composition and changes in competitiveness (the competitiveness effect in this term

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emerged from price difference). Changes in the export market share not always caused by changes in competitiveness, nonetheless, changes in the export share can be indicated as competitiveness indicator to measure a country's export competitiveness in the world market or in certain region such as ASEAN (Hadi and Mardianto, 2004,p.51).

To analyze Indonesian export performance and competitiveness, we use the two level of CMS decomposition based on Chen and Duan (Suprihatini,2005,p.4). The decomposition we use shown in picture 4.1.
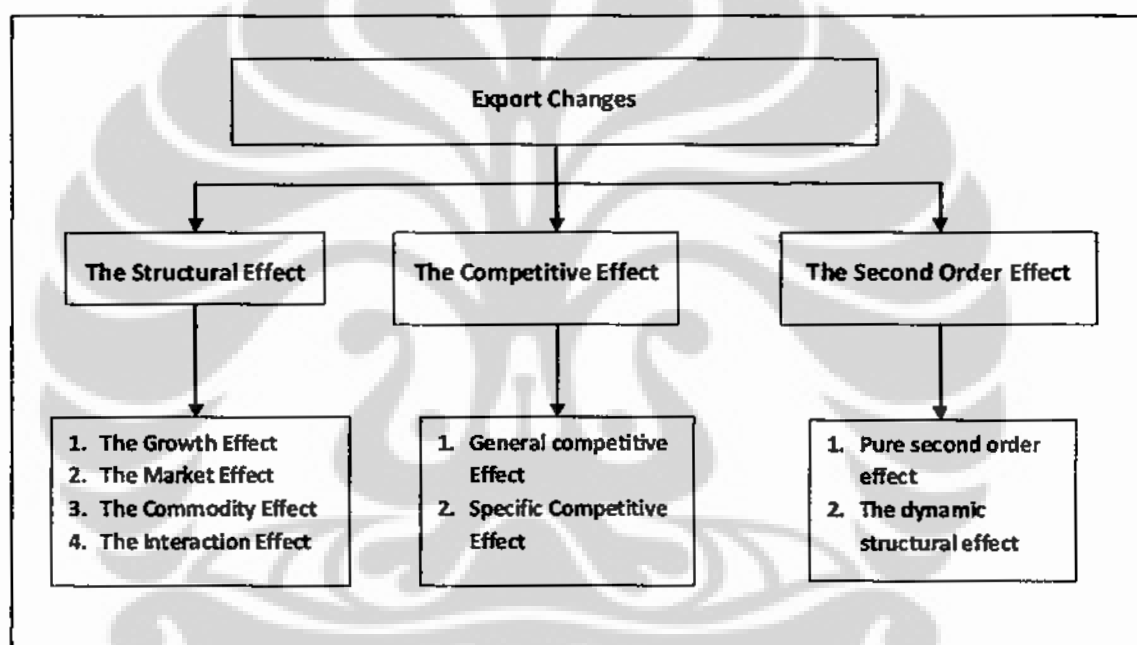
Source : Suprihatini,2005,p.4

Figure 4.1 Two levels of CMS Decomposition Model

Muhammad and Yaacob (2008) try to explain the two level of CMS decomposition Model. At the first level, the CMS model decomposes the change in export into three components:

1. The Structural Effect

   The Structural Effect indicates the change of Indonesia's electronic export due to the change of selected ASEAN electronic importing countries.

2. The Competitive Effect

   The Competitive Effect indicates the change of Indonesia's electronic export due to the change in Indonesia's competitiveness

3. The Second Order Effect

   The Second Order Effect indicates the change of Indonesia's electronic export due to the interaction of the change in Indonesia's selected electronic product competitiveness and the change in ASEAN electronic importing countries

And, at the second level the CMS model decomposes the three components of export changes, the decomposition as the following:

1. The structural effect further decomposed into:
   - The growth effect

     The change in Indonesia's electronic export due to the change in the world electronics import
   - The market effect

     The change in Indonesia's electronic exports due to the market distribution of Indonesia's electronic exports
   - The commodity effect

     The change in Indonesia's electronic exports due to the commodity composition of Indonesia's electronic exports
   - The interaction effect

     The change in Indonesia's electronic exports due to the interaction of market distribution effect and the commodity composition effect

2. The Competitive effect is split into:
    *   General Competitive effect

        The change in Indonesia's electronic exports due to the change of Indonesia's electronic exports competitiveness in its total E&E exports to ASEAN

    *   Specific competitive effect

        the change in Indonesia's electronic exports due to the change of Indonesia's electronic exports competitiveness in its exports of specific commodities to world markets

3. The Second order effect is divided into
    *   Pure second-order effect

        The change in Indonesia's electronic exports due to the interaction of Indonesia's electronic exports competitiveness and ASEAN's export

    *   The dynamic structural effect

        The change in Indonesia's electronic exports is due to the interaction of an exporting country's export competitiveness and imports of specific commodities in specific world markets.

The formula of Constant Market Share as follows (Muhammad and Yaacob, 2008 p.67):

The First Level:

$$\Delta \hat{E} = \underset{(1)}{\Sigma i \, \Sigma j \, S o \, ij \, \Delta \, Qij} \quad + \underset{(2)}{\Sigma i \, \Sigma j \, Q o \, ij \, \Delta \, Sij} \quad + \underset{(3)}{\Sigma i \, \Sigma j \, \Delta Sij \, Q o \, ij} \qquad (4.1)$$

The formula further decomposed into the following components:

The Structural Effect

$$\Delta \hat{E} = \underset{(4)}{S o \, \Delta \, Q} \; + \underset{(5)}{(\Sigma i \, \Sigma j \, S o \, ij \, \Delta \, Qij - \Sigma i \, S o \, i \, \Delta \, Qi)} + \underset{(6)}{(\Sigma i \, \Sigma j \, S o \, ij \, \Delta \, Qij - \Sigma j \, S o \, j \, \Delta \, Qj)}$$

$$+ \underset{(7)}{[\, (\, \Sigma i \, S o \, i \, \Delta \, Qi - S o \, \Delta \, Q) - (\Sigma i \, \Sigma j \, S o \, ij \, \Delta \, Qij - \Sigma j \, S o \, j \, \Delta \, Qj \,]} \qquad (4.2)$$

The competitive Effect

$$+ \Delta S Q^{o} + (\Sigma i\, \Sigma j\, \Delta S\, ij\, Q\, o\, ij - \Delta S\, Q\, o) \qquad (4.3)$$

$$\underset{(8)}{} \qquad \underset{(9)}{}$$

The Second-order-effect

$$(Q\, 1\, /\, Qo - 1)\, \Sigma i\, \Sigma j\, \Delta S\, ij\, Q\, o\, ij + (\Sigma i\, \Sigma j\, \Delta S\, ij\, \Delta Q\, ij - (Q\, 1\, /\, Q\, o - 1)\, \Sigma i\, \Sigma j\, \Delta S\, ij Q\, o\, ij\,] \qquad (4.4)$$

$$\underset{(10)}{} \qquad \underset{(11)}{}$$

Whereby:

(1)	Structural Effect		(2)	Competitive Effect
(3)	Second Order Effect		(4)	Growth Effect
(5)	Market Effect		(6)	Commodity Effect
(7)	Structural interaction Effect		(8)	General Competitive Effect
(9)	Specific competitive Effect		(10)	Pure Second-order effect
(11)	Dynamic structural residual			

Notation:

$\bar{E} =$ is Indonesia export value of commodity i to intra-ASEAN

$S =$ is Indonesia's share of the world export of all electronic products world market;

$Sj =$ is Indonesia's share of the world export of all electronic products in intra-ASEAN

$Si =$ is Indonesia's share of the world export of commodity i

$Sij =$ is Indonesia's share of the world export of commodity i in intra-ASEAN

$Q =$ is an total world export of all electronic products

$Qj =$ is total world export of all electronic products to intra-ASEAN

$Qi =$ is the total world export of commodity i

$Qij =$ is total export of commodity i in intra-ASEAN

$\Delta =$ represent the change in the two periods;

$o =$ is the initial year, 1 is the terminal year.

$i =$ represent export commodities

Standard growth indicates the general standard of export growth of all countries in the world market, or the world to the world export. The magnitude of this effect would show the potential increase of Indonesia's export if they were able to maintain it share as major importers.

The initial or commodity composition specialization effect corresponds to hypothetical gains or losses of a country aggregate market share that are associated with initial specialization of domestic supply for products characterized by dynamic markets demand. Commodity composition effect can be positive or negative. The positive value indicates that the subject country has exported particular product to the country which has the higher growth of demand compared to other countries.

The adaptation effect measures a country ability to adjust the supply of exports to changes in world demand. The effect is positive if the country market share increases in growing import market or declines in a declining market. The effect is negative if the country market share increases in declining import market or declines in a growing market.

The competitiveness effect corresponds to hypothetical gains or losses of a country aggregate market share that would occur if changes due to variations in the country's market share in import markets (product i and importing country k), regardless of the structure of the country export. The positive sign means that Indonesia more competitive than others and the negative sign means that Indonesia less competitive than others.

4.2. RCA

Revealed Comparative Advantage (RCA) was first introduced by Bela Balasa (1965). RCA can measure a specific product's share in the country's total exports relative to the share of this product in the world trade. In theory, it provides index measure of changes in comparative advantage.

The RCA's Model Structure :

$$RCA_{ij} = \frac{C_{ij} / Q_{ij}}{C_i / Q_i} \qquad (4.5)$$

Whereby,

Cij   = Country's export of commodity i to ASEAN

Qij   = World export of commodity i to ASEAN

Ci   = Country's export of commodity i to the world

Qi   = Total world export of commodity i

The RCA of more than one indicates that the country export performance of commodity i relative to world is higher. It can be interpreted that this country has a revealed comparative advantage for this product.

In contrary, the RCA of less than one indicates that the country export performance of commodity i relative to world is lower. It can be interpreted that this country has no revealed comparative advantage for this product.

RCA indicates whether a country is in the process of expanding the products which it has trade potential, as opposed to situations in which number of product can competitively exported is static.

4.3. COMPETITIVENESS MATRIX

A combination between the CMS analysis with the competitiveness matrix will give an overview of export product position. In the beginning, United Nations published the competitive analysis of nation, where the approached was introduced by O. Mandeng.

This measurement based on the idea that international competitiveness is country which able to enhance the size of its export from goods to a certain market. The one that decline its competitiveness is due to it increase size of the import coming from other country. The greater or smaller degree of competitiveness of a

sector or a country shows the nature and the degree of participation they have (through its export) in the import carried out by the analyzed market. In conclusion, a country improve its competitiveness in the way that other country increases the imports coming from the former.

The changes in international competitiveness are measured through the analysis of different variable :

1. Market Share

   Market Share or participation in the market, measures portion of the market that is supplied by a certain country or sector of this country.

   The model structure:

   $$MS = Mij / Mi$$

2. Percentage of Export

   Export structure of the analyzed country, is variable reflects the relative weight of each exporting sector in the total export of that country.

   The model structure:

   $$PE = Mij / Mj$$

3. Specialization Index

   Specialization index is the different sector from the export of services that also classified from the point of view of their international competitiveness throughout time when the degree of commercial specialization of each country and the evolution of the world imports are simultaneously analyzed.

   The model structure:

   $$SI = (Mij / Mi) / (Mj/M)$$

4. Percentage of Imports

   By the percentage of imports of the market we can know the degree of dynamism that a certain sector has analyzed import market.

   The model structure:

   $$PI = Mi / M$$

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Assessing Indonesia's..., Duma Olivia Bernadette, FE UI, 2010

Whereby the notations for this research:

M = Total import value of ASEAN

Mj = Importing value of ASEAN originated from Indonesia

Mi = Import value of commodity i in ASEAN

Mij = Import value of commodity i in ASEAN that originated from Indonesia

When bringing this variable into relation, we may construct different typologies of competitiveness matrix that offer the profile in which the foreign trade of an economy develops and suggest answers on the reasons for which a same sector can behave in different ways in various markets.

We can classify the exporting sector into four categories: rising star, missed opportunities, declining stars and retreats.

a. Rising Stars
- The export products for which country's has performed very well
- Dynamic products, which are growing faster than world trade in general
- Outperformed world market growth and increased its share in world imports.
- Trade promotion efforts for these products are less risky

b. Declining Stars
- Challenges for trade promotion efforts
- International demand has been growing at above-average rates, Country's has been falling behind.
- Its exports have either declined or grown less dynamically than world trade.
- The bottleneck is not international demand, but rather on the supply side.

- Identify and remove the specific bottlenecks, which impede a more dynamic expansion of exports

c. Retreats
- The export prospects for these products tend to be gloomy
- World imports of these products have been stagnating or have actually declined, and the market share of Country's has gone down.
- Trade promotion efforts for product groups in this category face difficulty.
- Country needs to adopt an integrated approach to take into account bottlenecks both on the supply and on the demand side.

d. Missed Opportunities
- Products are characterized by : growing shares of exporters in world import markets, which are declining or growing at a below average rate,
- A trade promotion perspective, niche-marketing strategies are required to encourage this positive trade performance despite the overall decline in these markets

Trade Can (1999) classifying the exporting sector as follows:

a. Market share on the vertical axis of the competitiveness matrix
- Rising Star meets the criteria:
$Mi/M (FY)>Mi/M (BY)$ and $Mij/Mi (FY)>Mij/Mi (BY)$.
- Declining Star meets the criteria:
$Mi/M (FY)<Mi/M (BY)$ and $Mij/Mi (FY)>Mij/Mi (BY)$.
- Missed Opportunity meets the criteria:
$Mi/M(FY)>Mi/M(BY)$ and $Mij/Mi (FY)<Mij/Mi (BY)$.
- A Retreat meets the criteria:
$Mi/M(FY)<Mi/M(BY)$ and $Mij/Mi (FY)<Mij/Mi (BY)$.

b. Percentage of exports on the vertical axis of the competitiveness matrix

- Rising Star meets the criteria:

$Mi/M(FY) > Mi/M(BY)$ and $Mij/Mj (FY) > Mij/Mj (BY)$.

- Declining Star meets the criteria:

$Mi/M(FY) < Mi/M(BY)$ and $Mij/Mj (FY) > Mij/Mj (BY)$.

- A Missed Opportunity meets the criteria:

$Mi/M(FY) > Mi/M(BY)$ and $Mij/Mj \cdot(FY) < Mij/Mj \cdot(BY)$.

- A Retreat meets the criteria:

$Mi/M(FY) < Mi/M(BY)$ and $Mij/Mj (FY) < Mij/Mj (BY)$.

c. Specialization on the vertical axis of the competitiveness matrix

- Rising Star meets the criteria:

$Mi/M(FY) > Mi/M(BY)$ and $(Mij/Mi)/(Mj/M)(FY) > (Mij/Mi)/(Mj/M)(BY)$.

- Declining Star meets the criteria:

$Mi/M(FY) < Mi/M(BY)$ and $(Mij/Mi)/(Mj/M)(FY) > (Mij/Mi)/(Mj/M)(BY)$.

- A Missed Opportunity meets the criteria:

$Mi/M(FY) > Mi/M(BY)$ and $(Mij/Mi)/(Mj/M)(FY) < (Mij/Mi)/(Mj/M)(BY)$.

- A Retreat meets the criteria:

$Mi/M(FY) < Mi/M(BY)$ and $(Mij/Mi)/(Mj/M)(FY) < (Mij/Mi)/(Mj/M)(BY)$.

Whereby,

FY   = Final year

BY   = Base year

The four quadrant of the matrix competitiveness export position, describes in below picture 4.2, which derived from World Bank :
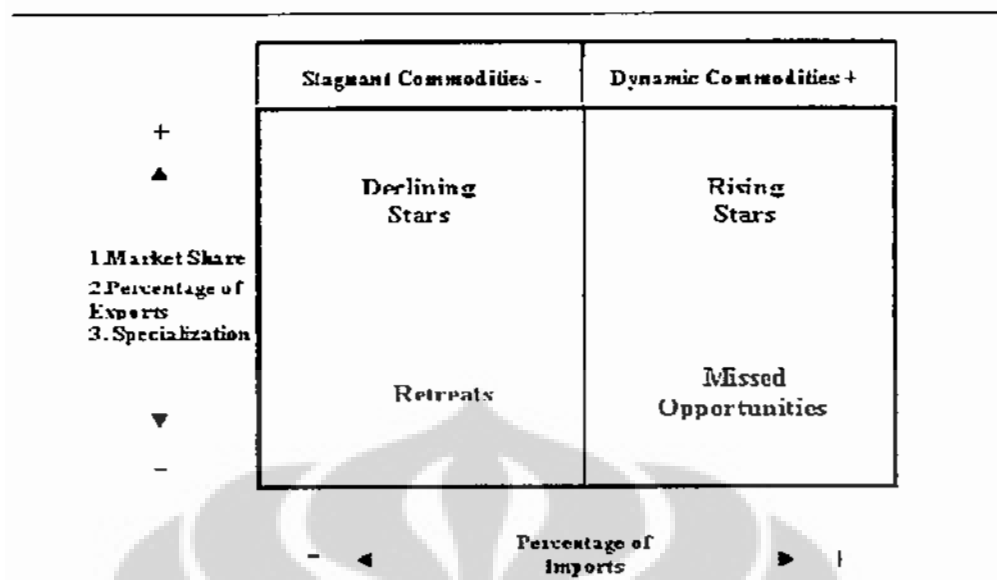
Source : TradeCAN 1999 edition, World Bank, p.25

Figure 4.2 Competitiveness Matrix

CHAPTER V
RESULT AND ANALYSIS

4.4. INDONESIA'S ELECTRONIC PRODUCTS EXPORT BY CONSTANT MARKET SHARE (CMS) ANALYSIS

5.1.1. CMS Result

This section present the empirical result of constant market share used in the study. The main objective of this research is to analyze the export competitiveness of Indonesian electronic industry. The result of decomposition of the change Indonesia's export of electronic selected product for the period 2000-2004 and 2004-2008 are provided here. This research presents the relative contribution of each effect on the change in the electronic exports between two periods.

Change in export value provided in Table. 5.1, it defines that an increased or decreased in export in conjunction to the contribution of structural effect, competitive effect and second order effect.

Table 5.1. Change of Indonesia's Export

PERIODS	Value (US $ Million)
2000-2004	122
2004-2008	3.052

Source : UN Comtrade, Processed

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In period 2000 -2004 Indonesia's export of electronic products to the world only increase about US$ 122 million, meanwhile in 2004-2008 it significantly increases to US$ 3.051 million. This condition may be caused by the reduction of world average tariff for electronic products that imposed to Indonesia, from approximately about 9.28 % in 2000-2004 to be approximately about 6.41% in 2004-2008.

5.1.1.1. Structural Effect

a. Growth Effect

Structural effect encompasses of growth effect, market effect, commodity effect and interaction effect. Annex 1 shows Indonesia export growth of electronic products due to the change of total world export to ASEAN.

According the result, in the first period world export growth for electronic products to ASEAN was 0.208 or 20.8 % meanwhile Indonesia was 0.017 or 1.7 %. This condition means that Indonesia export performance is worse compare to the world export performance to ASEAN.

Nonetheless, in the next period, 2004 – 2008, the Indonesia growth export performances increases significantly to 0.258 or 25.8% meanwhile the world export growth also increase to be 0.277 or 27.7%. Growth effect measures the change in export for Indonesia's electronic product due to the change in total world import of electronic products. In brief, over period 1 and period 2, the increase of Indonesia's electronic export influenced by general increase in total world import. The change in exports is due to the change of world exports. In addition, in period 2, it might be influenced by the tariff reduction. The ASEAN leaders have agreed that by 2003, the CEPT rates should be between zero to 5 per cent for the 12 sectors, the 12 sectors namely air travel, agro-based products, automotives, e-commerce, electronics, fisheries, healthcare, rubber-based products, textiles and apparels, tourism, wood-based products and logistic. Electronic sector was included as the

priority. However, that is only descriptive analysis, since the CMS cannot provide tariff influence analysis.

b. Market Distribution Effect

The market distribution effect provided in Annex 2 is referring to the change in export due to the market distribution of an exporting country of electronic products. It indicates Indonesia's ability to concentrate on the growing ASEAN countries. This research tries to examine each of the 10 selected products as we mentioned above.

The market distribution effect during 2000-2004 has negative sign for the 10 products. It indicates that Indonesia has distributed its electronic product to countries that have low demand on the product. Accordingly, it means intra-ASEAN did not have high import growth or have low demand for those Indonesia's electronic products. All products have negative signs, because Indonesia exporting its product to importer countries that also export the same products, moreover the importer countries have better products so it may cause the low demand for those Indonesia's electronic product.

However, in the next period the market distribution slightly improved. Three products have positive sign, namely HS 847330, HS 852520 and HS 853120. This means that in period 2004-2008 for HS 847330, HS 852520 and HS 853120 products, Indonesia has improved its market distribution. The improvement is also in line to Indonesian export growth in the 2004 – 2008 which show positive and increasing value.

There are no products that show positive sign in both periods. According to this condition, Indonesia has to improve its market distribution because from the period 2000 – 2008, Indonesia has not distributed its electronic product export destination to potential market. Moreover, Indonesia should consider the dynamic import of ASEAN countries. The change in export due to market distribution depend on trade policies and income growth.

d. Interaction Effect

The Annex 4 shows the interaction effects. The interaction effect indicates whether the country is specialized in the products or the country has competitive advantage. The interaction effect will be positive in values if the country specialized on export where it has competitive advantage and will be negative in values if the country specialized on export where it has no competitive advantage.

The CMS result shows that during period 2000-2004 there only one product that has negative sign, that is HS 847330. In the next period, 2004 – 2008 the products that have negative sign are HS 847330, HS 852990 and HS 853120. It indicates that Indonesia has produce HS 847330, HS 852990 and HS 853120 which has

Products that show positive sign in both periods are HS 852520, HS 847130, HS 847170, HS 854290, HS 853400, HS 850440, HS 854430. Product for HS 852520 has the highest interaction effect account. It is followed by HS 854430, HS 847130, and HS 853400, but those products have significant reduction in the value although it still has positive sign.

The interaction effect indicates net gain or loss in export market share relatively to standard after calculating the change of commodity and market distribution. The interaction effect is assumed as the effect based on changes in exporter country in ASEAN market to a certain product in the analysis period as a response to the price change of exporter country (Hadi and Mardianto,2004,p.53). It shows that when there is price changing in competitor country it will affected Indonesia product export.

Thus, if we linked to the export growth and the reduction of import rates for ASEAN countries, it shows that although Indonesia's export growth is increase, the 10 products still have negative sign or weak competitiveness. This condition is due to price differences among the ASEAN.

5.1.1.2. Competitive Residual

Competitive residual encompasses of specific and general competitive effect. The competitive effect measures the change in export due to the change in the exporting country's competitiveness. Annex 5 and Annex 6 show the competitive residual accounts for Indonesia's export value.

Over the period 2000-2004, the general competitive effects show – 19.84 % of the increment in Indonesia's export value. In the next period, 2004 – 2008 the general competitive effect still show negative sign although it show decreasing value to be about -0.37%. The negative sign indicates that the general increase in competitiveness contributes negatively to increase in Indonesia export value of electronics.

The specific competitive effect shows positive sign over both periods for all of the products. A positive specific competitive effect indicates that change in Indonesia's export structure show favorable interaction with the pattern of international demand. In the net term, the increase in general competitive effect and specific competitive effect resulting in an increase in overall competitive residual in both periods

5.1.1.3. Second Order Effect

The second order effect measures the change in export due to the interaction of the change in an exporting country's competitiveness and the change in the total world import of electronic products. As provided in Annex 7, the CMS result of the pure second order effects shows that from the 10 selected electronic products during period 2000-2004, there are 4 products that have negative sign and 6 products that have positive sign. The negative sign are in products of HS 854290, HS 853400, HS 852990, and HS 854430. In the next period, 2004-2008, there are 3 products that have negative sign, namely HS 847330, HS 853400, HS 852990 while

the rest have positive sign. However although the pure second order effects show positive sign, the value is very low, the value is less than 1 %.

Dynamic structural effect measure the change in exports due to the interaction of an exporting country's export competitiveness and import of specific commodities in specific world market. As provided in Annex 8, the CMS result of the dynamic structural shows that from the 10 selected electronic products during period 2000-2004, there are 3 products that have negative sign and 6 products that have positive sign. The negative sign are in products of HS 847330, HS 847170 and HS 852990. In the next period, 2004-2008, there is only 1 product that have negative sign, namely HS 852520 while the rest have positive sign. However although the dynamic structural show positive sign, the value is very low, the value is less than 1 %.

Both periods indicate insignificant contribution of the second order effect to the change in Indonesia's export of electronic products. A positive sign of competitive residual and interaction effect indicates that Indonesia has strengthen their competitiveness and changing export composition are almost equally important in explaining the increase in Indonesia's export of electronic products over this period.

In the net term, the increase in general competitive effect and specific competitive effect resulted in an increase in overall competitive residual. In other words, increase in general and specific competitive effects indicated a rise in competitiveness of Indonesia electronic selected products in intra-ASEAN trade.

5.1.2. CMS Analysis

According to the result of the CMS analysis we may conclude that:

a. The total change of Indonesia's export value for period 2000-2004 and 2004-2008 was contributed by structural effect, which encompasses of the growth effect, market effect, commodity effect and interaction effect. Meanwhile the competitive residual and second order effects have

insignificant influenced. It is proved that mostly of the competitive residual and second order effects show negative sign and if positive the value is less than 1 %. In other words, the export value was increased due to the increase in the world demand not because of competitiveness on Indonesia's electronic products.

b. Market distribution of all products indicates that Indonesia's ability to concentrate in ASEAN is still low. The result shows that there no product show positive sign in both periods. Indonesia has distributed its electronic product to countries that have low demand on the product.

c. Commodity composition shows Indonesia electronic products which exported to ASEAN have higher or lower import growth than ASEAN's imports. Products that show positive sign in both periods are, HS 852520, HS 847130, HS 847170, HS 850440 and HS 853120. Indonesia would be better not to export products for HS 847330, HS 853400, HS 852990 and HS 854430 to intra-ASEAN since those products has not good export result. However, we should improve our product commodity composition since it still has low value.

d. Products that show specialization on both periods are HS 852520, HS 847130, HS 847170, HS 854290, HS 853400, HS 850440, HS 854430.

4.5. INDONESIA'S ELECTRONIC PRODUCTS EXPORT BY REVEALED COMPARATIVE ADVANTAGE (RCA) ANALYSIS

5.2.1. RCA Result

As a comparison, the current study used RCA model to measure export performance of Indonesia electronic product. RCA value of more than 1 indicates that, the electronic product produced by one country has comparative advantage. The Annex 9 shows the result of Indonesia electronic products in intra-ASEAN in 2000, Annex 10. shows the result of Indonesia electronic products in intra-ASEAN in 2004

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and table Annex 11 shows the result of Indonesia electronic products in intra-ASEAN in 2008.

The result shows that for HS 847330, Indonesia has comparative advantage in year 2000, 2004 and 2008, which about 1.04, 1.16 and 1.11. However, if we compare to the ASEAN-5, Thailand has the highest RCA result for HS 847330. The value is 2.54, 3.28 and 2.20.

For HS 852520, Indonesia has no comparative advantage in year 2000, 2004 but has comparative advantage in 2008. If we compare to the ASEAN-5, in 2000 and 2008, Singapore has the highest RCA result which is 4.38 and 7.85, meanwhile in 2004, The Philippines has the comparative advantage which about 5.43.

For HS 847130, Indonesia has no comparative advantage in year 2000, 2004 and 2008. In 2000 the Philippines has the highest RCA result which about 23.71 and in 2004 Singapore has the highest RCA result which about 15.54, meanwhile in 2008, Thailand has the highest RCA result which about 21.71

For HS 847170, Indonesia has no comparative advantage in year 2000 and 2004, but improved in 2008 to be a product that has comparative advantage, with the RCA result 1.16. In 2000 the Philippines has the highest RCA result which about 1.43 and in 2004 the Philippines has the highest RCA result which about 4.45, meanwhile in 2008, Singapore has the highest RCA result which about 1.73

For HS 854290, Indonesia has no comparative advantage in year 2000, 2004 and 2008. In 2000 Singapore has the highest RCA result which about 3 and in 2004 Singapore has the highest RCA result which about 4.54, meanwhile in 2008, Singapore has the highest RCA result which about 9.95

For HS 853400, Indonesia has comparative advantage in year 2000 and 2004, and 2008. In 2000 Thailand has the highest RCA result which about 1.78 and in 2004 Malaysia has the highest RCA result which about 2.92, meanwhile in 2008, Singapore has the highest RCA result which about 4.66

For HS 852990, Indonesia has comparative advantage in year 2000, but getting worse in 2004 and 2008 to be a product that has no comparative advantage,

with the RCA result less than one. Singapore has the highest RCA result for all the observed year, in 2000, 2004 and 2008 which respectively about 4.55, 5.86 and 5.31

For HS 850440, Indonesia has no comparative advantage in year 2000 and 2004, and 2008 with the RCA result less than 1 %. Singapore has the highest RCA result for all the observed year, in 2000, 2004 and 2008 which respectively about 8.48, 7.69 and 9.69

For HS 8454430, Indonesia has comparative advantage for all the observed year, in 2000, 2004 and 2008 which respectively about 1.32, 1.62 and 1.62. However it still has lower value compare to the other ASEAN-5. In 2000 Singapore has the highest RCA result which about 42.98 and in 2004 Singapore has the highest RCA result which about 44.13, meanwhile in 2008, Malaysia has the highest RCA result which about 63.19

For HS 853120, Indonesia has no comparative advantage in year 2000 and 2004, but improved in 2008 to be a product that has comparative advantage, with the RCA result 4.97. In 2000 Singapore has the highest RCA result which about 5.56 and in 2004 the Singapore has the highest RCA result which about 13.69, meanwhile in 2008, Indonesia has the highest RCA result which about 4.97.

In conclusion, from the result of RCA index Indonesia's product that has revealed comparative advantage are HS 847330, HS 847130, HS 847170, HS 853400, HS 854430 and HS 853120. However, the average of Indonesia's RCA result has less value compare to Malaysia, The Philippines, Singapore and Thailand.

The weaknesses of intra-ASEAN trade are most of the member produce the same product. Because whether there is product that have high RCA value, most of ASEAN member also produce the same.

5.2.2. RCA Analysis

According to the result of the RCA, we may conclude that :

a. In the terms of performance export ratio, Indonesia has the lowest performance in intra-ASEAN market compare to Singapore, Malaysia, The

Philippines and Thailand. This is due to the low competitiveness of the product.

b.   Product that Indonesia has the highest comparative advantage result is for HS 853120 (indicator panels incorporating electronic displays) in 2008. Moreover, other products that have comparative advantages are HS 847330, HS 847130, HS 847170, HS 853400, HS 854430 and HS 853120.

5.3. INDONESIA'S ELECTRONIC EXPORT PRODUCTS BY COMPETITIVENESS MATRIX

5.3.1. Competitiveness Matrix Result

Combinations between indicated variables allow us to classify the countries competitiveness. After calculating the selected 10 electronic products using the CMS analysis and RCA, we may define our product competitiveness position. The categories were defined into four categories: the rising star, the declining star, the missed opportunities and Retreats.

5.3.1.1. Market Share Competitiveness Matrix

Annex 12 shows the result of change in the competitiveness of Indonesian commodities. In the first period, 2000 – 2004 there are 3 products that classify as the rising star. They are HS 852520, HS 847170 and HS 854430. Over the period 2004 – 2008 there is only one product that classify as the rising star. It is HS 853120. The rising star are those economic activities in which a country enhances its market share, in circumstances in which those activities have an increasing importance in the world-wide commerce.

In the period 2000 – 2004 there are 4 products that classify as the Missed opportunity. They are HS 847130, HS 852990, HS 850440 and HS 853120. Meanwhile, over the period 2004 – 2008 there are 3 products that classify as the

Missed opportunity, namely HS 847130, HS 854290 and HS 850440. The Missed opportunity is take place in those sectors in which the country is losing market share in a context in which this one is enhancing.

Furthermore, in the period 2000 – 2004 there is only 1 product that classify as the Declining star. It is HS 847330. Meanwhile, over the period 2004 – 2008 there are 2 products that classify as the Declining star, namely HS 852520 and HS 854430. The Declining stars are the situations of those sector of the economic activity in which the exporting country increases its market share in circumstances in which the international market is being reduced.

Over the period 2000-2004, there are 2 products that classify as the Retreat, namely HS 854290 and HS 853400. In the next period, 2004-2008 there are 4 products that classify as the Retreat. They are HS 847330, HS 847170, HS 853400 and HS 852990. We define the situation of a sector as retreat when that economy activity besides losing market share, registers a decline of dynamism in the international trade

5.3.1.2.Export Structure Competitiveness Matrix

The competitiveness matrix of the export structure is obtained relating to the behavior of the export structure of a country with the import dynamism of the international market. This matrix shows how the adjustment of the export structure can take place in the same direction or the opposite direction with respect to the changes in the world imports.

The competitiveness matrix by export structure is provided in the Annex 13 The result shows that during period 2000 – 2004 there are 7 products that classify as the rising star. They are HS 852520, HS 847130, HS 847170, HS 852990 , HS 850440, HS 854430 and HS 853120. Over the period 2004 – 2008 there is 2 product that classify as the rising star. They are HS 854290 and HS 853120. The rising star are those economic activities in which a country improve its income through certain

exports in international circumstances in which those activities have an increasing importance in the world-wide market.

In the period 2000 – 2004 there are no products that classify as the Missed opportunity. Meanwhile, over the period 2004 – 2008 there are two products that classify as the Missed opportunity, namely HS 847130 and HS 850440. The Missed opportunity is take place in those sectors in which the country downgrade the income of international assets coming from certain exports, in a context in which the market of the same activities is enhancing.

Over the period 2000 – 2004 there are two products that classify as the Declining star. It is HS 847330 and HS 853400. Meanwhile, over the period 2004 – 2008 there also 2 products that classify as the Declining star, but it is different from products in the previous period. It was HS 852520 and HS 854430. The Declining stars are the situations of those sector of the economic activity in which the exporting country increases its external income, although the international trade is being reduced at the same time.

Finally, in the period 2000-2004, there is one product that classify as the Retreat, namely HS 854290. In the next period, 2004-2008 it getting worse, since there are four products that classify as the Retreat. They are HS 847330, HS 847170, HS 853400 and HS 852990. We define the situation of a sector as retreat when an exporting branch besides losing importance of source of currency generation, it registers a decline of dynamism in the world market

5.3.1.3. Specialization Index Competitiveness Matrix

The competitiveness matrix by specialization index is provided in the Annex 14. The result shows that during period 2000 – 2004 there are six products that classify as the rising star. They are HS 852520, HS 847130, HS 847170, HS 850440, HS 854430 and HS 853120. Over the period 2004 – 2008 it getting worse, because from six product that classify as rising star in the previous period become only one product that can be classify as rising star. The product is HS 853120. The rising star

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are those economic activities in which a country improve its degree of commercial specialization in certain exports in international circumstances in which those activities have an increasing importance in the world-wide commerce.

In the period 2000 – 2004 there is one product that classify as the Missed opportunity. It is HS 852990. Meanwhile, over the period 2004 – 2008 there are 3 products that classify as the Missed opportunity, namely HS 847130, HS 854290 and HS 850440. The Missed opportunity is take place in those sectors in which the country reduces its degree of specialization in certain export, in a context in which this one is enhancing.

Furthermore, in the period 2000 – 2004 there are three products that classify as the Declining star. They are HS 854290, HS 847330 and HS 853400. Meanwhile, over the period 2004 – 2008 there are 2 products that classify as the Declining star, namely HS 852520 and HS 854430. The Declining stars are the situations of those sector of the economic activity in which the exporting country increases its degree of specialization in certain export in an international market in which the same activity are being reduced.

Finally, over the period 2000-2004, there is no product that classify as the Retreat. However, in the next period, 2004-2008 there are three products that classify as the Retreat. They are HS 847330, HS 853400 and HS 852990. We define the situation of a sector as retreat when that economy activity besides losing of its importance of its degree of specialization, registers a decline of dynamism in the international trade

5.3.2. Competitiveness Matrix Analysis

According to the result of the Competitive Matrix, we may summarize that:

a. Based on the Market share there are no products that have best performance in intra-ASEAN trade. It is indicted that no product classified as rising stars in both period.

b.   Based on the percentage of import, HS 853120 (indicator panels incorporating electronic displays) have the best performance in intra-ASEAN trade. HS 853120 has been classified as rising stars in both periods.

c.   Based on the Specialization, HS 853120 (indicator panels incorporating electronic displays) have the best performance in intra-ASEAN trade. HS 853120 has been classified as rising stars in both periods.

5.4. ASSESSING THE RESULT OF INDONESIA'S ELECTRONIC EXPORT PRODUCTS

From the result of CMS analysis, RCA and competitive matrix, the researcher concludes the result by setting its own indicator. The indicator only use positive (+) and negative (-) sign. For CMS, if the products show positive sign it assumed that the product have suitable expectation of CMS interpretation and if the products show negative sign it assumed that the product have not meet the expectation of CMS interpretation.

For RCA, if the products show positive sign it assumed that the product have Revealed Comparative Advantage and if the products show negative sign it assumed that the product have no RCA.

And the last for competitiveness matrix, if the products show positive sign it assumed that the product is rising star while others category shown as negative sign. The result shows in Annex 15.

Some of the result shows that in the first period (2000-2004) it has positive sign, but in the second period (2004-2008) it shows negative sign or vice versa in the first period (2000-2004) it has negative sign, but in the second period (2004-2008) it shows positive sign, this situation (products that have different sign in two periods) happen due to the relatively stagnant product development in ASEAN market which cause unstable dynamic growth of ASEAN market.

The rank of the products based on the amount of positive sign. The larger the amount of positive sign means the better is the product to be exported and the

smaller the amount of positive sign means the worse is the product to be exported. Therefore, after calculating the positive sign, the products were rank as shown in table 5.2

Table 5.2. The Rank of Indonesia's Electronic Export Based on CMS, RCA and Competitive Matrix

No	HS CODE	Description
1	853120	Indicator panels incorporating electronic displays
2	854430	Ignition/other wiring sets for vehicles/aircraft/ship
3	852520	Transmit-receive apparatus for radio, TV, etc.
4	847170	Storage units
5	847130	Portable digital data processing
6	850440	Static converters
7	853400	Electronic printed circuits
8	852990	Parts for radio/tv transmit/receive equipment
9	847330	Parts and accessories of data processing equipment nes
10	854290	Parts of electronic integrated circuits etc

CHAPTER VI
CONCLUSIONS

The objective of this thesis has been to analyze the competitiveness of Indonesia's electronic products export for intra-ASEAN trade and to identify Indonesia's competitive position of electronic products export in ASEAN.

1. Indonesia's electronic export increases during period 2000 – 2008 is due to the increase in the world demand not because of the competitiveness on Indonesia's electronic products. Moreover the reduction of ASEAN CEPT to be 0 – 5 % for electronic products encourage Indonesia's electronic export. However, although Indonesia's growth export to ASEAN is increasing, but other ASEAN countries competitor namely Malaysia, Singapore, Thailand and The Philippines also have increased export. This condition reflected that competitiveness becomes the main key for every country to develop their products. Countries that cannot develop their product competitiveness will be left behind and be the market only.

2. Based on this research, Indonesia have good competitiveness performance on products HS 853120 (Indicator panels incorporating electronic displays), HS 854430 (Ignition/other wiring sets for vehicles/aircraft/ship) and HS 852520 (Transmit-receive apparatus for radio, TV, etc.) according the indicator made to summarie the CMS result, RCA result and Competitiveness matrix. Therefore, Government of Indonesia should have more attention on these products.

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Annex 1. Growth Effect of Indonesia's Electronic Products to ASEAN region in period 2000 – 2004 and 2004 – 2008

Periods	World's Growth	Indonesia's Growth
2000-2004	0.208	0.017
2004-2008	0.277	0.258

Source : UN Comtrade, Processed

Annex 2. The Market Distribution Effect of Indonesia's Electronic Products to ASEAN region in period 2000 – 2004 and 2004 – 2008 (%)

No	HS CODE	Description	Period 2000-2004	Period 2004-2008
1	847330	Parts and accessories of data processing equipment nes	-38.4	34.14
2	852520	Transmit-receive apparatus for radio, TV, etc.	-2.85	0.45
3	847130	Portable digital data processing	-76.66	-5.1
4	847170	Storage units	-0.07	-4.76
5	854290	Parts of electronic integrated circuits etc	-0.04	-0.84
6	853400	Electronic printed circuits	-77.07	-8.32
7	852990	Parts for radio/tv transmit/receive equipment	-39.9	11.59
8	850440	Static converters	-68.31	-9.93
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	-14.77	-8.83
10	853120	Indicator panels incorporating electronic displays	-73.92	1.1

Source : UN Comtrade, processed

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Annex 3. The Commodity-composition Effect of Indonesia's Electronic Products to ASEAN region in period 2000 – 2004 and 2004 – 2008 (%)

No	HS CODE	Description	Period 2000-2004	Period 2004-2008
1	847330	Parts and accessories of data processing equipment nes	-34.6	-29.16
2	852520	Transmit-receive apparatus for radio, TV, etc.	0.29	0.01
3	847130	Portable digital data processing	2.72	0.24
4	847170	Storage units	0.04	0.13
5	854290	Parts of electronic integrated circuits etc	-1.07	0.24
6	853400	Electronic printed circuits	16.22	-0.38
7	852990	Parts for radio/tv transmit/receive equipment	68.83	-1.48
8	850440	Static converters	5	0.7
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	1.88	-0.01
10	853120	Indicator panels incorporating electronic displays	1.34	0.08

Source : UN Comtrade, Processed

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Annex 4. The structural interaction effects of Indonesia's Electronic Products to ASEAN region in period 2000 – 2004 and 2004 – 2008 (%)

No	HS CODE	Description	Period 2000-2004	Period 2004-2008
1	847330	Parts and accessories of data processing equipment nes	-19.87	-17
2	852520	Transmit-receive apparatus for radio, TV, etc.	87.43	85.19
3	847130	Portable digital data processing	76.66	5.1
4	847170	Storage units	0.07	4.76
5	854290	Parts of electronic integrated circuits etc	0.04	0.84
6	853400	Electronic printed circuits	77.07	8.32
7	852990	Parts for radio/tv transmit/receive equipment	39.9	-11.59
8	850440	Static converters	68.31	9.93
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	84.77	8.83
10	853120	Indicator panels incorporating electronic displays	73.92	-1.1

Source : UN Comtrade, Processed

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Annex 5. The General Competitive effects of Indonesia's Electronic Products to ASEAN region, in period 2000 – 2004 and 2004 – 2008

PERIODS	Value (US$)	%
2000-2004	-2,426,087,840	-19.84
2004-2008	-1,129,056,466	-0.37

Source : UN Comtrade, Processed

Annex 6. The Specific Competitive effects of Indonesia's Electronic Products to ASEAN region, in period 2000 – 2004 and 2004 – 2008

No	HS CODE	Description	Period 2000-2004	Period 2004-2008
1	847330	Parts and accessories of data processing equipment nes	21.14	0.32
2	852520	Transmit-receive apparatus for radio, TV, etc.	19.89	0.39
3	847130	Portable digital data processing	19.84	0.37
4	847170	Storage units	20.14	0.37
5	854290	Parts of electronic integrated circuits etc	19.81	0.37
6	853400	Electronic printed circuits	19.72	0.34
7	852990	Parts for radio/tv transmit/receive equipment	19.59	0.35
8	850440	Static converters	19.81	0.36
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	19.84	0.38
10	853120	Indicator panels incorporating electronic displays	19.84	0.38

Source : UN Comtrade, Processed

Annex 7. The Pure Second order effects of Indonesia's Electronic Products to ASEAN region, in period 2000 – 2004 and 2004 –

2008

No	HS CODE	Description	Period 2000-2004	Period 2004-2008
1	847330	Parts and accessories of data processing equipment nes	0.42	-0.02
2	852520	Transmit-receive apparatus for radio, TV, etc.	0.02	0.01
3	847130	Portable digital data processing	0.00	0.00
4	847170	Storage units	0.10	0.00
5	854290	Parts of electronic integrated circuits etc	-0.01	0.00
6	853400	Electronic printed circuits	-0.04	-0.01
7	852990	Parts for radio/tv transmit/receive equipment	-0.08	-0.01
8	850440	Static converters	-0.01	0.00
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	0.00	0.00
10	853120	Indicator panels incorporating electronic displays	0.00	0.00

Source : UN Comtrade, Processed

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Annex 8. The Dynamic structural residual effects of Indonesia's Electronic Products to ASEAN region, in period 2000 – 2004 and 2004 – 2008

No	HS CODE	Description	Period 2000-2004	Period 2004-2008
1	847330	Parts and accessories of data processing equipment nes	-0.27	0.03
2	852520	Transmit-receive apparatus for radio, TV, etc.	0.07	-0.01
3	847130	Portable digital data processing	0.00	0.00
4	847170	Storage units	-0.02	0.00
5	854290	Parts of electronic integrated circuits etc	0.01	0.00
6	853400	Electronic printed circuits	0.02	0.02
7	852990	Parts for radio/tv transmit/receive equipment	-0.09	0.01
8	850440	Static converters	0.00	0.00
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	0.00	0.00
10	853120	Indicator panels incorporating electronic displays	0.00	0.00

Source : UN Comtrade, Processed

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Annex 9. The RCA result of Indonesia's Electronic Products export to intra-ASEAN in comparison to Malaysia, The Philippines, Singapore and Thailand, 2000

No	HS CODE	Description	Intra-ASEAN Main Electronic Products Import Sources				
			Indonesia	Malaysia	The Philippines	Singapore	Thailand
1	847330	Parts and accessories of data processing equipment nes	1.04	0.45	2.47	1.48	2.54
2	852520	Transmit-receive apparatus for radio, TV, etc.	0.02	3.27	2.07	4.38	0.26
3	847130	Portable digital data processing	0.01	0.38	23.71	6.70	19.55
4	847170	Storage units	0.00	1.21	1.43	0.55	0.77
5	854290	Parts of electronic integrated circuits etc	0.47	0.58	0.54	3.00	0.89
6	853400	Electronic printed circuits	1.22	1.28	0.72	2.22	1.78
7	852990	Parts for radio/tv transmit/receive equipment	1.08	3.46	1.42	4.55	3.13
8	850440	Static converters	0.88	0.74	0.11	8.48	3.66
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	1.32	25.35	0.71	42.98	0.66
10	853120	Indicator panels incorporating electronic displays	0.39	1.74	2.21	5.56	0.78

Source : UN Comtrade, Processed

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Annex 10. The RCA result of Indonesia's Electronic Products export to intra-ASEAN in comparison to Malaysia. The Philippines, Singapore and Thailand, 2004

No	HS CODE	Description	Intra-ASEAN Main Electronic Products Import Sources				
			Indonesia	Malaysia	The Philippines	Singapore	Thailand
1	847330	Parts and accessories of data processing equipment nes	1.16	0.26	1.28	2.07	3.28
2	852520	Transmit-receive apparatus for radio, TV, etc.	0.04	1.83	5.43	4.59	1.74
3	847130	Portable digital data processing	0.02	0.5	1.01	15.54	5.34
4	847170	Storage units	0.53	1.04	4.45	0.87	1.96
5	854290	Parts of electronic integrated circuits etc	0.57	0.76	0.7	4.54	1.12
6	853400	Electronic printed circuits	1.38	2.92	0.6	2.5	1.43
7	852990	Parts for radio/tv transmit/receive equipment	0.82	2.28	1.1	5.86	1.93
8	850440	Static converters	0.22	3.1	2.64	7.69	1.16
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	1.62	23.75	3.43	44.13	3.32
10	853120	Indicator panels incorporating electronic displays	0.3	0.89	0.03	13.69	4.74

Source : UN Comtrade, Processed

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Annex 11. The RCA result of Indonesia's Electronic Products export to intra-ASEAN in comparison to Malaysia, The Philippines, Singapore and Thailand, 2008

No	HS CODE	Description	Intra-ASEAN Main Electronic Products Import Sources				
			Indonesia	Malaysia	The Philippines	Singapore	Thailand
1	847330	Parts and accessories of data processing equipment nes	1.11	6.28	0.5	1.99	2.2
2	852520	Transmit-receive apparatus for radio, TV, etc.	0.19	1.54	0.29	7.85	0.53
3	847130	Portable digital data processing	1.1	1.44	1.36	0.47	0.71
4	847170	Storage units	1.16	1.24	1.68	1.73	3.69
5	854290	Parts of electronic integrated circuits etc	0.11	9.84	1.15	9.95	1.34
6	853400	Electronic printed circuits	1.37	3.89	0.18	4.66	1.01
7	852990	Parts for radio/tv transmit/receive equipment	0.99	2.74	0.55	5.31	1.34
8	850440	Static converters	0.1	0.72	0.84	9.69	1.31
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	1.62	0.19	2.24	0.6	1.12
10	853120	Indicator panels incorporating electronic displays	4.97	0.93	1.25	4.71	1.09

Source : UN Comtrade, Processed

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Annex 12. Indonesia Competitiveness Matrix by Market Share

No	HS CODE	Description	2000 - 2004	2004 -2008
1	847330	Parts and accessories of data processing equipment nes	Declining Star	Retreat
2	852520	Transmit-receive apparatus for radio, TV, etc.	Rising Star	Declining Star
3	847130	Portable digital data processing	Rising Star	Missed Opportunity
4	847170	Storage units	Rising Star	Retreat
5	854290	Parts of electronic integrated circuits etc	Retreat	Rising Star
6	853400	Electronic printed circuits	Declining Star	Retreat
7	852990	Parts for radio/tv transmit/receive equipment	Rising Star	Retreat
8	850440	Static converters	Rising Star	Missed Opportunity
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	Rising Star	Declining Star
10	853120	Indicator panels incorporating electronic displays	Rising Star	Rising Star

Source : UN Comtrade, Processed

Annex 13. Indonesia Competitiveness Matrix by Export Structure

No	HS CODE	Description	2000 - 2004	2004 -2008
1	847330	Parts and accessories of data processing equipment nes	Declining Star	Retreat
2	852520	Transmit-receive apparatus for radio, TV, etc.	Rising Star	Declining Star
3	847130	Portable digital data processing	Rising Star	Missed Opportunity
4	847170	Storage units	Rising Star	Retreat
5	854290	Parts of electronic integrated circuits etc	Retreat	Rising Star
6	853400	Electronic printed circuits	Declining Star	Retreat
7	852990	Parts for radio/tv transmit/receive equipment	Rising Star	Retreat
8	850440	Static converters	Rising Star	Missed Opportunity
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	Rising Star	Declining Star
10	853120	Indicator panels incorporating electronic displays	Rising Star	Rising Star

Source : UN Comtrade, Processed

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Annex 14. Indonesia Competitiveness Matrix by Specialization Index

No	HS CODE	Description	2000 - 2004	2004 - 2008
1	847330	Parts and accessories of data processing equipment nes	Declining Star	Retreat
2	852520	Transmit-receive apparatus for radio, TV, etc.	Rising Star	Declining Star
3	847130	Portable digital data processing	Rising Star	Missed Opportunity
4	847170	Storage units	Rising Star	Retreat
5	854290	Parts of electronic integrated circuits etc	Declining Star	Missed Opportunity
6	853400	Electronic printed circuits	Declining Star	Retreat
7	852990	Parts for radio/tv transmit/receive equipment	Missed Opportunity	Retreat
8	850440	Static converters	Rising Star	Missed Opportunity
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	Rising Star	Declining Star
10	853120	Indicator panels incorporating electronic displays	Rising Star	Rising Star

Source : UN Comtrade, Processed

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Annex 15. Matrix Indicator of Indonesia electronic export using CMS, RCA and competitiveness

No	HS CODE	Description	2000-2004 COMP. MATRIX CMS						2004-2008 COMP. MATRIX CMS						RCA			SUM of (+)
			MD	CC	IE	MS	ES	SI	MD	CC	IE	MS	ES	SI	2000	2004	2008	
1	847330	Parts and accessories of data processing equipment nes	-	-	-	-	-	-	+	-	-	-	-	-	+	+	-	4
2	852520	Transmit-receive apparatus for radio, TV, etc.	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	8
3	847130	Portable digital data processing	-	+	+	+	+	+	+	+	+	-	-	-	-	-	-	7
4	847170	Storage units	-	+	+	+	+	+	-	+	+	+	-	-	-	-	+	8
5	854290	Parts of electronic integrated circuits etc	-	-	+	-	+	-	-	+	+	-	-	-	-	-	+	3
6	853400	Electronic printed circuits	-	+	+	-	-	-	+	-	+	-	-	-	+	+	+	5
7	852990	Parts for radio/tv transmit/receive equipment	-	+	+	-	+	-	+	-	-	-	-	-	+	-	-	5
8	850440	Static converters	-	+	+	+	+	+	-	+	+	-	-	-	-	-	-	6
9	854430	Ignition/other wiring sets for vehicles/aircraft/ship	-	+	+	+	+	+	-	-	+	-	-	-	+	+	+	9
10	853120	Indicator panels incorporating electronic displays	-	+	+	+	+	+	+	+	-	+	+	+	-	-	+	10