

Chapter 4

Competitive Advantages in the Semiconductor Industry between Malaysia, Indonesia, and Thailand

From looking at the comparative advantages in the earlier chapter (chapter 3), it can be seen that Thailand and Malaysia had comparative advantages while Indonesia had comparative disadvantages in terms of RCA index and export value in IC and parts. Despite the comparative status of those mentioned countries, this chapter will investigate the competitiveness of the industry. Since it is known that those mentioned countries have comparative advantages, this chapter will investigate whether the industry in the particular countries is competitive.

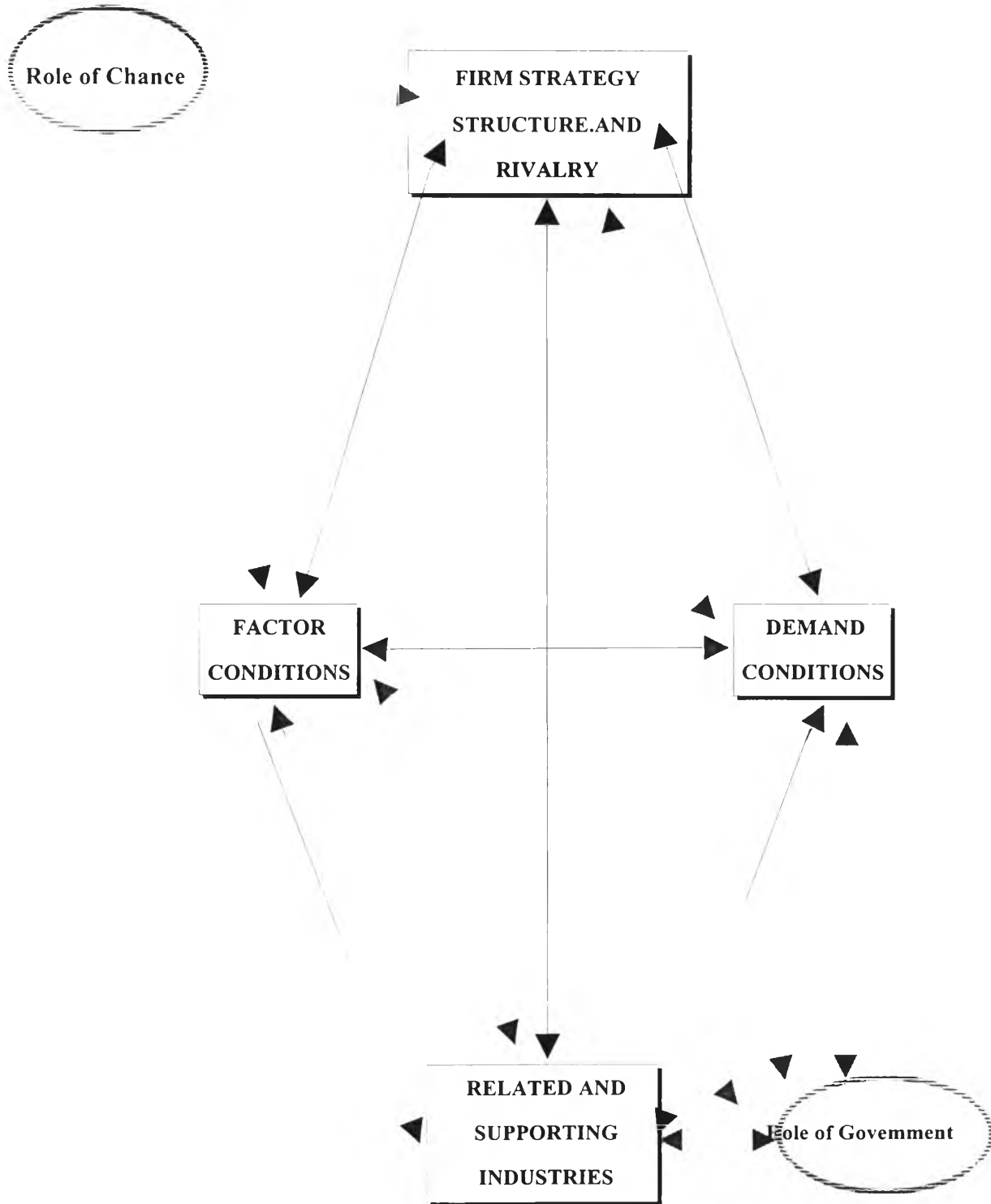
In analyzing the competitiveness in the Semiconductor Industry, Michael Porter's Diamond Model will be applied to support the analysis. The Determinant of the Nation Competitive Advantage (Porter's Diamond Model) will be presented first. Followed by the SWOT analysis for the competitive advantage of Malaysia, Indonesia, and Thailand.

4.1 The Determinants of National Competitive Advantage

The Determinant of National Competitive Advantage in the semiconductor industry is provided in the following section. Figure 4.1 shows the pattern of the Determinants of Nation Advantage and how the Determinants of National Advantage work.

Figure 4.1

The Determinants of National Competitive Advantage



I. Factor Condition or Factors of Production

Factor Condition or Factors of Production are nothing more than the inputs necessary to compete in any industry, such as labor, arable, natural resources, capital, and infrastructure. On the other hand, in order to explore the role of factors in the competitive advantage of a nation, the concept must be made more meaningful to industry competition. Factors of production are often described in very broad terms such as land, labor, and capital, which are too general to bear on competitive advantage in strategically distinct industries. Factors can be grouped into a number of categories as human resources, physical resources, knowledge resources, capital resources, and infrastructure. Thailand's, Malaysia's, and Indonesia's human resources physical resources, knowledge resources, capital resources, and infrastructure are considered in this study.

Human Resources: the quantity, skill, and cost of personnel, taking into account standard working hours.

Thailand: Human Resources

Human resource is one of the most basic important factors in the IC industry because the development and transfer of technologies is essential to the growth of this industry. In order to expand the semiconductor industry, it is necessary to train unskilled labor into semi-skilled and skilled labors. Thailand has an advantage over other industrial countries due to the fact that most of its population is unskilled to semi-skilled. Competitive laborers can be trained at low cost, on a particular task, and become skilled-laborers. The over supply of labor also results in a low cost of hiring.

The average competitive wage for semi-skilled labor is approximately US \$ 150.00-200.00, Skilled-labor such as technicians earn approximately US \$ 300.00-400.00 per person and professionals such as engineers US \$ 600.00-700.00 (Walsent Enterprise Co, Ltd.,) (the code rate currency 1 US dollar equals to Baht, Citiebank, Thailand, at 1997, December 19).

Malaysia: Human Resource

Malaysia has less advantage in human resources compared to Thailand because Malaysia has less population and wages are higher.

Thailand has a population of 60.2 M while Malaysia has only 19.9 M. From an Economic Report 1990/91, the Malaysian Ministry of Finance reported that Malaysia was facing wages pressure (wages increase) and it was becoming stronger. The Malaysian Embassy quoted the approximate wage rate for semi-skilled labor as US\$ 236.00- 350.00, for skilled labor approximately US\$ 270.00-375.00, and for professionals, US\$ 650.00-750.00(the code rate currency 1 US dollar equals to 3.79 Ringit, from Citibank Thailand, at 1997, December 19) One of the important reasons for the general increase in wages was the shortage of the skilled and semi-skilled labor.

Indonesia: Human Resource

Indonesia has the most advantages in human resources compared to both Thailand and Malaysia because Indonesia has a greater population. In 1996, Indonesia had a population of 202.9 M while Thailand had 60.2 M and Malaysia 19.9 M. Also, Indonesia has the lowest cost of labor for skilled, semi-skilled, and professional labor. The Indonesian Embassy quoted the approximate wages of semi-skilled labor as US\$ 120.00-170, and skilled labor as US\$ 200.00-300.00 , and for

professionals such as engineers, US\$ 263.00-350.00 (the code rate currency 1 Us dollar equals to 5050 Rupias, Citibank, Thailand, at 1997, December 19).

Knowledge Resources: the nation's stock of scientific, technical, and market knowledge with a bearing on goods and services. Thailand's, Malaysia's, and Indonesia's knowledge resources of the semiconductor industry will be analyzed in the following section.

Thailand: Knowledge Resources

The National Electronic and Computer Technology is under NECTEC which serves as a national electronic and computer technology provider for the whole country. It aims to enhance capability to telecommunication authorizers to be able to export competitively at international levels. In reverse, the Board of Investment (BOI) acts as stimulator for foreign investors, specifically those advanced in electronics that include the semiconductor industry and hi-technology, to invest in the Thai market, which will eventually bring technology transfer to local human resources. This would provide an overall boost to development in the electronic-technology industry and encourage it to be more dynamic. Per contra, there is an urgent need to build more solid marketing information on international databases to widen Thailand's opportunities in the world information highway.

Malaysia: Knowledge Resources

Compared to Thailand, the Malaysian Government has continued to provide better and stronger support toward the industry. Since the early 1970s, as the US semiconductor makers were relocating their labor-intensive assembly operations to the developing countries, the Malaysian government set up many organizations such as the Malaysian Industrial Development Authority (MIDA) which aims at developing

and establishing local research, transferring technologies, and improving the quality of its products. This was followed by The Penang Skills Development Center (PSDC) which is a good example of the forward thinking that has propelled the industry. PSDC is a public-private sector joint venture. It was given tax exempt status while much of its equipment is donated by the industry. It provides training courses not just to its members, but to the entire manufacturing sector. As a non-profit organization, it has emerged as one of the leading training institutes in Malaysia, becoming a model for other countries to follow. It has successfully established formalized apprenticeship programs for electronic engineering. Moreover, the country also founded the Standards and Industrial Research Institute of Malaysia (SIRIM) whose main purpose is to effectively train its labor force to use computer aided program in order to increase the expertise volume at a low cost of labor.

Indonesia: Knowledge Resource

Indonesia has a very limited knowledge resource. Considering both the development plan and the government policy, Indonesia does not emphasize the transfer of technology, the training of its people, nor the expert capabilities of this industry. Indonesia does have a Research and Technology Policy but for different purposes. The Minister of R&D believes Indonesia should become a regional aircraft manufacturer. His concentration is on the aircraft manufacture not the semiconductor industry.

Physical Resources: the abundance, quality, accessibility, and cost to the nation in supplying the given industry. Physical resources of the three mentioned countries can be defined as follows.

Thailand, Malaysia, and Indonesia

There is nothing to distinguish, in terms of physical resources, between these countries. This is because all three countries do not have their own technologies which would allow them to produce their own IC and parts. The BOI has mentioned that 99 percent or more of the raw materials are imported from other countries such as the USA, Japan, and Singapore.

Capital Resources: the amount and cost of capital available to finance an industry

Thailand, Malaysia, and Indonesia

There are no differences between the three mentioned countries because all three are production-bases for either foreign or joint-venture semiconductor companies such as companies from the USA, Japan, or Taiwan. Thus, the capital resources of the semiconductor industry will mostly come from outside of the country.

Infrastructure: the type, quality, and user cost of infrastructure available that affect competition, including the transportation system, the communication system, and so on.

Thailand: Infrastructure

The Investment Environment in Thailand: the Infrastructure Situation, the Board of Investment (BOI) has over viewed the result of Thailand's phenomenal growth, and highlighted that the Kingdom's infrastructure has been pushed to the limit. Economic growth during the Sixth Plan, 1987 to 1991, was more than double the original plan targets. Expenditures on infrastructure accordingly fell below the required levels and adjustments have taken place with a time lag. Demand for telecommunications

services, especially in Bangkok, outstrips supply. The reserve margin for electrical supply has been low at times. Added to these constraints is Bangkok's tariff congestion.

The government, well aware of the constraints on economic growth posed by the infrastructure bottlenecks, responded quickly with an increase in investment outlays for infrastructure during the Sixth Plan period of more than 30 percent. In the Seventh Plan period (1992-1996), expenditures on infrastructure are expected to increase by almost 150 percent over the levels in the Sixth Plan. Particular emphasis has been placed on telecommunications and transportation.

Thai infrastructure, transportation, and communication have developed steadily in the past. Thailand has four international airports located in Bangkok, Chaing mai, HatYai, and Phuket beside forty-five train destinations from of the city, Bangkok and even more outside of the city. Moreover, Thailand has forty-six seaports in and outside of the city. It has expanded its industrial estate projects to support and develop the Thai IC industry.

Malaysia: Infrastructure

One of the reasons for Malaysia's success in the past three decades is its steady support of infrastructure. The Malaysian Plan has devoted about 20 percent of its expenditure toward the build up of the country's infrastructure.

When, with the 1968 Investment Incentives Act (IIA), the government had began to court foreign investment, an efficient infrastructure became one of the most powerful incentive packages. The government built up roads for the transportation of equipment, materials and goods, and it created the Free Trade Zone (FTZs).

Indonesia: Infrastructure

The article in Bank Indonesia mentioned that, as economic activity in Indonesia has grown in complexity and sophistication, so has the infrastructure required to support it.

The sheer size and remoteness of Indonesia's territory has posed enormous challenges to nation-building and economic development. The task of effectively managing and governing a country as sprawling as Indonesia has required massive investments in advanced systems of transportation and communications in order to bring people and resources together.

Indonesia's economic planners also realize that adequate infrastructure is an absolute precondition for sustained economic development. Hence, the government has worked from the beginning to provide effective communications, transportation and all support services necessary for a sound business environment.

The upgrading of telecommunications and transportation systems is given high priority in Indonesia's annual spending allocations.

From Indonesia to 1991. (1987) the Economist Intelligence Unit mentioned the inclusion of major funding allocations toward improving highway, rail and air transportation as well as all water-bound traffic. Railways serve as a vital link in freight and passenger transportation on the islands of Java and Sumatra. Current programs are geared toward expanding and improving existing services. Garuda Indonesia, the nation's flagship airline, has undertaken a new strategic push into expanded international operations and improved customer services.

Out of Indonesia's 90 seaports, three - Jakarta, Surabaya and Medan - offer the most modern, large-scale container-handling facilities; another 30 have limited container-handling capacity. To accommodate the country's move into worldwide export markets, major upgrading projects are currently under way.

II Demand Condition

The second broad determinant of national competitive advantage in an industry is home demand conditions for the industry's product or service. Home demand condition had some influence in nearly every industry. The broad attributes of home demand are significant: the composition or nature of buyer needs of home demand, and the size and pattern of growth of home demand are transmitted to foreign markets.

Home Demand Composition

The most important influence of home demand on competitive advantage is through the mix and character of home buyer needs. It is important to analyze the home demand of these three countries in the semiconductor industry as followed:

Thailand, Malaysia, and Indonesia

These three countries do not have domestic demand for the IC industry because they do not produce high-technology products such as computers, mobile phones, etc. Most of the IC industries come from foreign companies, mostly transnational corporations, who want to transfer their operations to countries with cheaper labor in order to reduce some of their costs. It can be said that the semiconductor industry in these countries was not initiated to respond to local demands, instead the motivation for this relocation was from the ample and low labor cost that existed.

Demand Size or Pattern of Growth

Provided that its composition is sophisticated and anticipates international and not just domestic needs, the size and pattern of growth of home demand can reinforce national advantages in the semiconductor industry.

Thailand, Malaysia, and Indonesia

The semiconductor industries in Thailand, Malaysia, and Indonesia are all export-oriented industries. Their largest trading partners are the USA, Singapore, Japan, and Hong Kong. As mentioned in the previous chapter, trends in demand for IC and parts are rising and the export volumes to those countries are also increasing because the Malaysian IC industry is more competitive than that of other countries in Asia such as Thailand and Indonesia due to the better support of Malaysian government policies and framework which will be analyzed later in this chapter. Therefore Malaysia has the largest market supporting its IC industry followed by Thailand and Indonesia, respectively.

III Related and Supporting Industry

The third broad determinant of national advantage in the semiconductor industry is the presence in the nation of supplier industries or related industries that are internationally competitive.

Thailand, Malaysia, and Indonesia

As mentioned previously all three countries are IC assemblers not real product producers. The supporting industries are small in number. The major supporting industry is found in small and medium entrepreneurs. These segments carry on partial production processes instead of importing whole products.

IV Firm Strategy, Structure and Rivalry

The fourth broad determinant of a nation's competitive advantage in the semiconductor industry is the context in which firms are created, organized and managed as well as the nature of domestic rivalry.

Thailand, Malaysia, and Indonesia

Most of the investment in Thailand's, Malaysia's, and Indonesia's semiconductor industries are transnational corporations from the United States and Japan. These countries transfer their production-bases to developing countries due to the lower cost of labor and raw materials. The firms strategy, growth, and structure are dependent upon their head quarter companies which are located in those mentioned countries. Local companies will produce IC and parts according to guidelines from parent companies. It can be said that the semiconductor industry does not have its own marketing, it relies mainly on the parent company's policy and strategy. As a result, Thailand's, Malaysia's, and Indonesia's semiconductor industries are not always stable since parent companies are capable of changing or moving their production bases if they find better benefits and better returns in other countries. Factors which may alter their production bases are cheaper raw materials, better governmental support policies, cheaper cost of labor, better infrastructure. Whether a country's comparative advantage will last or not depend upon those mentioned factors.

Therefore, in order to protect Thailand's, Malaysia's, and Indonesia's present comparative advantages, these countries they are required to have specific strategies and policies in order to support and emphasize the comparative advantage of the country. Moreover, the governments of those mentioned should directly support IC research and development sectors.

Two others factors besides the four Determinants of National Advantage: Role of Chance and Role of Government

Role of Chance

The determinants of national advantage shape the environment for competing in particular industries including the semiconductor industry. Chance events are occurrences that have little to do with circumstances in a nation and are often largely outside the power of industries. Exchange Rate is counted as the role of chance that effects the movement of the semiconductor industry.

Exchange Rate

1) World Exchange Rate

The major change in the world exchange rate, especially the strengthening in 1993 of the Yen and Taiwanese dollars raised the cost of labor and cost of semiconductor assembly dramatically. Therefore, the semiconductor production-base in Japan and Taiwan shifted to South East Asia, Malaysia, Indonesia, and Thailand were among the countries the industry shifted to. These countries have lower labor costs and larger labor forces. As a result, Thailand's, Malaysia's, and Indonesia's semiconductor industries have become one of their major exporters.

The demand for the semiconductor industry in the USA, Japan, and some of the EU countries grew dramatically. Semiconductor industry investors started to expand the industry, but they were unable to expand within their countries due to the high cost of labor. As a consequence, they have consistently shifted their production-bases to developing countries.

2) The floating of the Thai Baht

In the middle of 1997, Thailand floated the Thai baht, resulting in a weakening of the Thai baht against the US. dollar by approximately 40 to 50 percent. Or it can be said that one US dollar is now worth 100 percent more in Thai baht.

IC and parts are export-oriented products, and the BOI has mentioned that the raw materials of IC and parts in Thailand are 99 percent fully imported from outside of the country. Or it can be said that there is only one percent of value added and this industry is not affected by the floatation of the Thai baht. This industry is fully offset.

Role of Government

The government sector plays an important role in the investment of the semiconductor industry. Since the majority of semiconductor industries are the foreign-owned or joint ventures, the government has to try to set up the most attractive policies and framework in order to motivate investment and capital inflow to the economy. The government's real role in national competitive advantage is in influencing the four determinants.

A government can influence each of the four determinants either positively or negatively, as should be evident from some of the following: (a) government regulations that influence buyer needs of Thailand, Malaysia, and Indonesia; (b) government policy influencing firm strategy, structure, and rivalry of Thailand, Malaysia, and Indonesia; and (c) government support of the industry's investment in the semiconductor industries of leading semiconductor countries, such as Korea and Taiwan.

(A) Government Regulations That Influence Buyer Need

Thailand

1) *BOI Investment Promotion Act B.E. 2520*

The Investment Promotion Act B.E. 2520 Amended by Investment Act (NO.2) B.E. 2534, the Office of the Board of Investment (BOI) has the most attractive policies consisting of many promotional privileges applicable to the semiconductor industry. The following are the highlights of these privileges:

- a. The minimum capital requirement has been reduced from Bath 2 million to Bath 1 million.
- b. Electronic goods and electronic components including IC assembling and testing are part of the promotion.
- c. Since 1993, the BOI has encouraged more investment in provincial areas by granting privileges to new and relocated factories in Zone 2 and Zone 3.

2) *BOI's Unit of Industrial Linkage Development (BUILD)*

The Investment Opportunities Study: Electronic Component Production and Sourcing by the Office of the Board of Investment, the Office of the Prim Minister, Royal Thai Government mentions the BUILD program. The BUILD program was launched with the main purpose of promoting and upgrading technology-related industries. It aims at building up capability and transferring technology to three major sectors namely the automotive industry, the metal works industry, and the electronics industry which includes the IC industry as part of its sector.

3) *Industrial Master Plan I (1997-2001)*

The Industrial Master Plan I (1997-2001) from the Ministry of Industry, Industrial Master Plan I was issued by the Ministry of Industry on October 1996. The Ministry of Industry was concerned that the Thai Industry play the most important

role in the economy. In particular, foreign investments could influence the increase in capital inflow and solve trading problems (trade deficit).

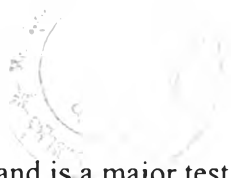
The Industrial Master Plan Policy was introduced to try to shape up the structure of the country's industry, increase the quality of production, support industry in order to create a linkage between small, medium, and large industries, and to prevent market dumping.

The Industrial Master Plan Policy was to support the export industry by creating a government budget for Research and Development. Even though the Master Plan is supported the export industry, there was no real support for the semiconductor industry.

Finally, the most important aspect of the Master Plans was the moving of production bases in the city to outside of the city, so that because the particular industry could reduce its expenses on labor cost, transportation costs, and pollution of the environment.

Malaysia

The Lesson of East Asia: Malaysia's Growth, Equity and Structural Transformation by Ismail Muhd Salleh mentioned that the electronics industry accounted for the largest share of Malaysia's manufacturing output, value added, exports and employment. (Ismail, 1993, p. 13) Also exports increased rapidly; by 1987 electronics exports were Malaysia's top revenue earner, contributing M\$6.9 billion to the national accounts. Most of this was due to the well established MNC semiconductor firms. Malaysia now has one of the largest installed semiconductor



assembly capacities in the world and is a major testing location for semiconductor devices.

Malaysia's government has various kinds of attractive packages for the transnational semiconductor industry as follows:

1) The Malaysia Industrial Development Authority (MIDA) coordinates specific investment missions to attract Foreign Direct Investment Company (FDIC) attention.

2) The Export Processing Zone or Free Trade Zones (FTZs), the EPZ Act has been designed to attract multinational companies (MNCs) to produce for the world market by providing the following privileges:

- a. Duty-free import of raw material and capital equipment.
- b. Streamlined Customs formalities
- c. Infrastructure
- d. Company income tax incentives

3) The Investment Incentives Act (IIA) shifted the basic structure away from import substitution. The incentives, administered by the Action Committee on Tariff and Industrial Development (ACTID) extended measures such as accelerated depreciation, reinvestment allowances, and investment credits for *non-pioneer* industries. Manufactured exports also received an *ad valorem* incentive.

4) The Malaysian Trade and Distribution Center was set up to provide a market base to sell and distribute Malaysian products direct to buyers in the European market.

Indonesia

The Transnational Corporations and Backward Linkages in Asian Electronics Industries. (1995) mentioned the Rationalization Policy in Indonesia. This policy

was based on the Ministry of Industry instruction No. 461/M/3/1983 which aimed to improve government assistance in the development of the electronic industry.

It seems that the role of the government of Indonesia in influencing the buyers' needs has not yet touched a very important generic dimension. Even though the Industry Master Plan of Indonesia is included in the Fifth-Five Years Plan of Indonesia, it is promoted separately, unlike Malaysia and Thailand whose governments are actively supporting and promoting the industry.

*(B) Government Policy Also Influences Firm Strategy, Structure, and Rivalry
Thailand*

1) Tax and Tariffs

The Investment Opportunities Study Electronic Component Production and Sourcing, (1995) by the Office of the Board of Investment mentioned that manufacturers complained about the Thailand import tax structure because the import taxes for some raw materials were higher than import taxes on the components themselves. Due to the international trade agreements and domestic changes in the industry, the import tax structure was later on revised.

Most electronic components used to be subject to an import tax of around 35 percent, except for components used to manufacture computers and television, which were subject to a tax of 1 percent and 10 percent, for integrated circuits and parts, respectively. Importers had to submit a formula detailing how many components would be used in each assembled set. However, since March 29, 1994, the import tax on many components was reduced to 1 percent, except for components that were protected because they were produced domestically.

2) *The Eighth National Economic and Social Development Plan (1997-2001)*

The Summary of The Eighth National Economic and Social Development Plan (1997-2001) by the National Economic and Social Development Board (NESDB) Office of the Prime Minister Bangkok, Thailand, focuses on the stability and sustainability of economic growth in order to empower the people to play a greater role in the development process and receive a fair share of the benefits of growth. Also the eighth plan targets on upgrading the skills and basic knowledge of industrial workers where the semiconductor industry requires those skills and knowledge for its workers.

From the Semiconductor investors, point of view, the Eighth Plan, which targets the social and human skill of industrial workers, would reduce the wages cost of the industry. This can be interpreted as enabling the industry to hire efficient workers as well as enabling it to benefit from an increase in productivity from those upgraded workers.

3) The Revision of the Eighth National Economic and Social Plan, from the Conference held at the Central Plaza hotel on Wednesday 17 December 1997 by the National Economic and Social Development Board, Office of the Prime Minister Bangkok, Thailand.

The Board of National Economic and Social Development has revised the Eighth National Economic and Social Plan in an endeavor to find a solution to the current turmoil situation of the Thai economy.

The Revised of the Eighth National Economic and Social Development Plan will target the stability of the Thai economy and adjust the economic structure for both Macro and Micro Economy.

Adjustments of the Eighth Plan will concentrate on managing the inflation rate and balance of payments, on structuring Thai investment from both Government and Private sectors. Also the Revised the Eighth Plan will give priority to the export industrial sectors such electronics, jewelry, and textile industries. The Revised of the Eighth Plan will increase the ability of production structures of the high tech industries, especially for exporting.

Malaysia

1) The Seventh Malaysia Plan 1996-2000

The Seventh Malaysian Plan 1996-2000 (1996, May) by the Economic Planning Unit, the Prime Minister's Department. The Seventh Malaysian Plan aims to extend the industrialization strategies of the Sixth Malaysian Plan, incorporating the principal recommendations of the Industrial Master Plan (IMP) which emphasizes export-led growth through industry diversification, provision of a liberal investment climate and the promotion of intra-industry linkage.

To sustain this high growth, policies and strategies will be formulated in the Seventh Malaysian Plan to accelerate the diversification of industries and develop a more resilient industrial base towards the achievement of Vision 2020. In meeting the challenge arising from increased globalization and continued tightness in the labor market, priority will continue to be accorded to improving the competitiveness of the industries through increases in productivity, research and development as well as the provision of adequate supporting infrastructure.

The Seventh Malaysian Plan is aimed at motivating the investment of the industrial sector, which includes the semiconductor industry. The industry will gain from the Seventh Malaysia Plan the benefit of an increase in productivity as well as Research and Development that will lead the Malaysian Semiconductor Industry to be even more competitive than that of other ASEAN countries.

2) Tax and Tariffs

The Malaysian Economic Challenge in The 1990s: transformation For Growth, by Professor Fong Chan Onn, mentioned that the Malaysian tariff structure had been revised and tariff rates for a wide range of products had been reduced. Under the time-frame for implementation, the target tariff of zero percent to five percent in fast-track programme was expected to be achieved within five to seven years, while the normal track programme would be realized within seven to ten years. The government held various dialogues with the private sector to reaffirm its commitment to further liberalize tariff items.

Indonesia

(1) The Sixth Five Year Development Plan (1994/95-1998/99) by the Republic of Indonesia, aims to develop all kinds of industries. There appears to be no specific for supporting the IC industry.

According to the Sixth Five Year Development Plan (1994/1995-1998/1999)

(a) Industrial Objectives

- *To achieve a sufficient high economic growth rate development
- *To improve industrial competitiveness
- *To produce high quality products capable of penetrational markets
- *To promote the growth of small and medium sized industries
- *To broaden the regional distribution of the industry

b. Industrial Policies

- * Development of broad-spectrum industries oriented towards the international markets, natural resource-intensive industries with rising technological level, labor-intensive industries becoming more skill-intensive over time, and technology-intensive industries.

- * Acceleration of technological mastery in order to strengthen the base for producing superior quality industrial products.

- * Reliance on the market mechanism with private sector in the lead.

- * Emphasis on growth with equitable income distribution by giving priority to those industries capable of fast growth and encouraging the participation of the broader community.

(c) Industrial Development Priorities

- * Agroindustry, developed through network of agroindustrial activities and agrobusinesses

- * Mineral, capital goods and electronic industries, including industries which produce components and engage in sub-assembly.

- * Export oriented industries which have become increasingly skill-intensive and diversified over time, including textiles and textile products.

(C) Government Policy of Two Leading Countries of the Semiconductor Industry in Asia.

From looking at countries successfully in the semiconductor industry around Asia such as Korea and Taiwan, it can be seen that both countries have very good government policies which are an example for the countries in Southeast Asia to follow.

1) Government Policy of Korea: An Industrial Master Plan

Data Quest (1996, May) mentions an Industrial Master Plan The Korean Semiconductor Industry: A Product of Government. By the mid 1970s the relationship between the Korean government and semiconductor producers had become a seminal example of how competitive advantage can be created by government-industry cooperation. Before that time, Korea had no comparative advantage in semiconductors. Capital was scarce, semiconductor design capabilities were non-existent, and markets were overseas. From Korea Exchange Bank, Monthly Review, 1992, in 1982, the government's Semiconductor Industry Promotional Plan called for the implementation of a wide variety of measures designed to support an indigenous semiconductor capability, including subsidized capital and tax benefits for semiconductor investment, the creation of an industrial estate for semiconductor and computer production, and increased funding for government research projects devoted to semiconductors.

From Cheabol, Korea's new Industrial Might, for 1990s, three of the largest Korean industrial grouping, or chaebol, had made semiconductors their top industrial priority, and the government recently announced an ambitious high-tech development plan that puts strong emphasis on government support for the Korean semiconductors industry.

The growth of the semiconductor industry in Korea could also occur in Thailand, but the difference is that the Korean Government has been more supportive and has provided subsidies toward this industry. Specifically, the Government planned to spend \$1.83 billion over the 1990-1996 period on the Korean semiconductor industry, and is strengthening its other promotional measures such as tax benefits and regulations governing investment to indicate an additional \$3.36 billion in private capital to semiconductor research and promotion. The government is also using tariff

protection and government procurement practices to support Korean producers. Government goals include the development of 16m and 64m DRAMs, diversification into custom designs, and a substantial increase of Korean capabilities in semiconductor materials and equipment.

2) Taiwan Government Policy Toward the Industry

In the 1970s Taiwan's semiconductor industry consisted solely of the off shore assembly and test operations of foreign semiconductor manufacturers and one small local firm. As truly, Taiwan had been a developing country, and its technologies were not well developed. Taiwan did not even have large industrial groups to which the task of developing a semiconductor industry could be assigned. "Mostly the country's economy was dominated by small and medium-sized firms with limited financial and technological resources." (Sutter, p.38.)

Taiwan's leadership mapped out an ambitious strategy to shift the nation's economy toward the high technology industries while simultaneously fostering a greater opening for Taiwan's economy to the world. In this process, promotion of the semiconductor industry became an increasingly central aspect of Taiwan's long run industrial strategy.

Moreover the Taiwanese government took a number of steps to encourage local firms to invest in semiconductors. First of all, tax and financial incentives were offered under the Statute for the Encouragement of Investment, which made such benefits available to specified sectors under the policy of "Current Promotional Effort". Second, the government established the Hsinchu Science Park, providing incentive for high tech firms to relocate in the park.

The policy “Current Promotional Effort” dictates that Taiwan’s development strategy be based on the promotion of specific industrial sectors. Promotion of the semiconductor industry is now a key element in Taiwan’s strategy to become a high technology based economy by the year 2000. The government has designated six high technology sectors which will be fostered through a variety of policy measures: information systems, factory automation, telecommunications, aviation components, advanced materials, and consumer electronics. Because semiconductors are the basic building blocks of these five sectors, the government has placed strong emphasis on enhancing national capacities in microelectronics. The current 15-year plan for the period 1986-2000 is the time frame for development. The semiconductor industry will continue to enjoy a considerable degree of government support from several key sources as follows:

- Taiwan Bank of communications*, to provide financial support for the industry
- Industrial Development Bureau*, to arrange preferential financing from government institutions for R&D projects, investment and industrial restructuring

The Taiwanese science park “Hsinchu Science Park” continues to make a large number of special benefits available to the firms which have located in the park, which is now full; government officials are exploring sites for a second park. The park is entirely devoted to high-tech R&D activities; computers, telecommunications and semiconductor companies represent over three quarters of the firms participating in the Park, with semiconductors the fastest growing segment. Benefits of locating plant in the park also include low interest, tax exemption, tariffs free for machinery, funds available for investment, purchased technology to transfer to start-up companies and set up submicrometer laboratories in the park to help upgrade production technology. Moreover, Taiwan has set up several organizations to support the

semiconductor industry such as the Industrial Technology Research Institute (ITRI) and the Electronics Research and Service Organization (ERSO)

Today, Taiwan plays a significant role in the semiconductor industry in the world market. Though not yet a leader, satisfactory improvement has taken place. Competitiveness is also being enhanced through Semiconductor Industries. Taiwan started developing its industries at the same time as Korea and both have best results in returns such as advanced technology etc... By the end of the 1980s, Taiwan had not only successfully established a semiconductor industry, but was experiencing a sudden and dramatic growth in manufacturing capacity. "In 1986, Acer entered into a \$250 million joint venture with Texas Instrument, IT Acer, to manufacture DRAMs in Taiwan" Central News Agency, (1986)

4.2 SWOT Analysis of the Semiconductor Industry

SWOT is an acronym for the internal Strengths and Weaknesses of an industry and the environmental Opportunities and Threats facing the particular industry. The SWOT analysis is a systematic identification of these factors and of the strategy that represents the match between them. It is based on the assumption that an effective strategy maximizes an industry's strengths and opportunities and minimizes its weakness and threats.

In this section, the SWOT analysis will be used to analyze both the external and internal environment of the Semiconductor Industry. The internal analysis will be presented first according to the Michael E. Porter Analysis the "Diamond Model" as follows: factor endowment, demand condition, related supporting industry and firms, strategy, structure, and rivalry. The external environment analysis will be presented second by using the opportunity and threat analysis according to the economic, social, and political situation.

In the SWOT section, we use "A Strategic Factors Analysis Summary" Strategic Management, J. David Hunger and Thomas L. Wheelen, in helping to assign the weighting by adjusting SWOT, strength (S), weakness (W), opportunity (O), or threat (T) individually. A weighting of 0-1.00 is assigned according to the importance of that factor to the success of the country in doing that particular business. The second entry in the Rating Column is the rating of how the industry's management is responds to each factor from the External Factors Analysis Summary (EFAS). Changes in environment that results in high opportunities will be rated as 5 to 4 and less opportunities will be rated as 2 to 1; and 3 being interpreted as medium in EFAS.

In terms of using the Internal Factors Analysis Summary (IFAS) to compare strengths and weakness tables, for the third column, multiply the weight for each factor by its rating to obtain the entries for the Weighted Score. The fourth column, analyses the average Weighted Score required in this section. If the Weight Score is more than 3.3 this means the competitiveness of a particular country in a particular industry exists. The Weight Score of 1.67-3.3 will be considered as average. The Weighted Score of 0 to 1.67 will be considered as a competitive disadvantage for the particular countries in the particular industry.

Figure 4.2

Factors Condition, SWOT the Analysis of the Strengths of the Semiconductor Industry

Strength		Thailand		Malaysia		Indonesia		Comments
Factor Condition	Weight	Rate	W/S	Rate	W/S	Rate	W/S	
Human Resources	0.3	4	1.2	3.5	1.05	4.5	1.35	Thailand and Indonesia are more competitive than Malaysia in terms of human resources due to the lower cost of labor and the larger population in labor force. Also the skilled laborers in Malaysia are more competitive than Thailand and Indonesia, especially in English Literacy and computer skills followed by Thailand and Indonesia.
Knowledge Resource	0.4	2.5	1	4.5	1.8	2	0.8	Thailand and Malaysia have stronger support for knowledge resource than Indonesia. Malaysia has SIRIM, PSDC, and MIDA. Thailand has NECT and BOI. Indonesia has R&D and the Ministry of Industry and Trade.
Physical Resource	0.3	0	0	0	0	0	0	The Author rated the Physical resources in the Weakness side in all three countries
Total	1		2.2		2.85		2.15	Malaysia has the highest strength in factor endowment compared to Thailand and Indonesia.

SWOT analysis is measured by 5 scale point. For strength, 1 means least strength, 5 means most strength.

References: Indonesian Embassy in Thailand, December 1, 1997

Malaysian Embassy in Thailand, December 9, 1997

Indonesia 1997. (1998). Economic Outlook. p.42-43

Science and Technology Development program. (1992). The Thailand Development Research Institute. p. 41-p44

Figure 4.3

Factors Condition, the SWOT the Analysis of the Weaknesses of the Semiconductor Industry

Weaknesses		Thailand		Malaysia		Indonesia		Comments
Factor Condition	Weight	Rate	W/S	Rate	W/S	Rate	W/S	
Human Resources	0.3	0	0	0	0	0	0	Human Resource of the semiconductor industry was put into the Strength side of all three countries.
Knowledge Resource	0.4	0	0	0	0	0	0	Also, the Knowledge Resources of the semiconductor industry was put into the Strength side of three countries.
Physical Resource	0.3	4.5	1.35	4	1.2	4.5	1.35	There are weaknesses of Physical Resource among these three countries because most of the raw materials are imported due to limited technology. Thailand and Indonesia especially imported most of the raw materials used in the industry.
Total	1		1.35		1.2		1.35	Thailand and Indonesia have the closest weakness score because both countries have faced the similar problems in terms of Factor Endowment. Malaysia has the less weakness in term of Factor Endowment because Malaysia has stronger Knowledge Resources in supporting the industry.

SWOT analysis is measure by 5 scale point. For weaknesses, 1 means least weakness, 5 means most weakness.

References: Indonesian Embassy in Thailand, December 1, 1997

Malaysian Embassy in Thailand, December 9, 1997

Indonesia 1997. (1998). Economic Out Look. p.42-43

Science and Technology Development program. (1992). The Thailand Development Reserch Institute. p 41-p44

Figure 4.4

Demand Condition, in the SWOT Analysis of Strengths of the Semiconductor Industry

Strengths		Thailand		Malaysia		Indonesia		Comments
Demand Condition	Weight	Rate	W/S	Rate	W/S	Rate	W/S	
Demand Size or Pattern of Growth	0.7	3.5	2.45	4.5	3.15	2.5	1.75	Thailand, Malaysia, and Indonesia enjoyed the pattern of growth in this industry. The export value of IC and Parts in Malaysia, Thailand, and Indonesia are 7,498.5, 1,007.8, and 37.6 (in million US dollars) 1991 respectively
Home Demand Composition	0.3	0	0	0	0	0	0	There is no home demand in this industry among the three countries: Malaysia, Indonesia and Thailand.
Total	1		2.45		3.15		1.75	

Reference: Atipol Bhanich, S. (Ed.) (1995). Transnational Corporation and backward Linkages in Asian Electronics Industries (Monograph No.5). New York: United Nation

Figure 4.5

Demand Condition, in the SWOT Analysis of Weaknesses of the Semiconductor Industry

Weaknesses		Thailand		Malaysia		Indonesia		Comments
Demand Condition	Weight	Rate	W/S	Rate	W/S	Rate	W/S	
Demand Size of	0.7	0	0	0	0	0	0	The Demand Size or Pattern Growth have been put into the Strength side because the Demand Size or Pattern Growth is not a Weakness.
Home Demand Composition	0.3	4.5	1.35	4.5	1.35	4.5	1.35	These three countries do not have domestic demand because these industries are export oriented. Most of the orders are followed by the mother company.
Total	1		1.35		1.35		1.35	

Reference: Atipol Bhanich, S. (Ed.) (1995). Transnational Corporation and backward Linkages in Asian Electronics Industries (Monograph No.5). New York: United Nation

Figure 4.6

Related or Supporting Industry in the SWOT Analysis of Weaknesses of the Semiconductor Industry

Weaknesses		Thailand		Malaysia		Indonesia		Comments
Industry	Weight	Rate	W/S	Rate	W/S	Rate	W/S	
Related or Supporting Industry	1	3	3	2.5	2.5	4	4	Related or Supporting Industry among those mentioned countries are rarely found in the particular industry, especially in Thailand and Indonesia because Thailand and Indonesia have high imports of around 99% to 100% respectively. Malaysia has high imports also but less than both mentioned countries. That's because Malaysia has Small and Medium enterprises for the support of new product development. (United Nation,1995 p. 180)
Total	1		3		2.5		4	

References: Atipol Bhanich, S. (Ed.) (1995). Transnational Corporation and backward Linkages in Asian Electronics Industries (Monograph No.5). New York: United Nation
 Transnational Corporation in the International Semicondustor Industry . (1986) . New York, United Nations

Figure 4.7

Firm Strategy, Structure & Rivalry in the SWOT Analysis of Weaknesses of the Semiconductor Industry

Weaknesses		Thailand		Malaysia		Indonesia		Comments
Industry	Weight	Rate	W/S	Rate	W/S	Rate	W/S	
Firm Strategy Structure & Rivalry	1	4.5	4.5	4.5	4.5	4.5	4.5	As most of the companies in this industry are transnational corporations, Firm Strategy, Structure and Rivalry in the semiconductor industry are dependent on the head office located outside those countries
Total	1		4.5		4.5		4.5	

References: Atipol Bhanich, S. (Ed.) (1995). Transnational Corporation and backward Linkages in Asian Electronics Industries (Monograph No.5). New York: United Nations

Transnational Corporation in the International Semicondustor Industry . (1986) . New York, United Nation

Table 4.1

The Summary of Internal Analysis Toward Investment in the
Semiconductor industry

Factors	Thailand			Malaysia		Indonesia	
	W	R	W/S	R	W/S	R	W/S
Factor Condition	0.25	3.5	0.88	4	1.00	3	0.75
Demand Condition	0.25	4	1.00	5	1.25	3	0.75
Related or Supporting Industry	0.25	2	0.50	2.5	0.63	1	0.25
Structure of Firms and Rivalry	0.25	1	0.25	1	0.25	1	0.25
Total	1		2.63		3.13		2.00

W/S is stand for Weighted Score of three countries.

From table 4.1, the Summary of the Internal Analysis Toward the Investment in Semiconductor Industry, each factors has been given the weight of 0.25. Since the four factors of the determinant of a nation have the same of weight value, the determination of rating is the most significant in this study. The rating in this study is evaluated from the SWOT analysis in the earlier part of this chapter. Finally, the Weight Score is measured by the weights and rates of the four factors in the determinant of a nation.

From the analysis of strength and weaknesses in the internal analysis, Thailand showed a score of 2.63, which is considered to be on the strong side. The strong side indicates that Thailand's internal factors of the semiconductor industry are in the developing stages of the internal factors in this industry. Thailand needs better

support in order to develop attractive internal factors for foreign investment in its semiconductor industry.

In contrast, Malaysia showed a score of 3.13 points which is considered to be a high score. The highest score indicates that Malaysia has well developed competitiveness in internal factors of the semiconductor industry compared to Thailand.

Finally, Indonesia showed a score of 2 points on the 5 point scale which is considered to be on the weak side. The weak score indicates that Indonesia is non competitive compared to both Thailand and Malaysia. Indonesia's internal factors of the semiconductor industry is in the undeveloped stage, Indonesia also needs strong support in the basic factors of the semiconductor industry in order to make the investment in this industry attractive.

Figure 4.8

SWOT Analysis of the Opportunities in the Economy for the Semiconductor Industry

Opportunities	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
GNP per capita	0.143	2.00	0.29	3.50	0.50	1.80	0.26	Malaysia's GNP per capita is the highest, about 4610 US dollars, followed by Thailand's 2754 US dollars, and Indonesia's 910 US dollars. There will be, in result, higher investment in that particular country. The higher GNP indicates that the country is at a better economic level and can motivate more investment in high technology industries
Balance of Payment	0.143	-	-	2.50	0.36	-	-	Even though the Balance of Payments in Malaysia is currently facing the current account deficit, Malaysia's current account deficit is not as high as both Thailand's and Indonesia's. Moreover, the Malaysian Balance of Payment Deficit has a tendency to improve. The higher Balance of Payment Deficit, the more negative impact toward FDI.
Interest Rates	0.143	2.70	0.39	3.50	0.50	-	-	Malaysia's interest rate is lower than Thailand. Thus, it does have a better opportunity. The lower interest rate leads to lower local and operational cost in particular countries. Thai interest is higher than Malaysian but lower than Indonesian. Thailand's interest rate is 10.33%, Malaysia is about 7.08%, and Indonesia's is 17.26%. (IFS, 1997)
Inflation Rates	0.143	-	-	3.00	0.43	-	-	Malaysia has an opportunity in terms of inflation because the inflation rate in Malaysia is 3 percent compared to 6 percent for Thailand and 6.4 percent for Indonesia. (IFS, 1997)

Figure 4.8(Continued)

SWOT Analysis of the Opportunities in the Economy for the Semiconductor Industry

Opportunities	Economy	Thailand		Malaysia		Indonesia		Comments
		Weight	Rate	W/S	Rate	W/S	Rate	
Exchange Rate	0.143	4.50	0.64	4.00	0.57	4.50	0.64	Since the financial crisis in Asia, all three countries have floated their currencies. As a result of that, the currencies of these countries weakened against the US dollar and the UK Pound. The weakening exchange rate market it more attractive for multinationals to invest in these countries because all the local cost will be cheaper.
Unemployment Rate	0.143	3.80	0.54	-	-	4.00	0.57	Unemployment rates are high in Thailand and Indonesia. The high unemployment rate represents the oversupply of labor in that particular country. As a result, the cost of labor will be competitively higher as the unemployment rate decreases.
Government Investment	0.143	2.8	0.4004	2	0.286	3	0.429	These three countries have high value government policies in terms of Government Investment. Indonesia has the highest value in terms of Government Investment in the year 1996, about US\$ 13,405,611,747, followed by Thailand at US\$ 9,656,314,127 and Malaysia at US\$ 1,649,509,121.
Total	1.00		2.26		2.65		1.90	Overall, the economic determinant of Malaysia is more attractive than others for the semiconductor industry. Malaysia provides a better opportunity for the industry.

SWOT analysis is measured by 5 scale point. For opportunities, 1 means least opportunities, 5 means most opportunities.

Source: International Financial Statistic, November 1997.

Figure 4.9

SWOT Analysis of the Threats in the Economy for the Semiconductor Industry

Threats	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
GNP per capita	0.143	-	-	-	-	-	-	On the Economy GNP per capita has been put on the opportunities side because GNP per capita within the three countries is not a Threats in the semiconductor industry.
Balance of Payment	0.143	3.00	0.43	-	-	2.80	0.40	Balance of Payment represent the economic stability of each country. The Balance of Payments for both Thailand and Indonesia is quite low, thus it has a negative effect toward investment in the Semiconductor Industry.
Interest Rates	0.143	-	-	-	-	3.50	0.50	Interest Rate in Indonesia is quit high 19 percent compared to Thailand's 14.75 percent and Malaysia's 10 percent. High interest rate will not attract capital inflow in terms of investment, on the other hand, high interest rates will attract capital inflow in terms of savings.
Inflation Rates	0.143	3.00	0.43	-	-	3.20	0.46	High Inflation Rate means lower earnings in terms of real return in investment. Thailand's inflation rate is 6 percent while Indonesia's inflation rate is 6.4 percent and Malaysia is 4 percent. Indonesia has the highest inflation rate compared to Thailand and Malaysia.

Figure 4.9 (Continued)

SWOT Analysis of the Threats in the Economy for the Semiconductor Industry

Threats	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
Unemployment Rate	0.143	-	-	3.50	0.50	-	-	The Unemployment Rate of Malaysia is the lowest (less than one percent) compared to Thailand and Indonesia due to the shortage of labor supply in Malaysia. As result, Malaysia's wages are higher than both Thailand and Indonesia. This result will be a threat to Malaysia because FDIs who look for the cheaper cost of labor.
Government Investment	0.143	0	-	0	-	0	0.00	Government Investment has shown in the opportunity side.
Exchange Rate	0.143							The exchange rate has shown in the opportunity side
Total	1.00		0.86		0.50		1.36	Indonesia has more threat in terms of the economic determinants followed by Thailand and Malaysia.

SWOT analysis is measure by 5 scale point. For threats, 1 means least threats, 5 means most threats.

Source: International Financial Statistic, November 1997.

Figure 4.10

SWOT Analysis of the Social Opportunities for the Semiconductor Industry

Opportunities Social	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
Lifestyle Changes	0.16	3	0.48	3.2	0.512	2.8	0.448	Today is the age of world information technology, which applies for Thailand, Indonesia, and Malaysia. The peoples lifestyles have become much more comfortable because of the advances of modern technology.
Education	0.28		0	3.4	0.952		0	Under the Malaysian Education system, free school is provided and government assisted. Also in 1997, the Feral budget allocated RM10,197m. for educational purposes.
Language Literacy	0.28		0	4	1.12		0	The official language is Bahasa Malaysian based on Malay; however, English is also widely used because Malaysia used to be under British protection.
Technology	0.28	0	0	0	0	0	0	These three countries did not develops their own technology, thus techology is a threat rather than opporyunity for them.
Total	1		0.48		2.58		0.45	Malaysia has better opportunities in terms of social factors in investment of the semiconductor industry. The second isThailand, followed by Indonesia.

Reference: The Europa World Year Book 1997, Vol 1

Figure 4.11

SWOT Analysis of the Social Threats for the Semiconductor Industry

Threats Social	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
Lifestyle Changes	0.16	0	0	0	0	0	0	Lifestyle Changes of the people in the three countries are not Threats so Lifestyle Change has been put into the Opportunity side.
Education	0.28	2.8	0.784	0	0	3	0.84	While the Malaysian government spent 24.6 percent of their budget on education, Indonesia spent only 10 percent. Also Indonesian schooling is not provided for low income households. Thailand's education is officially compulsory for six years, to be undertaken between the ages of 6 and 11 years while Malaysia's is 6 and 18 years.
Language Literacy	0.28	3	0.84	0	0	3	0.84	The official languages of both Indonesia and Malaysia are Bahasa, and Thai for Thailand. English is not widely used within both countries, Indonesia and Thailand. Language Literacy of Thailand and Indonesia is counted as a threat for the IC industry.
Technology	0.28	3	0.84	2.5	0.7	3.5	0.98	Technology is one of the key factors of the semiconductor industry or it can be said that the IC industry is technology intensive. Being developing countries, Thailand, Malaysia, and Indonesia are not competitive in IC technological. Especially Indonesia has the most Threat in Technology due to the rare support of the R&D of the country's industry, followed by Thailand and Malaysia
Total	1		2.46		0.70		2.66	Indonesia has the most threats in terms of SWOT rating in social sectors, followed by Thailand and Malaysia .

Reference: The Europa World Year Book 1997, Vol 1

Figure 4.12
SWOT Analysis of Political Opportunities for the Semiconductor Industry

Opportunities Political	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
Govt. Regulation	0.35	3	1.05	4.5	1.58	0	0	The Government Regulation of Malaysia is well supportive of the semiconductor industry by considering the attractive policies, MIDA, PSDC which have mentioned earlier, and followed by Thailand, BOI, NECT, and etc. Indonesia GR. is on the Threat side.
Political	0.2	0	0	3.8	0.76	0	0	The Political situation in Malaysia is very strong because Malaysia has a charismatic leader. He has created an effective policy and framework in order to bring Malaysia to be up front. Thailand's and Indonesia's political situation are on the Threat side.
Stability	0.25	0	0	4	1.00	4.2	1.05	In terms of stability, Malaysia's, Prime Minister, Dr. Mahathir Mohamed, has been serving for up to 20 years, and President Suharto of Indonesia has been serving for up to 30 years. Both countries could create more consistent policies. Thailand is on the Threat side.
Relation Among Trading Partners	0.2	2.8	0.56	2.5	0.50	2	0.4	Thailand, Indonesia, and Malaysia have a good relationship among their trading partners because those mentioned countries are under APEC, AFTA, and ASIAN which have driven to trade liberalization.
Total	1		1.61		3.84		1.45	Malaysia has a very good opportunity in terms of Political factor. Malaysia's politics is stronger compared to other countries like Thailand and Indonesia.

References: The Indonesian Embassy in Thailand

The Malaysian Embassy in Thailand

The Ministry of Foreign Affairs

Figure 4.13
SWOT Analysis of Political Threats for the Semiconductor Industry

Threats Political	Weight	Thailand		Malaysia		Indonesia		Comments
		Rate	W/S	Rate	W/S	Rate	W/S	
Govt. Regulation	0.35	0	0	0	0.00	3.8	1.33	Indonesia does not have attractive regulations in order to attract semiconductor investment from foreign investors. Moreover, most of Indonesia's markets are monopolies.
Political	0.2	2.5	0.5	0	0.00	2.8	0.56	Thailand's and Indonesia's politics are not stable. The parliament have oftenly been dissolved in Thailand. Indonesia's politics is built based on one man holding everything. The Indonesia Government has a monopolys over the industry.
Stability	0.25	3	0.75	0	0.00		0.00	Thailand's frequent dissolution of parliament lead to the views of instability in terms of inconsist policy
Relation Among Trading Partners	0.2	0	0	0	0.00	0	0	
Total	1		1.25		0.00		1.89	The Political situation in indonesia is the most threatening among the three countries. Indonesia does not show political stability. Thailand has less threat in the political factor.

References: The Indonesian Embassy in Thailand
The Malaysian Embassy in Thailand
The Ministry of Foreign Affairs

Table 4.2

The Summary of the External Analysis Toward Investment in The
Semiconductor Industry

Factors	Thailand			Malaysia		Indonesia	
	W	R	W/S	R	W/S	R	W/S
Economic	0.40	3	1.2	3.5	1.4	2.5	1.00
Social	0.20	2.5	0.5	4	0.8	2	0.4
Political	0.40	2.5	1	4	1.6	2	0.80
Total	1		2.70		3.80		2.20

This external indicators has weighted followed from Schneider, Friedrich, and Frey, Bruo "Economic and Political Determinants of Foreign Direct Investment"
In World Development Vol. 13 No.2 (1985): 161-175.

Table 4.2 is a summary of opportunities and threats analysis to see the total picture of the environment of the external factors and taking those into consideration of the important of each factor by assigning the weight in the first column. From the Summary of External Environment Analysis , Thailand shows a score of 2.70 points in external analysis which indicates that Thailand is on in the strong side of external opportunities, especially economic, but Thailand has a political threat toward the investment in the semiconductor industry. However, Thailand's external environment score of 2.70 is considered to be a stable level for the industry's external environment analysis.

Second, Malaysia showed the score of 3.80 in external analysis. Malaysia has an excellent external environment due to the well supported economic, social, and political indicators.

Finally, Indonesia showed only 2.20 points in the summary of external analysis in the semiconductor industry. For this reason, Indonesia has the least opportunities for investment in the semiconductor industry due to the external environment. Indonesia has lost its opportunities due to economic and political reasons. Thus, Indonesia has no competitive advantage toward the investment opportunities in the semiconductor industry.

Conclusion

Even though Thailand and Malaysia have comparative advantages over the semiconductor industry according to the RCA index, the competitiveness of this industry occurs only in Malaysia. Neither Thailand nor Indonesia have competitive disadvantages towards the industry.

The competitive advantage occurs only in Malaysia due to both internal analysis, factor conditions of SWOT analysis and factor demand conditions supportive industry, strategy of the firms, together with chance and government roles and external environment, economy, political, social, of the "Diamond Model". Also, the Malaysian government provides real support to the industry with attractive policies and framework and non-profit organizations have been set up for the particular industry as mentioned earlier. Malaysia has the biggest market share in the IC industry among Asian countries because Malaysia has the strongest government policies, and the best infrastructure instruments, and internal and external environment. For example, Malaysia has higher labor costs due to the shortage of labor, but Malaysia has, in substitution, upgraded its labor skills. Malaysia knows how to minimize its weaknesses and maximize its strengths for this particular industry.

On the other hand, the Thai semiconductor industry does have less competitive advantage compared to Malaysia. The Thai government seems to have attractive packages for overall industries and electronic industries but not specifically for the IC industry. Thailand does not have particular R&D for the IC industry. Because the speed of technology innovation in this industry is fast, the IC industry needs specific Research and Development in order to develop its own technology. Not only does Thailand have few internal strengths, but also it has several environmental constraints in the promotion of the semiconductor industry. Thailand does not have the effective strategies to minimize internal weaknesses and maximize strengths. Thailand should choose appropriate strategic policy instruments and use them when necessary.

In contrast, Indonesia's semiconductor industry is still far back behind both Malaysia and Thailand in terms of comparative and competitive advantages. The Indonesian government has no aim to promote the development of the semiconductor industry. Indonesia does have a good background in developing the industry and has a good track record in economy of scale, but without attractive government policies, this industry does not have the ability to develop itself.

In adapting to the age of technology, a particular country must find its own path. Each nation is seeking both political and economic indigence, and this takes a variety of routes, given the diverse backgrounds and conditions of the various developing countries, that include Thailand, Malaysia, and Indonesia. However, each developing nations desires the ability to make and implement rational decisions concerning development, using all the science and technology available for them. In particular, those mentioned countries may have to rely on FDI for both capital and technology

capability. As developing countries, they must ensure that certain requisites are met. These include an adequate and efficient infrastructure, a skilled and trainable work force, fiscal and financial incentives, and government support. It is also necessary for the government to develop various plans, including the establishment of export zones, IC industrial complexes, and preferential duty or tax systems.