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A STUDY ON UPGRADING INDUSTRIAL STRUCTURE OF CLMV COUNTRIES

EDITED BY
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EXECUTIVE SUMMARY

Ruth Banomyong and Masami Ishida

BACKGROUND

Cambodia, Lao PDR, Myanmar and Vietnam have recently been the focus of numerous economic cooperation schemes such as the Greater Mekong Subregion (GMS) program or the Japan-Mekong assistance project. In parallel with infrastructure development, foreign direct investment (FDI) in the CLMV countries has increased in labor intensive industries such as garment and footwear. Investment in diverse industries, however, is limited as illustrated by the lack of investment in electronics and automotive industries in Cambodia, Lao PDR, Myanmar. Vietnam seems to be the exception.

The more advanced ASEAN countries such as Malaysia and Thailand showed remarkable economic growths after the second half of the 1980s by attracting FDI. These countries have integrated themselves into the electric, electronic and automotive global and regional production network. These countries are now currently faced with intense competition from China and India. A number of firms in the more advanced ASEAN countries have considered relocating their production units or fragment one or two of their production blocks to countries that can provide locational advantages.

This purpose of this study is to analyze CLMV countries potential to upgrade or diversify their respective industrial structures by attracting FDI from the more advanced ASEAN countries as a part of relocation and/or “fragmentation” strategy as well as the necessary conditions for the CLMV countries to attract FDI from the more advanced

ASEAN countries.

STRUCTURE OF THE STUDY

Chapter 1 describes the research methodology undertaken based on the background and objectives of this research project. A exploratory approach was selected with semi-structured interviews delivered to key decisions-makers in business associations, government officials and private firms in the three more advanced ASEAN countries (Malaysia, Thailand and Indonesia) and in CLMV. Four different types of surveys were prepared in this research project. The purpose of the surveys targeted to business associations and government officials was to better understand the competitive environment, history and current situations of selected industries. Surveys developed the private sector focused on their respective cost structure and business climate. In the case of the three more advanced ASEAN countries, surveys on the evaluation of relocation or fragmentation to the CLMV countries were collected and for the CLMV countries, questions regarding the need related to “hard” and “soft” infrastructure with a key section on the local investment environment.

Chapter 2 introduces the results of a questionnaire survey on investment climates of major cities within the CLMV countries that was conducted in 2008. The major CLMV cities were Phnom Penh, Sihanouk Ville and Bavet in Cambodia, Vientiane and Savannakhet in Lao PDR, Yangon, Mandalay and Myiek in Myanmar, and Danang and Ho Chi Minh City of Vietnam. This chapter describes some of the key bottlenecks related to investment in each of these CLMV cities. The survey also appraises the one-stop service in Bavet as a successful example.

From Chapter 3 to Chapter 5, the possibilities of relocation or fragmentation of firms in Malaysia, Thailand and Indonesia to the CLMV countries are analyzed. The industry focused in Malaysia is electronics industry, those in Thailand are electronics and automotive industries and those in Indonesia are upstream and downstream textile industries and electronics industries. Each chapter introduces the overviews the related industries and analyzes on the cost structure, indicators of investment climates of the related industries and the possibilities of relocation or fragmentation to the CLMV countries. Firms located in the three advanced ASEAN countries are interested in the investment in Vietnam, but there are no firms which have interests in investing in Cambodia, Myanmar and Vietnam. Chapter 3, however, says that Malaysian firms have already invested in garment, textile, hotels and resorts and infrastructure development. Nevertheless, the chapter concludes that each country has to make efforts in order to create attractive environments for investors in accordance with the experiences of Malaysia. Chapter 4 also give policy recommendations based on the experiences of Thailand and the recommendations include the good linkage between universities, vocational schools and industries and the development of border zones which can procure materials such as parts and components of Thailand easily. Chapter 6 concludes that the investment into the CLM countries is risky, but these results should be treated cautiously due to the limited knowledge of respondents on the CLMV countries and the small number of samples.

Chapter 6 to Chapter 9 describes the possibilities of upgrading or diversifying the existing industrial structure in CLMV countries. The selected industries under study were “existing industries” such as garment and textile, agro-industrial produce, wood-processing and “new industries” such as plastics, electronics and automotive. Each

chapter illustrates the current industrial structure of each CLMV country, provides an overview of several industries and analyses the cost structure, investment climate indicators and local firms' need for "soft" and "hard" infrastructure as well as for the necessary investment climate. In Chapter 6, it is urgent to improve both soft and hard infrastructure in Cambodia. Improvement is slow due to lack of resources. The case of Lao PDR is illustrated in Chapter 7 and concludes that industries including the selected "new industries" were already present in the country while a reduction in production cost is necessary. Chapter 8 describes two different types of policy recommendations. One is for the "existing industries" and the other for the "new industries" in Myanmar as an outcome of the country survey. Myanmar needs to improve its infrastructure in particular those related to electricity supply and cumbersome documentation procedures. Chapter 9 concludes that electronics and automotive industries in Vietnam are still much dependent on imported materials and supporting industries as well as human resource needs to be further developed.

Chapter 10 describes the current situation on the implementation of trade facilitation schemes and facilities for maritime, railway, road, inland waterway and air transport in the CLMV countries and shows the logistics connectivity of Lao PDR as an example. Finally, the chapter stresses on the importance of the development of logistics in increasing the production capability in the CLMV countries. Chapter 11 presents the analytical results of compiled surveys.

POLICY RECOMMENDATIONS

"Hard" infrastructure in the CLMV is still an important issue but not as high as

expected. The highest issues were more focused on the "soft" aspects of infrastructure, in particular those related to institutional complexity. It is therefore of great importance for CLMV policies to be developed according to these recommendations hereunder if CLMV countries would like to diversify their current industrial structure.

- A CLMV sub-regional cooperation framework is needed for investment policy coherence between and within countries. CLMV should be considered as a sub-regional grouping in its own right and marketed as a single investment destination.
- Existing policies, laws, regulations need to be implemented in a fair and transparent manner in order to convince foreign investors of equal treatment.
- Logistics linkages within CLMV must be improved for further integration that is based on key development corridor axis. These corridors need to achieve at least a logistics corridor development level in order to facilitate the efficient and effective flow and storage of goods, vehicles, people and information from origin to destination.
- The development of these corridors should be based on a supply chain/value chain development strategy that focuses on the integration of key industries or sectors. This will enable the establishment of industrial corridors with multinational firms FDI as a key driving force.
- The key proposed corridor for automotive is:
    - Thailand-Lao-Vietnam (Hanoi)
- The key proposed industrial corridors for electronics are:
    - Thailand-Malaysia (Penang)-Thailand

- Thailand-Lao-Vietnam (Ho Chi Minh)-Thailand
- Thailand-Cambodia-Vietnam (Ho Chi Minh)

- The key proposed industrial corridors for the agro-industry are:
  - Thailand-Cambodia-Vietnam
  - Thailand-Lao-Vietnam
  - Thailand-Myanmar-Thailand
- The key proposed industrial corridors for textile and garments are:
  - Thailand-Lao-Thailand
  - Thailand-Cambodia-Vietnam
  - Indonesia-Cambodia-Vietnam

This list of proposed industrial corridors is not exhaustive and is based on the survey results of the more advanced ASEAN and the CLMV countries.

CHAPTER 1

INTRODUCTION OF THE RESEARCH PROJECT

Ruth Banomyong and Masami Ishida

1. OBJECTIVE OF THE PROJECT

1.1. Background and Objectives

Cambodia, Lao PDR, Myanmar and Vietnam (CLMV) have shown remarkable economic growth since 2000. Physical infrastructure improvement, cheap labor cost and preferential market access supported and facilitated foreign direct investment (FDI) in the CLMV countries.

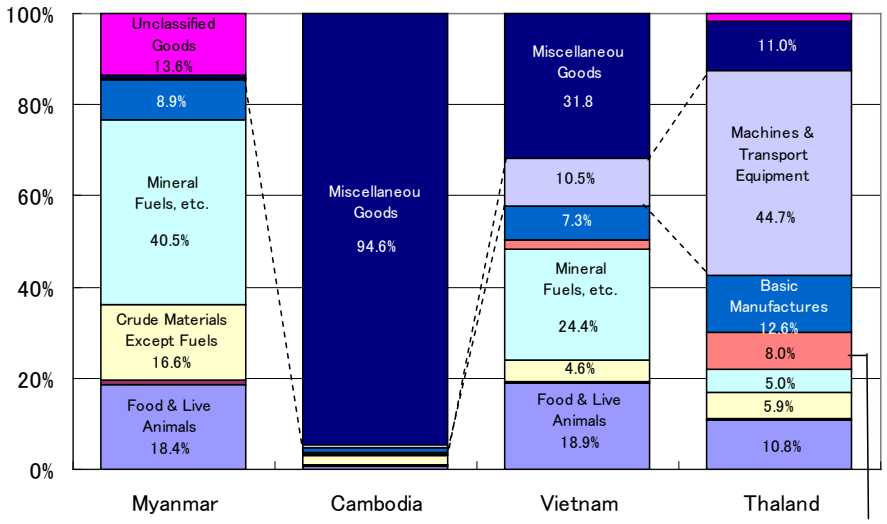
With the exception of Vietnam, however, FDI and other forms of business entities, especially manufacturing industries, in the CLMV countries concentrated only on a few certain sectors, in particular, textile and garment. FDI in Cambodia is concentrated in the garment and textile industries, employing several hundred thousand people and accounting for about 75 percent of the country's export (Yamagata, 2006). In Lao PDR, foreign-invested garment factories employ about 60 percent of the labor force in the manufacturing industries (Business Establishment Survey, 2006). And while Myanmar also participates in regional production networks of garment products, it is on a smaller scale, which is obviously not proportional to its relatively large population size (Kudo 2007). Vietnam has been more successful in absorbing a more diversified FDI, but given its size and potential, much still needs to be done before it catches up with the

advanced ASEAN members, including Thailand.

Looking at the structure of the export commodities of Thailand, Vietnam and Myanmar in Figure 1, it is obvious that the share of machines and transport equipment, including electrical appliances, increases in proportion with the countries' respective development stages. Myanmar (and even Vietnam) still depends on primary commodities such as crude materials, including fuels, food and live animals, while Cambodia is heavily dependent on garments. On the other hand, the export commodities of Thailand are well diversified and the Figure shows the successful performance of the development of machines and transport equipment. However, even the exports of Thailand also depended heavily on food and live animals in 1980, and it took about twenty years for the country to diversify the composition of its export commodities (Figure 2). Malaysia also changed its policy to attract FDI in 1986 in accordance with the recommendation of the UNIDO for Malaysia to diversify its industrial structure. Following the experiences of the more advanced ASEAN countries, the CLMV countries managed to attain a turning point in their economies through a diversification of their industrial structures and export commodities via the attraction of FDIs in "new industries" like the electronics and automotive industries. Clearly, then, one can see that diversification is the most important element in the upgrading of the industrial structure of the CLMV countries.

As shown, the garment industry is the most significant among the "existing industries" in the CLMV countries. However, there are several elements that still need to be improved in the garment industry. For one, most of the raw materials of the garment industries such as cloth, yarn and thread are imported from other countries. Thus, to develop the textile industry as a whole, it is important to attract the upstream

Figure 1 Export Commodities in CMV and Thailand (SITC)



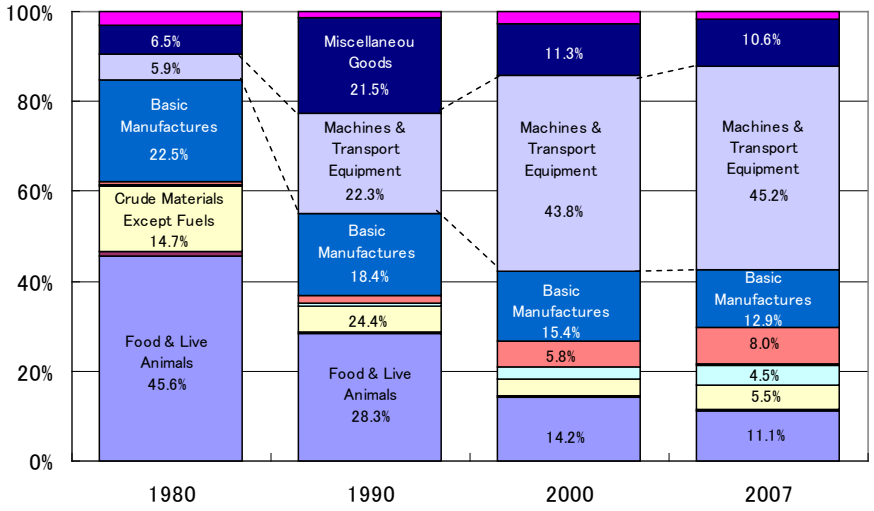
Notes: 1) The numbers of Thailand and Vietnam are as of 2006, and the number of Cambodia and Myanmar is as of 2004.

2) They do not include the re-export.

3) Miscellaneous goods of Cambodia are mostly composed of garments.

Sources: ADB, *Key Indicators* (Various Years) and UN Comtrade.

Figure 2 Historical Path of Export Commodities in Thailand (SITC)

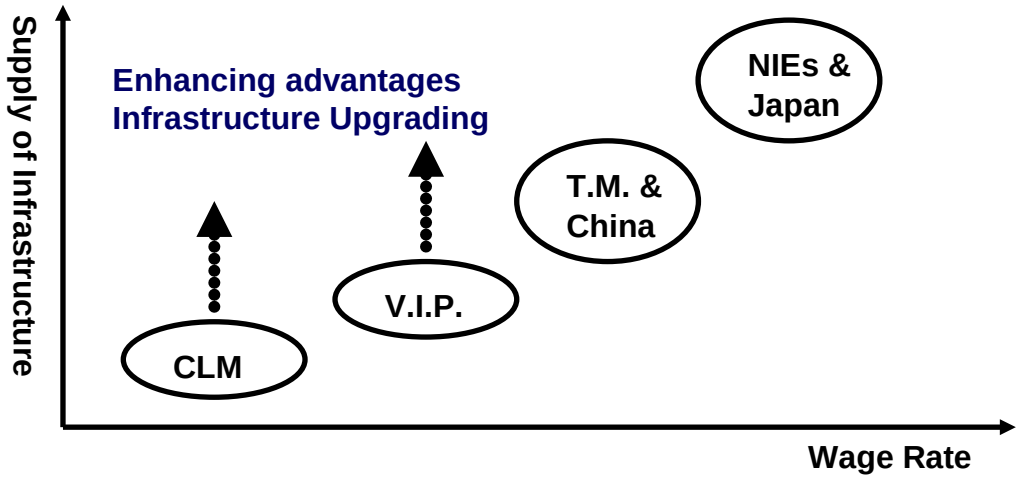


Notes & Sources: as same as Table 2.

industries like weaving and spinning in upgrading the industrial structure. It is also important for the garment industries in the CLMV countries to diversify their products from low value-added ones such as non-seasonable men's shirts to high value-added ones such as seasonable ladies' fashion items. Diversification from downstream to upstream industries and production of higher value-added products are thus two important elements in the upgrading of the industrial structures of the CLMV countries. In the meantime, another one of the significant "existing industries" in the CLMV countries is the agro-based industry where diversification from upstream to downstream industries and the switching from domestic market-oriented products to export-oriented products are the ones considered as important elements in the upgrading of its industrial structure.

Turning the attention to the more advanced ASEAN countries, namely, Malaysia, Thailand and Indonesia, meanwhile, would show that they began to register remarkable economic growth in the second half of the 1980s when they started receiving FDIs. These countries have participated in the production network of the electric, electronics and automotive industries in East Asia. Firms in these countries, however, have started to face the competition of lower-priced products imported from China and India since the beginning of the 2000s. In addition, the textile industries in these countries have also been faced with decreasing competitiveness vis-à-vis the products imported from China. In order to survive the competition from these imported products, the firms have attempted to do "fragmentation." This means that they have been inclined to move the labor-intensive blocs of their manufacturing process to lower- wage countries such as CLMV countries. It is in this sense that the CLMV countries are expected to be able to upgrade and diversify their industrial structures through their being the subjects of the

Figure 3 Scattergram of the EACs in terms of Infrastructure & Wage Rate



Source: drawn by the authors.

fragmentation and relocation of new industries like electronics and automotive industries from Malaysia, Thailand and Indonesia as these countries compete with other lower-wage countries.

The infrastructure development in the CLMV countries, however, is considered to still be immature in comparison with the more advanced ASEAN countries (Figure 3) albeit the fact that certain major infrastructure development schemes like the Greater Mekong Subregion (GMS) economic cooperation program have been set up in the former. Such underdevelopment of infrastructure is seen to have hampered the diversification in these countries.

Based on the above background discussion, this study hereby presents several research questions to make its objectives clear. At the same time, this study will attempt to respond to such questions through the exposition of various case studies and survey results. The research questions include the following:

(1) Why would firms in the more advanced ASEAN countries make the decision to relocate some or all of their production activities to the CLMV countries? Or will they decide not to do so at all? In terms of set-up cost, operation cost and service link cost, is the relocation to CLMV countries reasonable? What are the factors needed in the CLMV countries for these firms to consider moving?

(2) How can the CLMV countries attract more FDI from the more advanced ASEAN nations? Which of the following elements are needed to attract more FDI: 1) development of infrastructure, 2) improvement of the investment climate, or 3) human resource development? In case the hard infrastructure, investment climate and human resources were improved in the future, what kind of "upgrading" or improvement like the expansion of market and development of new products is possible in the "existing industries"? Why have the CLMV countries not been able to diversify their existing industrial structure?

1.2. The Results of Previous CLMV ERIA Projects

As a part of ERIA projects, a two-year research project on the development of the CLMV countries was conducted a few years ago. In the first year of the project, the theoretical backbone and review of the development schemes of the Greater Mekong Subregion (GMS) Program and ASEAN were studied and presented. At the same time, the development assistance projects of China, Korea and Japan as bilateral donors to the CLMV countries were reviewed. Based on the findings of the research project, the authors from the CLMV countries presented policy recommendations (Sotharith, 2008) for their respective countries. In the second year, two kinds of survey were undertaken

for the project. The first one is a flowchart approach-based survey where bottlenecks and challenges in attracting anchor industries such as a printer manufacturer of Cannon in Hanoi were identified, and then actions to be taken to address the challenges in some cities in the CLMV countries, i.e. Phnom Penh, Sihanouk Ville, Vientiane, Yangon and Danang, were prioritized. The second survey is a questionnaire survey on the investment climate where the samples were taken from foreign firms and trade-related domestic firms in major cities in the CLMV countries, i.e. Phnom Penh, Sihanouk Ville, Bavet, Vientiane, Savannakhet, Yangon, Mandalay and Danang. According to these surveys, the problems and challenges such as the high cost of electricity, poor road infrastructure, and access to finance in some cities are the main obstacles in doing business in the CLMV countries (Kuchiki ed., 2009).

As for trade facilitation, Ishida (2008) explains the contents of the cross-border transport agreement (CBTA) as well as reviews (2009) the current situation on the utilization of information and communication technologies (ICT). In terms of infrastructure, including roads, ports and harbors as well as Special Economic Zones (SEZs) in the CLMV countries, Chapter 2 of Kuchiki ed. (2009) reviews a comprehensive study on infrastructure.

The second and final year's study focused on the investment climate, including the soft and hard infrastructures of the major cities in the CLMV countries. This year, the study deepens the analysis on the improvement of the investment climate with a focus on industrial structures. This is important because knowledge of the investment climate by industry in the CLMV countries is necessary for the inflow of FDI in upgrading the industrial structure. This year, too, the study would like to ask potential investors in Malaysia, Thailand and Indonesia on whether or not they are willing to invest in the

CLMV countries on the basis of the overall picture of the investment climates in the CLMV countries.

2. RESEARCH METHODOLOGIES

For the purpose of answering the two main research questions, a multiple case study approach is suggested in order to obtain insights into the decision-making process of firms in the more advanced ASEAN countries as well as on what is needed to attract more "industrialized" FDI, from a CLMV country's perspective. Three different kinds of surveys were done, namely:

2.1. Semi-structured interviews with decision-makers in the more advanced ASEAN countries;

2.2. Semi-structured interviews with key associations and selected firms in the CLMV countries on what is needed to attract "industrial" FDI from other ASEAN countries; and

2.3. Questionnaire on main logistics (links) linkages in terms of cost and time to and from the main trade flows with key trading partners in the CLMV countries.

The following sections (2.1 to 2.3) describe the final research proposal that was written after the first meeting on September 21-22, 2009.

2.1. Semi-structured Interviews with Decision-makers in the More Advanced ASEAN Countries

Each representative from Malaysia, Thailand and Indonesia, and members of the sub-supporting studies (hereinafter referred to as “team members”) are required to call on the business association and policymakers of the key industries and ask them about the history, current situation and competitive environment of the key industries. At the same time, the team members need to ask the business association to introduce target respondent firms which have relocated some or all of their production blocs to other countries or are likely to relocate to other countries. In accordance with the information gathered from the business associations, the team members are expected to target the respondent firms for the interview. The target firms should be diverse: small, medium and large firms, local, foreign and joint venture firms. The industrial sectors for the surveys are: electronics industries in Malaysia, automotive and related industries as well as electronics industries in Thailand, and electronics and upper stream sub-industries of textile industries in Indonesia. As soon as the target firms are decided on, team members are required to inform the research project leader and coordinator. Respondents of the target firms should be the decision- makers for the relocation or fragmentation. The interview is expected to be done in accordance with the instructions in the accompanying paper (see appendices). A major part of the instructions for interview is designed as open-ended questions; thus, the team members are required to extract and discern the information that are not assumed in the instructions. After finishing the interview, the team members are required to write the results and send them immediately to the research project leader and coordinator.

The outlines of the interviews are as follows:

(1) Survey on Cost Structure (only for interviews with private firms)

The team members are required to make unit cost structures (total cost structure is also available in case that the unit cost structure cannot be given) ofthe firms. The elements of the total cost are 1) labor force, 2) transportation, 3) electricity, 4) other energies, 5) imported parts, components and raw materials, 6) parts, components and raw materials procured from the domestic market, and 7) other elements. The share of each element is reported by a unit of percentage. The cost structure is expected to be compared with those of the CLMV countries.

(2) Business Climate

The team members are required to ask the decision-makers whether they are faced with competition from lower-wage countries or not and whether they have experienced or have considered relocating some or all of the production blocs to lower- wage countries, and what the differences on investment climates between CLMV countries and other lower-wage countries (India, Pakistan and Bangladesh) are. The team members are also required to ask other information such as average wages for workers, level of educational attainments of workers, and frequency and longest period of black-out. These indicators are expected to compare with those of the CLMV countries.

(3) Evaluation for Fragmentation and Relocation

This part is a key part for the survey for more advanced ASEAN countries. The team members are required to ask the decision-makers of firms on whether the respondent knows about the CLMV countries or not, and the perception on the CLMV countries. Then they are required to ask the respondent to evaluate the fragmentation and relocation to CLMV countries *after showing the basic data of investment climates of the CLMV countries (see appendices)* such as*:* 1) land price for owning and leasing, 2)

minimum wage and average wage for workers, 3) electricity price, 4) price of water for industrial use, 5) distance to ports and markets, 6) average level of educational attainments of workers, 7) population and GDP per capita of the country, 8) tax holiday period, and 9) other qualitative information like political stability. The team members are expected to compare the difference of perception before and after showing the basic data of the investment climate of CLMV countries. By way of the evaluation, the advantages and disadvantages of the CLMV countries can be cleared and the ways for improving the disadvantages can be considered candidates for policy recommendations.

2.2. Semi-Structured Interviews with Key Associations and Selected Firms in CLMV Countries

The team members of the CLMV countries are required to call on business associations of garment, electronics, automotive and related industries, and also one of export-oriented food industries, as well as related policymakers and ask them the history and current situation of the industries and what is needed to attract FDI from more advanced ASEAN countries. The improvement of hard infrastructure, investment climate and development of human resources are the expected examples of the answers. The team members also need to ask the business associations to introduce to them foreign and joint-venture firms of the related industries. If the number of foreign-affiliated firms is not that many, then exporting firms may also be tapped and included. Based on the information gathered, the team members are required to make a list of the respondent firms which should be well-balanced among the industries. Then the team members will have to call on he respondent firms one by one for the interview based on the instructions given in accompanying papers (see appendices). Again, like the first

type of survey interview, a major part of the interview is designed to be open-ended questions. In view of this, the team members are also required to get other information that are not included and assumed in the instructions. After the interview, the team members are required to write the results on a specific format and submit them immediately to the research project leader and coordinator.

The outlines of the instruction are:

(1) Survey on Cost Structure

The team members from the CLMV countries are required to make unit cost structures (total cost structure is also available in case that the unit cost structure cannot be cleared) of the firms of the electronics industries, automotive and related industries, and footwear and garment industries in each country. The elements of the total cost are 1) labor force, 2) transportation, 3) electricity, 4) other energies, 5) imported parts, components and raw materials, 6) parts, components and raw materials procured from the domestic market, and 7) other elements. The share of each element is reported by a unit of percentage. The difference of cost structures between “existing industries” like garments and “new industries” like the electronics and automotive and related industries is expected to explain why such new industries are minor in each country and what the bottlenecks for attracting new industries are. At the same time, the team members are required to ask why the firms of the new industries can continue to operate even though the cost structure is not efficient. Furthermore, they also have to ask whether or not the development of new products or the expansion of market is possible in case some elements of the soft and hard infrastructure will be improved in the future,

(2) Other Indicators

The team members are likewise required to ask other indicators by way of interviews with industrial associations and firms. These would include information on the average wages for workers, level of educational attainments of workers, and frequency and the longest time of black-out.

(3) Prioritized Demand and Needs for Hard and Soft Infrastructure

The team members of the CLMV countries also need to ask industrial associations and firms what is needed for the CLMV countries to attract FDI and why the CLMV countries have not been able to diversify their existing industrial structures. The demands and needs for the improvement of hard infrastructure, investment climate and human resources should likewise be inquired from the associations and firms. The possible demands and needs may be broken down into six categories: 1) labor force, 2) customs, 3) transport infrastructure logistics, including roads, ports and harbors, and airports, 4) telecommunication, 6) electricity, and 7) others. The bottlenecks for the business operation of the existing and new industries are expected to become clearer after the answers are collated and analyzed. In case some elements of the soft and hard infrastructure will be improved in the future, it should thus be also important to know whether development of new products or expansion of market is possible or not.

2.3. Questionnaire on Main Logistics Linkages with Key Trading Partners in CLMV Countries

The team members from the advanced ASEAN countries and CLMV countries, meanwhile, are also required to ask forwarders about the time, cost and frequency of

each section of major logistics routes between major cities of the country and the destination of export and between major cities and the origins of imports. Details are given by the leader of the project. He may also be requested to accompany the team members during their survey interviews, if necessary.

3. EXPECTED POLICY RECOMMENDATIONS

Among the key policy recommendations that may be formulated on the basis of the results of the surveys include the following:

- Identify advantages and disadvantages of each industry based on the analysis of the cost structure;
- Identify bottlenecks for new industries like electronics and automotives in the CLMV countries;
- Examine the possibilities of the fragmentation and relocation of some or all production blocs of new industries like electronics and automotive from the advanced ASEAN countries to the CLMV countries, and identify the challenges to be faced or are being faced by the CLMV countries in receiving such kinds of fragmentation or relocation of the new industries from the more advanced ASEAN countries;
- Compare the basic indicators like wage, educational attainment of workers, and frequency of blackouts between CLMV countries and Malaysia, Thailand and Indonesia; and
- Identify appropriate policies for upgrading and diversifying industrial structure in CLMV countries.

In terms of policy recommendations, it should be noted that what is needed are clear ideas or initiatives on how to attract more "industrial" type of FDI from the selected industries in other ASEAN countries to the CLMV countries.

4. COMPOSITION OF REPORT

4.1. Title and Author of Each Chapter

The composition of this volume is as follows:

	Executive Summary	Ruth Banomyong
Chapter 1	Introduction of the Research Project	Ruth Banomyong & Masami Ishida
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Chapter 3	Evaluation on Fragmentation and Relocation of Electronics Industries to CLMV Countries: View Points of Malaysia	Tan-Yii, Chang
Chapter 4	Evaluation on Fragmentation and Relocation of Electronics and Automotive and Related Industries to CLMV Countries: View Points of Thailand	Apichat Sopadang & Korrakot Yaibuathet
Chapter 5	Fragmentation of Electronics and Textile Industries from Indonesia to CLMV Countries	Shiwage Dharma Negara
Chapter 6	Infrastructure Needs in CLMC Countries for Private and State Companies: the Case of Cambodia	Hem Socheth
Chapter 7	Upgrading and Diversification of Industrial Structure and Its Challenges in Lao PDR: Prospects and Challenges	Leam Nhongvongsithi & Soukinilan Keola
Chapter 8	Upgrading and Diversification of Industries in Myanmar: Prospects and Challenges	Moe Kyaw and Toshihiro Kudo
Chapter 9	The Challenges of Upgrading and Diversifying Viet Nam's Industrial Structure	Nguyen Binh Giang
Chapter 10	Logistics Challenges in Cambodia, Lao PDR, Myanmar and Vietnam	Ruth Banomyong

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Appendices

Instruction for Semi-Structured Interview Focusing on Fragmentation in Advanced ASEAN Countries For Private Companies

A. Please write your contact information

Respondent No.		Name of country	
Name of company			
Address (headquarter)			
Address (factory)			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			
Date/time of interview	Date: from : a.m./p.m. to : a.m./p.m.		
Name of interviewer			

B. Company Profile

Q1.Year of establishment	_____ (in the present location)			
Q2. Other production points (including headquarters, branches, parent companies and subsidiary companies)	1. City/country		2. City/country	
	3. City/country		4. City/country	
	5. City/country		6. City/country	
	7. City country		8. City/country	
Q3. Capital structure	a. 100% Local b. 100% Foreign c. Joint venture			
	Nationality of major foreign investor in case of b. and c.:			
	Share of foreign capital in case of c.;			
Q4. Factory location	a. In Industrial estate b. In SEZ or in EPZ c. Outside of IE, SEZ & EPZ			
Q5. Major products	1. Product name: Brand name:			
	2. Product name: Brand name:			
	3. Product name: Brand name:			
Q6. Industrial sector (Multiple answers)	a. Electronics b. Automotive c. Automotive-related d. Machinery e. Plastic processing f. Metal-processing g. Spinning h. Knitting i. Weaving j. Footwear k. Wood-processing l. Agro-industries m. Others [ ]			
Q7. Main business activities	a. Material supplier b. Part/component supplier c. Assembler/Manufacturer d. Distributor e. Others [ ]			
Q8. Annual output (quantity)	(Unit:)			
Q9. Annual sales (amount)	(Currency unit:)			
Q10. Total asset (registered capital)	(Currency unit:)			
Q11.Number of full-time employees	Persons			

C. Questions on Cost-structure

	Unit cost structure (main product)	Total cost structure
a. Labor force	____ %	____ %
b. Imported parts, components & raw materials	____ %	____ %
c. Parts, components & raw materials procured from domestic market	____ %	____ %
	____ %	____ %
d. Transportation	____ %	____ %
e. Electricity	____ %	____ %
f. Other energies	____ %	____ %
g. Depreciation on machinery	____ %	____ %
h. Other elements		
Total	100 %	100 %

D. Questions on Business Climate

Q1. Export ratio	____% (i.e. % manufactured goods that are exported)
Q2. Domestic market	(Descriptive information: cities, shares and preferences of consumers)
Q3. Relation with domestic buyers	(Descriptive information: type and contract of buyers) Ex) Who decides the design? Whether are materials supplied by buyers or not?
Q4. Export market	(Descriptive information: destinations, buyers, marketing, contracts with buyers)
Q5. Relation with exporting buyers	(Descriptive information: type and contract of buyers as same as Q3)
Q6. 1. Lead time (period between a customer's order and delivery of products) ____ days 2. Lead time (period between respondent's order for import materials and its delivery) ____ days	
Q7.Transport mode	(Descriptive information: truck, airplane, ships or multi modals)
Q8. Distance (km) & time (hours) to domestic markets	1. ____ km ____ hours 2. ____ km____ hours 3. …
Q9. Distance (km), time (hours) & frequency to major ports & harbors and Airports	1. ____ km ____ hours frequency ____ destination ____ 2. ____ km ____ hours frequency ____ destination ____ 3. …
Examples for frequency for shipping: a. several times in one day b. once in one day c. several times in a week d. once in a week e. fewer than d. Examples for frequency for Flights: a. more than two flights in a day b. two flights in a day c. one flight in a day d. a few flights in a week e. fewer than d.	
Q10. Export customs clearance	1.Ttime consumed for customs clearance ____ hours per one container (or other unit:) 2 Payments needed for customs clearance ____ per one container (Currency unit:)
Q11. Import customs clearance	1.Ttime consumed for customs clearance ____ hours per one container (or other unit:) 2 Payments needed for customs clearance ____ per one container (Currency unit:)
Q11. Black-out 1. Frequency	a. Several times in a day b. Once or a few times in a week c. Once or a few times in a month d. Once or a few times in six months e. Have not experienced in a year (if none, please skip to Q12)
2. Length of period in case of the longest	a. Less than a few seconds b. a Few seconds – one minute c. One minute – five minutes d. Five minutes – thirty minutes d. Longer than thirty minutes
Q12. Average wage	1. Workers ____ (Currency unit:) 2. Middle managers ____ (Currency unit:) 3. Engineers ____ (Currency unit:)
Q13. Education (completed)	1. Workers a. ____% b. ____% c. ____% d. ____% e. ____% f. ____% g. ____% 2. M. Managers a. ____% b. ____% c. ____% d. ____% e. ____% f. ____% g. ____% 3. Engineers a. ____% b. ____% c. ____% d. ____% e. ____% f. ____% g. ____%
Categories: a. No formal schooling b. Elementary school c. Middle high school d. High school e. Vocational school f. College/university g. Graduate school	
Q14. Difficulties in recruitment	(Descriptive information: for worker, middle managers and engineers)

Q15. Turn-over ratio	_____ % (number of workers who left the firm/total no. of workers in 2008)
Q16. Skillfulness needed for workers	(Descriptive information: how long does it take for a new worker to become professional) Please be reminded that the skillfulness needed are different by the types of jobs

E. Questions on Fragmentation (including reinvestment or expansion elsewhere)

Q1. Competitive environment	(Descriptive information: domestic competition & international competition, toughness, Difficult to continue operation like environmental restriction, etc.)
Q2. Experience of factory relocation	1. from: _____ to: _____ 2. the reasons and what elements were successful and what elements were not good Ex) set-up cost, operation cost and service link cost (suggest transport, logistics)
Q3. Experience of considering factory relocation	Candidate places for relocation: _____ the reasons and evaluations on the candidates [ ] Ex) set-up cost, operation cost and service link cost (suggest transport, logistics)

F. Evaluation of Investment Climate in CLMV Countries

Q1. Perception on CLMV countries	Please just ask the respondent, "Do you know CLMV countries well? Yes ( ) No ( ) How about perception? _____

Q2. Please ask respondents to rank the following investment climate elements (1=most important, 2=second … 9=least).

a. land price for owning or leasing	b. wage level for workers	c. price of energy or electricity
d. price of water for industrial use	e. access to port & markets	f. educational level of workers
g. population and GDP per capita of the country	h. incentives like tax holidays	i. others [specify]

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____
8. _____ 9. _____

Examples for others:

a. quality and cost of logistics services	b. quality of suppliers and services	c. time to go through customs
d. level of unseen cos	e. availability of managerial, technical staff	f. ease of getting expatriate working visas
g. ICT availability	h. political stability	i. risks to production delays

Q3. Please ask respondents to evaluate the investment in CLMV countries after showing the basic information on investment climate in CLMV countries (This question is a key, but please make the questions simpler if the respondent is not interested in each CLMV country)

1. Please ask the respondent to evaluate each investment climate element of each country (Cambodia, Laos, Myanmar, Vietnam).
2. Please ask what the advantages for each country are.
3. Please ask what the disadvantages for each country are.
4. Please ask whether the respondent would consider investing or whether the respondents can operate in each country.
5. If the answer is negative for one country in the previous country, please ask the respondent what kind of improvements can change the respondent's mind positive.

Q4. Perception on other countries in comparison with CLMV countries (as a potential location for investment)	Ex) a. China b. India c. Bangladesh d. Pakistan

THANK YOU VERY MUCH.

Instruction for Semi-Structured Interview Focusing on Fragmentation in Advanced ASEAN Countries for Business Association (Chamber of Commerce)

G. Please write your contact information

Respondent No.		Name of country	
Name of organization			
Address			
Address (factory)			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			
Date/time of interview	Date: from : a.m./p.m. to : a.m./p.m.		
Name of interviewer			

H. Business association profile

Q1. Number of member companies	
Q2.Year of establishment of association	
Q3. History of the industry	(Descriptive information)
Q4. Competitive environment of industry	(Descriptive information: domestic competition & international competition, toughness, difficulties to continue operation like environmental restriction, etc.)
Q5. Major products (produced by member firms of the business association)	4. Product name: Brand name:
	5. Product name: Brand name:
	6. Product name: Brand name:
Q7. Annual output of the industry (quantity)	(Unit:)
Q8. Annual sales of the industry (amount)	(Currency unit:)
Q9.Number of full-time employees of the industry	Persons

I. Other Questions (just ask the trend of business association member firms as far as respondents can answer)

Q1. Export Ratio	_____% (i.e. % manufactured goods that are exported)
Q2. Domestic market	(Descriptive information: cities, shares and preferences of consumers)
Q3. Relation with domestic buyers	(Descriptive information: type and contract of buyers) Ex) Who decides the design? Whether are materials supplied by buyers or not?
Q4. Export market	(Descriptive information: destinations, buyers, marketing, contracts with buyers)
Q5. Relation with exporting buyers	(Descriptive information: type and contract of buyers as same as Q3)
Q6.Transport mode	(Descriptive information: truck, airplane, ships or multi modals)
Q7. Distance (km) & time (hours) to domestic markets	1. _____ km _____ hours 2. _____ km_____ hours 3. …
Q8. Distance (km), time (hours) & frequency to major ports & harbors	1. _____ km _____ hours frequency _____ 2. _____ km _____ hours frequency _____ 3. …
Examples for shipping frequency: a. several times in one day b. once in one day c. several times in a week d. once in a week e. fewer than d.	

Q10. Export customs clearance	1.Ttime consumed for customs clearance _____ hours per one container (or other unit:) 2 Payments needed for customs clearance _____ per one container (Currency unit:)
Q11. Import customs clearance	1.Ttime consumed for customs clearance _____ hours per one container (or other unit:) 2 Payments needed for customs clearance _____ per one container (Currency unit:)
Q12. Black-out 1. Frequency	a. Several times in a day b. Once or a few times in a week c. Once or a few times in a month d. Once or a few times in six months e. Have not experienced in a year
2. Length of period in case of the longest	a. Less than a few seconds b. A few seconds – one minute c. One minute – five minutes d. Five minutes – thirty minutes d. Longer than thirty minutes
Q13. Average wage (Trend of members)	1. Workers _____ (Currency unit:) 2. Middle managers _____ (Currency unit:) 3. Engineers _____ (Currency unit:)
Q14. Education (Completed)	1. Workers a. _____% b. _____% c. _____% d. _____% e. _____% f. _____% g. _____% 2. M. Managers a. _____% b. _____% c. _____% d. _____% e. _____% f. _____% g. _____% 3. Engineers a. _____% b. _____% c. _____% d. _____% e. _____% f. _____% g. _____%
Categories: a. No schooling b. Elementary school c. Middle high school d. High school e. Vocational school f. College/university g. Graduate school	
Q15. Difficulties in recruitment	(Descriptive information: for worker, middle managers and engineers)
Q16. Turn-over ratio of staff	_____ % (number of workers who left the firm/total no. of workers in 2008)
Q17. Skillfulness needed for workers	(Descriptive information: how long does it take for a new worker to become professional) Please be reminded that the skillfulness needed are different by the types of jobs

J. Questions on Fragmentation (including reinvestment or expansion elsewhere)

Q1. Trend of factory relocation	1. Countries to relocation: _____ 2. the reasons for the relocation to above-mentioned countries Ex) set-up cost, operation cost and service link cost (suggest transport and logistics)

K. Evaluation of Investment Climate in CLMV Countries

Q1. Perception on CLMV countries	Please just ask the respondent, "Do you know CLMV countries well? Yes ( ) No ( ) How about perception? _____

Q2. Please ask respondents to rank to the following investment climate elements in accordance with the priory order.

a. land price for owning or leasing b. wage level for workers c. price of energies or electricity
d. price of water for industrial use e. access to port & markets f. educational level of workers
g. population and GDP per capita of the country h. incentives like tax holidays i. others [ ]

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____
8. _____ 9. _____

Examples for others:

a. quality and cost of logistics services b. quality of suppliers and services c. time to go through customs
d. level of unseen cos e. availability of managerial, technical staff f. ease of getting expatriate working visas
g. ICT availability h. political stability i. risks to production delays.

Q3. Please ask respondents to evaluate the investment in CLMV countries after showing the basic information on investment climate in CLMV countries.

1. Please ask the respondent to evaluate each investment climate element of each country (Cambodia, Laos, Myanmar, Vietnam).
2. Please ask what the advantages for each country are.
3. Please ask what the disadvantages for each country are.

4. Please ask whether the respondents would consider investing or whether the respondents can operate in each country. 5. If the answer is negative for one country in the previous country, please ask the respondent what kind of improvements can change the respondent's mind positive.	
Q4. Perception on other countries in comparison with CLMV countries (as a potential location for investment)	Ex) a. China b. India c. Bangladesh d. Pakistan

L. Introduction of member companies

Please ask the respondent to introduce member firms which are appropriate to this semi-structured survey.

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

THANK YOU VERY MUCH.

Instruction for Semi-Structured Interview Focusing on Hard and Soft Infrastructure Needs in CLMV Countries for Private Companies

M. Please write your contact information

Respondent No.		Name of country	
Name of company			
Address (headquarter)			
Address (factory)			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			
Date/time of interview	Date: from : a.m./p.m. to : a.m./p.m.		
Name of interviewer			

N. Company Profile

Q1.Year of establishment	_____ (in the present location)			
Q2. Other production points (including headquarters, branches, parent companies and subsidiary companies)	9. City/country		10. City/country	
	11. City/country		12. City/country	
	13. City/country		14. City/country	
	15. City country		16. City/country	
Q3. Capital structure	a. 100% local b. 100% foreign c. Joint venture			
	Nationality of major foreign investor in case of b. and c.:			
	Share of foreign capital in case of c.;			
Q4. Factory location	a. In industrial estate b. In SEZ or in EPZ c. Outside of IE, SEZ & EPZ			
Q5. Major products	7. Product name: Brand name:			
	8. Product name: Brand name:			
	9. Product name: Brand name:			
Q6. Industrial sector (Multiple answers)	a. Electronics b. Automotive c. Automotive-related d. Machinery e. Plastic processing f. Metal-processing g. Spinning h. Knitting i. Weaving j. Footwear k. Wood-processing l. Agro-industries m. Others [ ]			
Q7. Main business activities	a. Material Supplier b. Part/Component Supplier c. Assembler/Manufacturer d. Distributor e. Others [ ]			
Q8. Annual output (quantity)	(Unit:)			
Q9. Annual sales (amount)	(Currency Unit:)			
Q10. Total asset (registered capital)	(Currency Unit:)			
Q11.Number of full-time employees	Persons			

O. Questions on Cost-structure

	Unit cost structure (main product)	Total cost structure
a. Labor force	____ %	____ %
b. Imported parts, components & raw materials	____ %	____ %
c. Parts, components & raw materials procured from domestic market	____ %	____ %
d. Transportation	____ %	____ %
e. Electricity	____ %	____ %
f. Other energies	____ %	____ %
g. Depreciation on machinery	____ %	____ %
h. Other elements	____ %	____ %
Total	100 %	100 %

P. Other Questions

Q1. Export ratio	____% (i.e. % manufactured goods that are exported)
Q2. Domestic market	(Descriptive information: cities, shares and preferences of consumers)
Q3. Relation with domestic buyers	(Descriptive information: type and contract of buyers) Ex) Who decides the design? Whether are materials supplied by buyers or not?
Q4. Export market	(Descriptive information: destinations, buyers, marketing, contracts with buyers)
Q5. Relation with exporting buyers	(Descriptive information: type and contract of buyers as same as Q3)
Q6. 1. Lead time (period between a customer's order and delivery of products) ____ days 2. Lead time (period between respondent's order for import materials and its delivery) ____ days	
Q7.Transport mode	(Descriptive information: truck, airplane, ships or multi modals)
Q8. Distance (km) & time (hours) to domestic markets	1. ____ km ____ hours 2. ____ km____ hours 3. …
Q9. Distance (km), time (hours) & frequency to major ports & harbors	1. ____ km ____ hours frequency ____ destination ____ 2. ____ km ____ hours frequency ____ destination ____ 3. …
Examples for frequency for shipping: a. several times in one day b. once in one day c. several times in a week d. once in a week e. fewer than d. Examples for frequency for Flights: a. more than two flights in a day b. two flights in a day c. one flight in a day d. a few flights in a week e. fewer than d.	
Q10. Export customs clearance	1.Time consumed for customs clearance ____ hours per one container (or other unit:) 2 Payments needed for customs clearance ____ per one container (Currency unit:)
Q11. Import customs clearance	1.Ttime consumed for customs clearance ____ hours per one container (or other unit:) 2 Payments needed for customs clearance ____ per one container (Currency unit:)
Q12. Black-out 1. Frequency	a. Several times in a day b. Once or a few times in a week c. Once or a few times in a month d. Once or a few times in six months e. Have not experienced in a year (if none, please skip to Q12)
2. Length of period in case of the longest	a. Less than a few seconds b. A few seconds – one minute c. One minute – five minutes d. Five minutes – thirty minutes d. Longer than thirty minutes
Q13. Average wage	1. Workers ____ (Currency unit:) 2. Middle managers ____ (Currency unit:) 3. Engineers ____ (Currency unit:)
Q14. Education (Completed)	1. Workers a. ____% b. ____% c. ____% d. ____% e. ____% f. ____% g. ____% 2. M. Managers a. ____% b. ____% c. ____% d. ____% e. ____% f. ____% g. ____% 3. Engineers a. ____% b. ____% c. ____% d. ____% e. ____% f. ____% g. ____%
Categories: a. No formal schooling b. Elementary school c. Middle high school d. High school e. Vocational school f. College/university g. Graduate school	
Q14. Difficulties in recruitment	(Descriptive information: for worker, middle managers and engineers)
Q15. Turn-over ratio	____ % (number of workers who left the firm/total no. of workers in 2008)

Q16. Skillfulness needed for workers	(Descriptive information: how long does it take for a new worker to become professional) Please be reminded that the skillfulness needed are different by the types of jobs

Q. Needs and Demand for Improvements of Soft and Hard Infrastructure

Q1. Please ask the respondent what is needed to attract more FDI.

Q2. Please ask the respondent why the CLMV countries have not been able to diversify the existing industrial structure.

Q3. Please ask respondents to enumerate the needs and demands freely. In case that the respondent does not answer well, suggesting one of the examples B on the following pages can be effective. In suggesting, please present the larger categories like labor force, customs, transport & logistics, telecommunication and electricity. This question is very important, so please ask using 5W1H (Who, when, where, what, why, how) concretely. Finally, after the enumeration and detailed explanation of the needs and demands, please ask the respondent to give priorities on the ones.

1. _____
2. _____
3. _____
4. _____
5. _____

…

Q4. Please ask the developments of the enumerated needs and demands in Q1 in the last three years. Has each of the needs and demands been worsened, not improved, not changed, improved or much improved? And ask why?

Q5. Please ask respondents on the prospects of the enumerated needs and demands in Q1 in the next few years. Will each of the needs and demands be worsened, not improved, not changed, improved or much improved? And ask why?

Q6. Please ask the supposed effects on the business with the assumption that each of the needs and demands were realized. If the respondent does not answer well, suggesting one of the following examples A can be effective.

Examples A:

a. Productivity increase	b. Recruitment become easier	c. R & D become possible	d. Cost decrease
e. Sales increase	f. Can expand new market	g. Transport time decrease	h. Transport cost decrease
i. Lead time decrease	j. Export destination increase	k. Value of export increase	l. Production can increase
m. Can reduce branches	n. Generator become unnecessary	o. Become effective for marketing	p. Fund raising become easier
q. Producing higher value added products can become possible		r. Others [ ]	

[Examples B]

1 Labor Issues (human resource development)

1-1 Enforcement against illegal strikes

1-2 Establishment of vocational training school for new workers

1-3 Establishment of vocational training school for existing workers

1-4 Establishment of technical college for new engineers

1-5 Establishment of technical college for existing engineers

1-6 Establishment of institutes of technology for new engineers

1-7 Establishment of institutes of technology for existing engineers

1-8 Establishment of business school for new managers

1-9 Establishment of business school for existing managers

1-10 Opportunities of on the job training in developed countries for existing engineers

1-11 Opportunities of on the job training in developed countries for existing managers

2 Investment Climate

2-1-1 Improvement of time taken for customs clearance at port & harbor for import

2-1-2 Improvement of time taken for customs clearance at port & harbor for export

2-1-3 Improvement of time taken for customs clearance at port & airport for import

2-1-4 Improvement of time taken for customs clearance at port & airport for export

2-1-5 Improvement of time taken for customs clearance at EPZ for import

2-1-6 Improvement of time taken for customs clearance at EPZ for export

2-1-7 Improvement of time taken for customs clearance at border for import

2-1-8 Improvement of time taken for customs clearance at border for export

2-2-1 Decrease in cost for customs clearance at port & harbor for import

2-2-2 Decrease in cost for customs clearance at port & harbor for export

2-2-3 Decrease in cost for customs clearance at port & airport for import

2-2-4 Decrease in cost for customs clearance at port & airport for export

2-2-5 Decrease in cost for customs clearance at EPZ for import

2-2-6 Decrease in cost for customs clearance at EPZ for export

2-2-7 Decrease in cost for customs clearance at border for import

2-2-8 Decrease in cost for customs clearance at border for export

2-3-1 Improvement of corruption by customs officers at port & harbor for import

2-4-1 Improvement of corruption by customs officers at port & harbor for export

2-4-2 Improvement of corruption by customs officers at port & airport for import

2-4-3 Improvement of corruption by customs officers at port & airport for export

2-4-4 Improvement of corruption by customs officers at EPZ for import

2-4-5 Improvement of corruption by customs officers at EPZ for export

2-4-6 Improvement of corruption by customs officers at border for import

2-4-7 Improvement of the system of tax incentive scheme.

3 Transport and logistics

3-1 Improvement of smoothness of road infrastructure near the factories

3-2 Improvement of smoothness of road infrastructure to the major city

3-3 Improvement of smoothness of road infrastructure to the port and harbor

3-4 Improvement of smoothness of road infrastructure to the airport

3-5 Improvement of time consumed for logistics to the national road

3-6 Improvement of time consumed for logistics to the major city

3-7 Improvement of time consumed for logistics to the port & harbor

3-8 Improvement of time consumed for logistics to the airport

3-9 Decrease in cost for logistics to the national road

3-10 Decrease in cost for logistics to the major city

3-11 Decrease in cost for logistics to the port & harbor

3-12 Decrease in cost for logistics to the airport

3-13 Improvement of price of gasoline

3-14 Improvement of railway cargo station

3-15 Improvement of time consumed at container terminals at port & harbor

3-16 Improvement of container terminal handling charge at port & harbor

3-17 Improvement of time consumed at container terminals at airport

3-18 Improvement of airport tax at airport

3-19 Increase in frequency of ships at port & harbor

3-20 Increase in frequency of flights at airport

4 Telecommunication

4-1 Improvement of cost for fixed phones

4-2 Improvement of quality for fixed phones

4-3 Improvement of quantity for fixed phone lines (difficult to connect)

4-4 Improvement of cost for mobile phones

4-5 Improvement of quality for mobile phones

4-6 Improvement of quantity for mobile phone stations (difficult to connect)

4-7 Improvement of cost for internet price

4-8 Improvement of speed to access to internet

5 Electricity

5-1 Improvement in decreasing black-out

5-2 Improvement in electricity price

5-3 Improvement of lower priced emergency generator

5-4 Improvement of quantity of water for general use

5-5 Improvement of quality of water for general use

5-6 Improvement in water price for general use

5-7 Improvement of quantity of water for industrial use

5-8 Improvement of quality of water for industrial use

5-9 Improvement in water price for industrial use

Instruction for Semi-Structured Interview Focusing on Hard and Soft Infrastructure Needs in CLMV Countries for Business Association (Chamber of Commerce)

R. Please write your contact information

Respondent No.		Name of country	
Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			
Date/time of interview	Date: from : a.m./p.m. to : a.m./p.m.		
Name of interviewer			

S. Business association profile

Q1. Number of member companies	
Q2.Year of establishment of association	
Q3. History of the industry	(Descriptive information)
Q4. Competitive environment of industry	(Descriptive information: domestic competition & international competition, toughness, difficulties to continue operation like environmental restriction, etc.)
Q5. Major products (produced by member firms of the business association)	10. Product name: Brand name:
	11. Product name: Brand name:
	12. Product name: Brand name:
Q7. Annual output of the industry (quantity)	(Unit:)
Q8. Annual sales of the industry (amount)	(Currency unit:)
Q9.Number of full-time employees of the industry	Persons

T. Questions on cost-structure (depends on rough feeling of respondent, but please check whether the value summed up is equal to 100% or not)

	Unit cost structure	Total cost structure
a. Labor force	%	%
b. Imported parts, components & raw materials	%	%
c. Parts, components & raw materials procured from domestic market	%	%
d. Transportation	%	%
e. Electricity	%	%
f. Other energies	%	%
g. Depreciation on machinery	%	%
h. Other elements	%	%
Total	100 %	100 %

Note) This question is not needed for policy makers.

U. Other Questions (just ask the trend of business association member firms as far as respondents can answer)

Q1. Export Ratio	_____% (i.e. % manufactured goods that are exported)
Q2. Domestic market	(Descriptive information: cities, shares and preferences of consumers)
Q3. Relation with domestic buyers	(Descriptive information: type and contract of buyers) Ex) Who decides the design? Whether are materials supplied by buyers or not?
Q4. Export market	(Descriptive information: destinations, buyers, marketing, contracts with buyers)
Q5. Relation with exporting buyers	(Descriptive information: type and contract of buyers as same as Q3)
Q6.Transport mode	(Descriptive information: truck, airplane, ships or multi modals)
Q7. Distance (km) & time (hours) to domestic markets	1. _____ km _____ hours 2. _____ km_____ hours 3. …
Q8. Distance (km), time (hours) & frequency to major ports & harbors	1. _____ km _____ hours frequency _____ 2. _____ km _____ hours frequency _____ 3. …

Examples for shipping frequency:
a. several times in one day b. once in one day c. several times in a week d. once in a week e. fewer than d.

Q9. Export customs clearance	1.Time consumed for customs clearance _____ hours per one container (or other unit:) 2 Payments needed for customs clearance _____ per one container (Currency unit:)
Q10. Import customs clearance	1.Ttime consumed for customs clearance _____ hours per one container (or other unit:) 2 Payments needed for customs clearance _____ per one container (Currency unit:)
Q11. Black-out 1. Frequency	a. Several times in a day b. Once or a few times in a week c. Once or a few times in a month d. Once or a few times in six months e. Have not experienced in a year
2. Length of period in case of the longest	a. Less than a few seconds b. a Few seconds – one minute c. One minute – five minutes d. Five minutes – thirty minutes d. Longer than thirty minutes
Q12. Average wage	1. Workers _____ (Currency unit:) 2. Middle managers _____ (Currency unit:) 3. Engineers _____ (Currency unit:)
Q13. Education (Completed)	1. Workers a. _____% b. _____% c. _____% d. _____% e. _____% f. _____% g. _____% 2. M. Managers a. _____% b. _____% c. _____% d. _____% e. _____% f. _____% g. _____% 3. Engineers a. _____% b. _____% c. _____% d. _____% e. _____% f. _____% g. _____%

Categories:
a. No schooling b. Elementary school c. Middle high school d. High school e. Vocational school
f. College/university g. Graduate school

Q14. Difficulties in recruitment	(Descriptive information: for worker, middle managers and engineers)
Q15. Turn-over ratio	_____ % (number of workers who left the firm/total no. of workers in 2008)
Q16. Skillfulness Needed for Workers	(Descriptive information: how long does it take for a new worker to become professional) Please be reminded that the skillfulness needed are different by the types of jobs

V. Needs and Demand for Improvements of Soft and Hard Infrastructure (After finish, please jump to F)

Q1. Please ask the respondent what is needed to attract more FDI.

Q2. Please ask the respondent why the CLMV countries have not been able to diversify the existing industrial structure.

Q3. Please ask respondents to enumerate the needs and demands freely. In case that the respondent does not answer well, suggesting one of the examples B on the following pages can be effective. In suggesting, please present the larger categories like labor force, customs, transport & logistics, telecommunication and electricity. This question is very important, so please ask using 5W1H (Who, when, where, what, why, how) concretely. Finally, after the enumeration and detailed explanation of the needs and demands, please ask the respondent to give priorities on the ones.

1. _____
2. _____
3. _____
4. _____
5. _____

…

Q4. Please ask the developments of the enumerated needs and demands in Q1 in the last three years. Has each of the needs and demands been worsened, not improved, not changed, improved or much improved? And ask why?

Q5. Please ask the prospects of the enumerated needs and demands in Q1 in the next few years. Will each of the needs and demands be worsened, not improved, not changed, improved or much improved? And ask why?

Q6. Please ask the supposed effects on the business with the assumption that each of the needs and demands were realized. If the respondent does not answer well, suggesting one of the following examples A can be effective.

Examples A:

a. Productivity increase	b. Recruitment become easier	c. R & D become possible	d. Cost decrease
e. Sales increase	f. Can expand new market	g. Transport time decrease	h. Transport cost decrease
i. Lead time decrease	j. Export destination increase	k. Value of export increase	l. Production can increase
m. Can reduce branches	n. Generator become unnecessary	o. Become effective for marketing	p. Fund raising become easier
q. Producing higher value added products can become possible		r. Others [ ]	

[Examples B]

6 Labor Issues (human resource development)

1-1 Enforcement against illegal strikes

1-2 Establishment of vocational training school for new workers

1-3 Establishment of vocational training school for existing workers

1-4 Establishment of technical college for new engineers

1-5 Establishment of technical college for existing engineers

1-6 Establishment of institutes of technology for new engineers

1-7 Establishment of institutes of technology for existing engineers

1-8 Establishment of business school for new managers

1-9 Establishment of business school for existing managers

1-10 Opportunities of on the job training in developed countries for existing engineers

1-11 Opportunities of on the job training in developed countries for existing managers

7 Investment Climate

2-1-1 Improvement of time taken for customs clearance at port & harbor for import

2-1-2 Improvement of time taken for customs clearance at port & harbor for export

2-1-3 Improvement of time taken for customs clearance at port & airport for import

2-1-4 Improvement of time taken for customs clearance at port & airport for export

2-1-5 Improvement of time taken for customs clearance at EPZ for import

2-1-6 Improvement of time taken for customs clearance at EPZ for export

2-1-7 Improvement of time taken for customs clearance at border for import

2-1-8 Improvement of time taken for customs clearance at border for export

2-2-1 Decrease in cost for customs clearance at port & harbor for import

2-2-2 Decrease in cost for customs clearance at port & harbor for export

2-2-3 Decrease in cost for customs clearance at port & airport for import

2-2-4 Decrease in cost for customs clearance at port & airport for export

2-2-5 Decrease in cost for customs clearance at EPZ for import

2-2-6 Decrease in cost for customs clearance at EPZ for export

2-2-7 Decrease in cost for customs clearance at border for import

2-2-8 Decrease in cost for customs clearance at border for export

2-3-1 Improvement of corruption by customs officers at port & harbor for import

2-4-1 Improvement of corruption by customs officers at port & harbor for export

2-4-2 Improvement of corruption by customs officers at port & airport for import

2-4-3 Improvement of corruption by customs officers at port & airport for export

2-4-4 Improvement of corruption by customs officers at EPZ for import

2-4-5 Improvement of corruption by customs officers at EPZ for export

2-4-6 Improvement of corruption by customs officers at border for import

2-4-7 Improvement of the system of tax incentive scheme.

8 Transport and logistics

3-1 Improvement of smoothness of road infrastructure near the factories

3-2 Improvement of smoothness of road infrastructure to the major city

3-3 Improvement of smoothness of road infrastructure to the port and harbor

3-4 Improvement of smoothness of road infrastructure to the airport

3-5 Improvement of time consumed for logistics to the national road

3-6 Improvement of time consumed for logistics to the major city

3-7 Improvement of time consumed for logistics to the port & harbor

3-8 Improvement of time consumed for logistics to the airport

3-9 Decrease in cost for logistics to the national road

3-10 Decrease in cost for logistics to the major city

3-11 Decrease in cost for logistics to the port & harbor

3-12 Decrease in cost for logistics to the airport

3-13 Improvement of price of gasoline

3-14 Improvement of railway cargo station

3-15 Improvement of time consumed at container terminals at port & harbor

3-16 Improvement of container terminal handling charge at port & harbor

3-17 Improvement of time consumed at container terminals at airport

3-18 Improvement of airport tax at airport

3-19 Increase in frequency of ships at port & harbor

3-20 Increase in frequency of flights at airport

9 Telecommunication

4-1 Improvement of cost for fixed phones

4-2 Improvement of quality for fixed phones

4-3 Improvement of quantity for fixed phone lines (difficult to connect)

4-4 Improvement of cost for mobile phones

4-5 Improvement of quality for mobile phones

4-6 Improvement of quantity for mobile phone stations (difficult to connect)

4-7 Improvement of cost for internet price

4-8 Improvement of speed to access to internet

10 Electricity

5-1 Improvement in decreasing black-out

5-2 Improvement in electricity price

5-3 Improvement of lower priced emergency generator

5-4 Improvement of quantity of water for general use

5-5 Improvement of quality of water for general use

5-6 Improvement in water price for general use

5-7 Improvement of quantity of water for industrial use

5-8 Improvement of quality of water for industrial use

5-9 Improvement in water price for industrial use

11 Others

W. Introduction of member companies

Please ask the respondent to introduce member firms which are appropriate to this semi-structured survey.

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Name of organization			
Address			
Telephone number		FAX number	
Name of respondent		Title/position	
E-Mail address			

Table Basic Information on Investment Climate in CLMV Countries

	Cambodia			Laos	Myanmar	Vietnam		
	Poipet	Phnom Penh	Bavet	Vientiane	Yangon	Hanoi	HCMC	Danang
Land Ownership (US$ per m^2 per Month) [1]	US$ 30	US$ 50	US$ 25 - 33	-	-	-	-	–
Land Leases (US$ per m^2)	US$ 30	US$ 50		US$ 0.5 - 1.0[2]	US$0.15 - 0.26	US$ 50-55	US$ 85	US$ 16
Water Supply Charges (Cent per m^3)	¢ 35	¢ 33	¢ 15	US$ 4.8 or ¢ 60[3]	¢ 88	¢ 29.2	¢ 15.9-47.1	¢ 16.3
Electricity Charges (Cent per KWh)	¢ 12	¢ 19.3	¢ 12.65	¢ 3.0	¢ 0.08[4]	¢ 2.8-10.3	¢ 2.8-10.3	¢ 2.8–10.3
Minimum wage (US$ per Month)	US$ 56	US$ 56	US$ 56	US$ 28	-	US$ 70.7	US$ 70.7	US$ 70.7
Average wage for workers	n.a.	US$ 80	US$ 80	US$ 30-40	US$ 16.3	US$ 95.8	US$ 95.8	US$ 95.8
Distance to ports and harbor (km)	n.a.	20km or 210km[5]	70km	720km	24km or 50km[6]	114km	30km	19km
Education Level of Majority of Workers [7]	Elementary & Junior High School (J.H.)			Elementary and J.H.	J.H.	High School		
Middle Managers	High School			College/Univ.	College/Univ.	College/University		
Engineers	Technical/Vocational and College/Univ.			College/Univ.	Technical/Vocational	College/University		
Population (Thousand Persons)	14,356			5,763	58,510	86,160		
GDP per Capita (US$)	US$ 756.1			US$ 917.8	US$ 464.6	US$ 1052.7		
Corporate Tax Ratio [8]	9%, **20%**			7.5 - **20%**		10%, 15%, 20%, **28%**		
Tax Holiday Periors (Years)	3-9 years			2 Years	3 Years	2 - 4 Years		

(Notes) 1) Firms with the nationality of Cambodia, which means that the share of Cambodian capital is 51% or larger than it, can own land. Foreign investors cannot own land in Lao PDR, Myanmar and Vietnam.

2) The land lease price is average price of land around Vientiane, and the land concession price is US$ 30 -50 in the same area.

3) US$ 4.8 is the case that the consumption is 10 m^3 or larger than it and ¢ 60 is the case that it is less than 10 m^3. Both cases are for non-residents.

4) The electricity price of Myanmar is lower, but it is often heard from investors that the black-out is frequent and electric generator is needed.

5) 20km is the case from Phnom Penh SEZ to Phnom Penh River Port and 210 km is the case to Sihanoukville Port.

6) 24km is the case from Mingaladon Industrial Park to Yangon Port and 50km is the case to Thilawa Port.

7) These data are based on the results of survey done for ERIA project in the fiscal year of 2008.

8) Corporate tax ratio does not include the cases during tax holiday period and the bold and underlined ratio means the tax ratio without tax incentives.

(Source) JETRO, ASEAN Secretariat, Japan-ASEAN Center, Brochures of Industrial Estates and Other Information Source.

CHAPTER 2

SURVEY FINDINGS ON INVESTMENT CLIMATES OF MAJOR CITIES IN CLMV COUNTRIES

Masami Ishida

Abstract

A questionnaire survey on investment climates in major cities in CLMV countries was conducted in 2008 as part of a project called "Development Strategy of CLMV Countries" of the Economic Research Institute of ASEAN and East Asia (ERIA). This study seeks to compare the survey results across cities and countries and to explain the purpose and backgrounds of the results, which show the challenges in human resources, infrastructure and trade-related institutions. Based on the survey, the service link cost has been reduced by the introduction of the one-stop service. Such a measure is key to attract foreign direct investments (FDI) in the upgraded manufacturing sectors.

INTRODUCTION

In 2008, the Economic Research Institute of ASEAN and East Asia (ERIA) in the fiscal year of 2008 undertook a survey on the investment climates in major cities in the CLMV countries, namely, Cambodia, Lao PDR, Myanmar and Vietnam. The analytical

results were reported by Sisovanna (2008), Oraboune (2008), Kyaw (2008) and Dinh (2008). This paper provides a comparative analysis of the survey results focusing on cities cited by Ishida (2009).

These cities belong to at least one of following categories: 1) metropolitans areas with lager population, 2) ports and harbors, 3) junctions and 4) border areas. In Cambodia, Phnom Penh, the cities cited were Sihanouk Ville and Bavet. Phnom Penh is a metropolitan city and the capital of Cambodia. It has an international airport and is home to the Mekong River port. Six national roads comprise Phnom Penh. National Road Nos. 1, 5 and No. 6 are parts of Central Sub-Corridor of the Southern Economic Corridor while National Road No. 4 connects with Sihanouk Ville.

Sihanouk Ville is the largest sea port in Cambodia, where several liners connect with Singapore, Hong Kong, Kelang in Malaysia, Laem Chabang in Thailand and Ho Chi Minh City[1] in Vietnam. Bavet borders Vietnam and is located along the Central Sub-Corridor of the Southern Economic Corridor. In Manhattan Special Economic Zone (SEZ) located in Bavet, six companies have already started operations. The distance from Manhattan SEZ to Ho Chi Minh City is just 66km while the distance to Phnom Penh is 218 km.[2]

In Lao PDR, Vientiane and Savannakhet were the cities chosen for the analysis. Vientiane, the capital of Lao PDR, is a metropolitan area and borders Nongkhai Province of Thailand. Savannakhet borders Mukdahan Province of Thailand and is on the junction of National Road No. 13 – the most major road of Lao PDR – and National Road No. 9 – which makes up the East-West Economic Corridor. In Savannakhet, Savan-Seno area was designated as a SEZ by virtue of Decree No. 2 issued by the Prime

[1] Based on an interview with the staff of Sihanouk Ville Autonomous Port on September 10, 2009.
[2] Calculated in accordance with Ishida and Kudo (2007).

Minister on January 21, 2002 (Keola 2008).

In Myanmar, the cities selected for the comparative analysis were Yangon, Mandalay and Myeik. The Yangon metropolitan area has the largest population in Myanmar. It lies in the harbor area along Yangon River. Mandalay is also a metropolitan city and boasts the second largest population in Myanmar. It is also an important point on the major import route from China, and is expected to be a junction of National Road No. 1 and a road connecting China and India. Myeik is just a small town with a small harbor and has a border trade post that enables free-on-board exports to Hong Kong, Malaysia and Singapore (Than 2006). The major industry of Myeik is processing of fresh fish.

In Vietnam, the survey covered Ho Chi Minh City and Danang. Ho Chi Minh City, one of Vietnam's metropolitan areas, has the largest population in the country and has several container terminals such as Saigon Port and Saigon New Port. There are plans, however, to move the freight ports in Ho Chi Minh City to Thivai and Caimep Port in Baria-Vuntau Province in the next several years.[3] Several major roads are located in Ho Chi Minh City, which lies at the junction of National Road No. 1 and Central Sub-corridor of Southern Economic Corridor. Danang is the third largest city in Vietnam with a deep-sea port. It is also the starting point of the East-West Economic Corridor.

Reviews of the operations of respondent companies in each city and country are presented in Table 1. Respondents were given a five-point scale response options: 1) very poor, 2) poor, 3) fair, 4) good and 5) excellent. There were 71 questions multiplied by the total number of cities (10) comprising the study, totaling 710. A total of 12 and six questions were not included in the survey in Lao PDR and Myanmar, respectively.

[3] Based on an interview with staff of the Saigon Port dated on December 8, 2009.

Table 1: Number of Samples for Each City in CLMV Countries

Country	City	Number of Samples
Cambodia	Phnom Penh (PP)	62
	Sihanouk Ville (SHV)	6
	Bavet (BV)	8
Lao PDR	Vientiane (VT)	30
	Savannakhet (SVK)	30
Myanmar	Yangon (YG)	30
	Mandalay (MDL)	20
	Myeik (MYK)	10
Vietnam	Ho Chi Minh City (HCM)	35
	Danang (DN)	30

Source: Data file of surveys.

Thus the number of average values came up to 668 (710 – 12 × 2 – 6 × 3). The average value of 668 is 3.15 and standard deviation is 0.53. The interval of 1 σ is 2.62 – 3.68; that of 2 σ is 2.09 – 4.21; and that of 3 σ is 1.56 – 4.74. These values can be good benchmarks and the values higher than 3.68 (1) are focused. However, in terms of a benchmark of the lower value, the values lower than 3.0 are focused at the same time. For the average value of less than 3.0 means that some respondent companies at least are not satisfactory with the specified investment climate.

This paper seeks to compare and explain the results of the comparative analyses of the investment climates in CLMV against the foregoing benchmarks. The questions were divided into three parts, that is, according to business set-up, business operation and logistics (Kuroiwa 2009). The business operation is further divided into macro economy, governance, regulatory framework, infrastructure, labor related matters, effectiveness of investment incentives and other factors affecting the investment climates. The logistics refer not only to transport for the domestic and foreign markets but also to domestic and foreign procurements. Policy recommendations concerning each CLMV country are given in the conclusion.

1. INVESTMENT CLIMATE ON BUSINESS SET-UP

Table 2 shows the evaluations by respondent companies of the investment climates in the CLMV cities where they operate. Of these cities, Bavet, a Cambodian city that borders Vietnam, received a remarkable evaluation. Seven of eight respondent companies will start their operation in SEZs in Bavet. The Cambodian government set up a one-stop shop at Bavet so companies do not have go to Phnom Penh for certain business transactions. The business services rendered by SEZ, including the one-stop shop, have contributed to Bavet's high rating. The results of evaluations on obtaining licenses and permits in Phnom Penh, Sihanouk Ville and Danang also exceeded 3.7.

One the other hand, the evaluations of the one-stop service in three cities in Myanmar are lower than 3.0. Investment regulations in Yangon and Myeik also fell below 3.0. However, Mandalay rated higher on collecting information on regulations and obtaining licenses and permits.

Table 2 Investment Climate for Business Set-up

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Collecting business information	3.5	3.2	3.8	3.5	3.5	3.1	3.3	3.5	3.6	3.0	3.5	3.3	3.3	3.3
Collecting information on regulation	3.3	3.2	3.9	3.4	3.3	3.4	3.4	3.5	3.9	3.0	3.6	3.3	3.5	3.4
Obtaining licenses and permits	3.7	3.8	3.8	3.7	3.3	3.4	3.3	3.3	3.9	3.1	3.5	3.4	3.7	3.5
One stop service	3.3	3.0	3.9	3.3	3.1	3.5	3.2	2.3	2.8	2.5	2.5	3.4	3.3	3.4
Investment regulation	3.7	3.2	3.8	3.6	3.5	3.4	3.5	2.8	3.2	2.4	2.9	3.2	3.4	3.3

Notes: 1) The cities are abbreviated as follows: PP (Phnom Penh), HV (Sihanouk Ville), SVK (Savannakhet), YG (Yangon), MDL (Mandalay), MYK (Myeik), HCM (Ho Chi Minh City), DN (Danang).

2) The underlined values are less than 3.0 and shaded values are larger than 3.68 (1 σ).

Source: The author made based on the survey results.

2. INVESTMENT CLIMATE ON BUSINESS OPERATIONS

2.1. Macro Economy

Macro economy is an important factor for the companies operating in each CLMV country. Table 3 shows the respondents' corresponding ratings on macro economies. Macro economy rated lower than 3.0 except in three cities in Cambodia and Myeik in Myanmar.

Table 3 Evaluation on Macro Economy

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Macro economy	3.2	3.5	3.3	3.3	2.9	2.7	2.8	2.5	2.6	3.0	2.6	3.0	2.9	2.9

Notes: as same as Table 2.
Source: as same as Table 2.

In case of Lao PDR, the exchange rate of kip against the U.S. dollar depreciated from 720 kip to the dollar in the first half of 1990s to 3,298 kip against the dollar in 1998, declining further to 10,000 kip in 2002 (Suzuki 2009). This tremendous depreciation was spawned by the failure of macro-economic policies that the government of Lao PDR enforced to solve the economic crisis that began in Thailand **in 1997** by increasing money supply (Koyama 2005).

In the case of Myanmar, the anti-government protests spearheaded by monks in Yangon in September 2007 was triggered by government's announcement on August 15, 2007 to raise the fuel prices (Kudo 2008). In the case of Vietnam, its economy was suffering from 23% inflation and increasing trade deficits in the first half of 2008 despite a steadily growing economy so far (Teramoto and Sakata 2009). The instability

of macro economies in recent years is reflected in the evaluations of macro-economic policies by respondent companies.

2.2. Governance

Investment climate items related to governance are enumerated in Table 4. Remarkably, the evaluations on corruption are lower than 3.0 in eight cities except in Myeik and Danang. This means that corruption is still one of the biggest problems in CLMV countries. On the other hand, the legal system and tax administration systems rated higher than 3.0 in all the cities. Governance and quality of policy rated relatively higher, especially in Bavet, but rated lower in Myeik. Quality of policy formation and implementation rated lower than 3.0 in Yangon and Myeik. Thus, governance factors other than corruption are not major concerns among respondents.

Table 4 Evaluation on Governance

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Governance	3.2	3.5	4.0	3.3	3.4	3.7	3.6	3.6	3.6	3.0	3.5	3.5	3.4	3.4
Quality of policy	3.4	3.2	3.9	3.4	3.6	3.3	3.4	2.8	3.2	2.9	3.0	3.3	3.3	3.3
Quality of government service	3.0	3.2	3.3	3.1	3.3	3.2	3.2	3.3	3.5	2.6	3.3	3.1	3.2	3.2
Legal system	3.0	3.2	3.5	3.1	3.6	3.5	3.5	3.2	3.6	3.0	3.3	3.2	3.3	3.2
Corruption	2.6	2.8	2.9	2.7	2.9	2.9	2.9	2.9	2.7	3.0	2.9	2.9	3.0	2.9

Notes: as same as Table 2.
Source: as same as Table 2.

2.3. Regulatory Framework

Table 5 shows the evaluations of respondent companies of regulatory frameworks across CLMV cities. Ratings for obtaining licenses and permits came out higher than

Table 5 Evaluation on Regulatory Framework

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Regulation of license & permit	3.5	3.3	3.9	3.6	3.4	3.6	3.5	3.5	3.7	2.9	3.4	3.3	3.6	3.4
Tax rate	3.2	3.5	3.6	3.3	3.1	2.9	3.0	2.5	2.7	2.3	2.6	3.2	3.3	3.2
Tax administration	3.3	3.3	3.5	3.3	3.1	3.2	3.2	3.3	3.3	3.0	3.3	3.3	3.3	3.3
Land regulation	3.3	3.5	3.9	3.4	3.4	3.6	3.5	3.7	3.6	3.0	3.6	3.1	3.2	3.2
Finance Regulation	3.3	3.5	3.8	3.4	3.7	3.3	3.5	3.2	3.7	3.0	3.3	3.3	3.3	3.3
Intellectual property right	3.2	3.2	3.8	3.3	3.4	2.9	3.2	3.4	3.3	3.0	3.3	3.0	3.2	3.1

Notes: as same as Table 2.
Source: as same as Table 2.

3.0 (fair) except in Myeik of Myanmar. Those of Bavet and Mandalay are higher than 3.7.

The respondents' ratings for tax rates in three cities in Myanmar and Savannakhet in Lao PDR fell below 3.0 while those in three cities in Cambodia were relatively higher. The corporate income tax rate of Myanmar is 40.0% while those of Vietnam, Cambodia and Lao PDR are 25%, 20% and 20%, respectively.

In addition, according to the 2010 *Doing Business* report of the World Bank, on "paying tax," Cambodia, Lao PDR and Vietnam ranked 58th, 113th and 147th, respectively, out of 183 economies covered in the report. The respondents took into account the total number of hours it takes each year to pay taxes in Vietnam, which is 1,050 hours, and the sum of related tax rates, which is 40.1%. The corresponding figures in Cambodia and Lao PDR are 173 and 362 hours, respectively, and 22.7% and 33.7%, respectively, in terms of the sum of tax rates. These facts are reflected in the evaluations except that the tax rate of Lao PDR is lower than Vietnam. Tax administration ratings are generally moderate except in Myeik in Myanmar.

Among the CLMV countries, land ownership, especially by private companies, is allowed only in Cambodia, which imposes a domestic equity requirement of 51% or more (CDC 2007). Lao PDR, Myanmar and Vietnam do not allow land ownership for private firms. In Lao PDR, the longest land use term for foreign investors is 30 years in case he leases from a Lao national, 50 years in case he leases from the government, and 75 years in case he leases land in the special economic zone. Land use term may be extended subject to the approval of the National Land Management Authority, the government and the parliament (Suzuki 2009). In Myanmar, people can lease land over a period of 10 to 30 years or for a maximum term of 50 years[4]. In Vietnam, the maximum land use term is 50 years, according to Article 36 of the investment law in Vietnam (Law No.59/2005/QH11.)[5] The maximum allowable period for a company lease land in an industrial estate in Vietnam depends on when the estate was built. For example, if a company invests in an industrial estate established in 2000, as of 2010, the land use term is 40 years for the company. In terms of satisfaction over land use terms in the CLMV countries, respondents' choices were – in order of how they were rated – Cambodia, Vietnam or Lao PDR and Myanmar.

Vietnam was rated the lowest (3.2) by the companies in terms of land regulation. Myanmar rated the highest (3.6) while Bavet and Yangon rated higher at 3.7. Differences in land use term is not reflected in the evaluation of land regulation.

The financial regulations in the CLMV countries are generally perceived fair based on the evaluations. Cambodia rated 3.4, Lao PDR 3.5, Myanmar 3.5 and Vietnam 3.3 while Bavet, Vientiane and Mandalay rated higher than 3.7. Ratings on intellectual

[4] Referred to Website of JETRO, on January 17, 2010.

[5] Referred to Website of Ministry of Planning and Investment, Vietnam on January 17, 2010. (See comment above)

property rights fell below 3.0 in Savannakhet and Myeik.

2.4. Infrastructure

Table 6 shows the respondents' evaluations of infrastructure in the CLMV countries. Power supply is a major problem in Cambodia, Myanmar and Vietnam, and hardly a concern in Lao PDR, a net electricity exporter. Myanmar's rating was extremely low. Myanmar is faced with incessant blackouts despite the price of electricity for manufacturing industries pegged at only 5 cent per kilowatt hour, said to be lower than those of other countries in the ASEAN. Based on interviews with several companies in Yangon, factories operate their electricity generators for four to five hours daily.[6]

Phnom Penh and Sihanouk Ville rated lower than 3.0. on power supply. In Cambodia, electricity cost is very high – at 19.3 cents and 18 cents per kwh in Phnom Penh SEZ and Sihanouk Ville Port SEZ, respectively.[7] Bavet rated higher on power

Table 6 Evaluation on Infrastructure

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK		HCM	DN	Total
Electricity	3.0	2.8	3.8	3.0	3.4	3.8	3.6	2.2	2.2	2.0	2.2	2.9	3.1	3.0
Water	3.4	3.0	3.4	3.3	3.4	3.5	3.4	3.7	3.8	2.0	3.5	3.0	3.4	3.2
Gas/fuel	3.3	3.5	3.4	3.3	3.3	3.7	3.5	3.5	3.1	2.2	3.2	3.2	3.2	3.2
Transportation	3.3	3.3	3.9	3.4	3.2	3.4	3.3	3.2	3.8	2.3	3.3	2.5	3.1	2.8
Telecommunication	3.5	2.8	3.4	3.4	3.6	3.8	3.7	2.8	3.7	3.0	3.1	3.4	3.5	3.4
Industrial estate	3.5	3.7	4.1	3.5	3.2	3.5	3.4	2.7	3.1	2.3	2.8	3.1	3.3	3.2
Accommodation for foreigners	3.7	4.0	4.0	3.7	3.3	3.6	3.5	3.0	3.8	2.7	3.2	3.1	3.0	3.1

Notes: as same as Table 2.
Source: as same as Table 2.

[6] Based on interviews conducted on October 21-22, 2009.
[7] Based on an interview with a staff of Phnom Penh SEZ on September 11, and with a staff of the Port Authority of Sihanouk Ville on September 10. At Phnom Penh SEZ, stable electricity supply is guaranteed by an electricity generating company, Golden Energy PPSEZ Ltd. , which generates 15MW/h.

supply due to its lower power cost. Cross-border power supply in Vietnam is easily supplied in the border area at a cost of 12.65 cents per kwh. When this survey was conducted, blackouts were frequent occurrences in Phnom Penh. The frequency of blackouts has since decreased[8] after transmission lines were extended to Phnom Penh from Takeo Province, in accordance with a signed contract between Vietnam Electricity Group and Electricité du Cambodge on May 26, 2009. [9]

In Ho Chi Minh City, the evaluation on electricity was lower than 3.0. A distinction must be made between the evaluations made by companies within industrial estates and in special economic zones and those outside. The average rating on power supply given by the former was 3.4, with no "poor (2)" and "very poor (1)" ratings while the latter gave a corresponding rating of 2.7. Electricity costs in Vietnam tend to change on a day's notice (Table 7). In Lao PDR, power cost for industrial use in 2009 ranged from 516 kip (6.1 U.S. cents) to 607 kip (7.1 cents).

Table 7: Price of Electricity in Vietnam

		Low Point	Normal Point	Peak Point
Bien Hoa	Time	22:00 - 6:00	6:00-9:30 11:30-17:00 20:30-22:00	9:30-11:30 17:00-20:30
	Price	¢ 3.0 (VND 530)	¢ 5.3 (VND 920)	¢ 10.5 (VND 1,830)
Danang	Time	22:00 - 4:00	4:00-9:30 11:30-17:00 20:00-22:00	9:30-11:30 17:00-20:00
	Price	¢ 2.6 (VND 455)	¢ 4.7 (VND 835)	¢ 9.7 (VND 1,690)

Source: Interview with a staff of Industrial Estate at Bien Hoa and Brochure of Saigon Danang Investment Corporation.

[8] Based on an interview with a garment factory manager in Phnom Penh.

[9] Based on an article, published on May 27, 2009 on the website of NASDAQ Newsletter (accessed on January 21, 2010).

Compared with electricity, complaints on gas/fuel do not seem to be serious except in Myeik. The evaluations on transportation in general were lower than 3.0 in Myeik and Ho Chi Minh City. Underdevelopment of infrastructure and traffic congestions merited poor ratings in Myeik and Ho Chi Minh City, respectively. As for industrial estates, Yangon and Myeik obtained ratings lower than 3.0 for reasons owing to the poor state of the one-stop service.

2.5. Labor Force

Table 8 shows the education attainment of workers, middle managers and engineers. The majority of workers in Cambodia, particularly in Phnom Penh and Sihanouk Ville, either have no education or reached only middle high school. Those in Bavet have slightly higher educational attainments, with 25 to 30% of the workers having finished elementary to middle high school and completed high school. This proportion is similar to that of Vientiane in Lao PDR. In Savannakhet, the share of workers with elementary school decreases as that with high school and vocational education increases. In Myanmar, the highest education level attained by nearly half the workers is middle high school while workers in Yangon and Mandalay with university education comprise more than 10%. In Vietnam, more than 40% of the workers have high school education.

The highest educational attainment of the majority of middle managers in Sihanouk Ville and Bavet is high school while those in Phnom Penh have high school or some college/university education. Engineers have relatively higher education than middle managers. None of the employees in the respondent companies in Sihanouk Ville are engineers. The majority of engineers in Phnom Penh have either vocational education or some college/university education while all engineers in Bavet have

Table 8: Education Background of workers, Middle Managers and Engineers

<Workers> (Unit: %)

	Cambodia				Lao PDR			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SK	Total	YG	ML	MYK	Total	HCM	DN	Total
No Schooling	21.3	25.0	16.7	21.0	6.7	4.6	5.7	0.8	0.0	0.0	0.4	1.1	0.2	0.7
Elementary School	27.3	25.0	25.0	27.0	32.3	15.3	23.8	19.7	18.0	34.5	21.6	8.7	4.7	6.8
Middle High School	27.8	25.0	29.2	27.8	20.3	27.6	24.0	45.1	46.3	51.0	46.5	34.2	32.4	33.4
High School	17.1	16.7	25.0	17.9	27.1	31.4	29.2	18.9	22.8	11.5	18.9	43.5	46.7	45.1
Vocational School	5.6	8.3	4.2	5.6	11.1	18.2	14.7	2.0	2.3	0.0	1.8	11.6	12.4	12.0
College/University	0.9	0.0	0.0	0.8	2.4	2.9	2.7	13.6	10.8	3.0	10.9	0.7	3.9	2.2
Graduate School	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<Middle Managers> (Unit: %)

	Cambodia				Lao PDR			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SK	Total	YG	ML	MYK	Total	HCM	DN	Total
No Schooling	1.7	0.0	0.0	1.6	0.0	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elementary School	4.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle High School	13.2	20.0	9.1	13.2	2.0	0.5	1.3	0.0	0.0	0.0	0.0	2.7	4.3	3.6
High School	27.6	60.0	54.5	30.0	5.9	17.0	11.4	0.0	8.3	33.0	8.3	20.2	7.0	13.0
Vocational School	18.4	0.0	18.2	17.9	53.5	34.7	44.1	6.7	0.0	0.0	3.4	19.2	28.0	24.0
College/ University	27.6	20.0	18.2	26.8	33.5	42.3	37.9	90.0	91.7	67.0	86.5	56.4	59.1	57.8
Graduate School	7.5	0.0	0.0	6.8	5.1	4.8	4.9	3.4	0.0	0.0	1.7	1.5	1.5	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

<Engineers> (Unit: %)

	Cambodia				Lao PDR			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SK	Total	YG	ML	MYK	Total	HCM	DN	Total
No Schooling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elementary School	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle High School	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.3	0.0	0.0	0.0
High School	0.0	0.0	0.0	0.0	0.0	12.6	6.0	5.3	0.0	0.0	2.6	0.0	0.0	0.0
Vocational School	50.0	0.0	0.0	48.4	60.5	45.5	53.4	70.5	74.5	98.8	77.6	15.3	3.5	9.4
College/University	40.0	0.0	100.0	41.9	38.6	34.3	36.5	24.2	25.5	0.0	19.5	81.5	90.6	86.0
Graduate School	10.0	0.0	0.0	9.7	1.0	7.6	4.1	0.0	0.0	0.0	0.0	3.2	5.9	4.5
Total	100.0	0.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated based on the survey data (Lao PDR, Myanmar and Vietnam) and Sisovanna (2009).

college/university education.

In Savannakhet, the majority of middle managers and engineers attended vocational schools and obtained college/university education. In Myanmar, the majority of middle managers have college/university education while most engineers have vocational education. In Vietnam, the majority of middle managers and engineers have

college/university education.

Respondents' evaluations of the quality of workers in Mandalay and Bavet (Table 9) are relatively higher. The share of workers with high school and middle high-school education in Mandalay is bigger than Yangon and those with either no education or attended elementary schools in Mandalay are slightly lower in number than those in Yangon. Those with college/university education make up a bigger number in Yangon. Similar trends can be seen in Bavet and Phnom Penh. On the other hand, the evaluation of the quality of workers in Sihanouk Ville is below 3.0. This area has the largest share of workers with no schooling. Vietnam, which has the highest educational attainment of workers among the countries in CLMV, did not rate higher on the quality of workers.

The evaluations of the quality of middle managers and engineers in Mandalay and in Bavet show similar trends. The evaluation of middle managers and engineers in Shianouk Ville is higher than the evaluation of its workers. The ratings given to the quality of engineers in Sihanouk Ville, however, is not a credible one, there being no information from the respondent companies about the engineers' level of education. In

Table 9: Evaluation on Labor Related Matters

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Quality of worker	3.2	2.8	3.5	3.2	3.2	3.2	3.2	3.2	3.7	3.0	3.3	3.1	3.3	3.2
Quality of middle management	3.3	3.3	3.5	3.4	3.6	3.5	3.6	3.4	3.7	3.0	3.4	3.5	3.4	3.5
Quality of engineers	3.3	3.5	3.4	3.3	3.6	3.6	3.6	3.4	3.5	3.0	3.4	3.4	3.4	3.4
Labor cost	3.3	3.2	3.3	3.3	3.5	3.5	3.5	3.1	3.2	3.0	3.1	3.1	3.1	3.1
Recruitment of workers	3.2	3.7	3.5	3.3	3.1	3.0	3.1	3.3	4.0	3.0	3.5	2.9	3.1	3.0
Labor turnover	3.0	3.2	3.3	3.1	3.1	3.2	3.1	3.2	3.9	3.2	3.4	2.9	2.9	2.9
Labor relation (strike, etc.)	3.0	3.5	3.6	3.1	4.0	4.3	4.2	3.5	4.1	3.2	3.6	3.4	3.5	3.4

Notes: Same as Table 2.
Source: Same as Table 2.

Lao PDR and in Vietnam, the quality of middle managers and engineers rated higher than the workers.

On labor cost, the evaluation of Lao PDR yielded higher ratings than other countries whereas Vietnam rated lower. The minimum wage in Lao PDR is 384,000 kip (US$ 45) (Suzuki 2009), which is lower than Cambodia's (US$56). The minimum wage in Vietnam differs by investment area, as shown in Table 10. But it is mostly higher than that of Cambodia. The minimum wage in Myanmar is not made public.

The level of minimum wages is reflected in the results of evaluations of labor costs across the CLMV countries. Ratings of ease of recruitment of workers are relatively higher in Mandalay and Sihanouk Ville while that of Ho Chi Minh City is lower than 3.0. It is said that employee recruitment in Vietnam has been difficult since 2006 since a foreign direct investment boom based on the "China plus one" strategy. Maybe so the evaluation of labor turnover in Ho Chi Minh City and Danang is also lower than 3.0. As for labor relations, the higher ratings given to Lao PDR and Mandalay reflect the stable relations between employer and employees. Phnom Penh,

Table 10: Minimum Wages in Vietnam

Time of Implementation	Jan. 2006	Jan. 2008	Jan.2009	Jan.2010
First Area	US$ 54.4 (VND 870,000)	US$ 61.3 (VND 1,000,0(	US$ 68.6 (VND 1,200,00	US$ 74.4 (VND 1,340,00(
Second Area	US$ 49.4 (VND 790,000)	US$ 55.2 (VND 900,0(	US$ 61.7 (VND 1,080,00	US$ 66.1 (VND 1,190,00(
Third Area	US$ 44.4 (VND 710,000)	US$ 49.1 (VND 800,0(	US$ 54.3 (VND 950,00	US$ 57.8 (VND 1,040,00(
Fourth Area			US$ 52.6 (VND 920,00	US$ 55.6 (VND 1,000,00(

Notes: 1) The first areas are Ho Chi Minh City and Hanoi; the second, suburban areas of Ho Chi Minh and Hanoi; the third are other cities; and the fourth are remote areas.
2) Exchange rates of Vietnam Dong are 15,994 in 2006, 16,302 in 2008, 17,500 in 2009 and 18,000 in 2010 are assumed.

Source: Newspapers and brochures of industrial estates.

where one company alone has several trade unions, obtained a relatively lower rating on labor relation.

2.6. Other Factors Affecting Business Operations

The results of evaluations of other investment climates are shown in Table 11. In terms of land price, cities rated between 3.0 and 3.3. Only the companies in Savannakhet rated slightly higher (3.6). According to Article 30 of the Decree on the Management Regulations and Incentive Policies Regarding the Savan-Seno Special Economic Zone, investors leasing land inside the SEZ for a period of 30 years are exempted from making lease payments for 12 years.

Still another factor evaluated by respondents was access to loan, which received a rating of less than 3.0 in Phnom Penh and Sihanouk Ville. Institutionally, the law on banking and financial institutions was enacted in 1999. Overseas capital transfer, issuance of letter of credit and foreign exchange service are available in Cambodia. It is said, however, that capital borrowing is generally difficult without offering immovable assets as collateral, the lending term is shorter and the lending rates are higher than those in other countries (CDC 2007).

Table 11: Other Investment Climates on Business Operation

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	Mey	Total	HCM	DN	Total
Land price /office rentals	3.1	3.3	3.3	3.2	3.2	3.6	3.4	3.2	3.1	3.0	3.1	3.0	3.1	3.0
Finance-access to Loan	2.8	2.8	3.1	2.9	3.0	3.2	3.1	3.2	3.5	2.8	3.2	3.1	3.2	3.2

Notes: as same as Table 2.
Source: as same as Table 2.

Table 12: Effectiveness of Investment Incentives

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Tax incentives	3.7	3.5	4.0	3.7	3.5	3.8	3.6	1.7	1.6	1.8	1.7	3.3	3.3	3.3
Subsidies	2.7	3.0	2.6	2.7	2.6	3.3	3.0	n.a.	n.a.	n.a.	n.a.	2.9	2.8	2.9
Rent-free or subsidized land	2.8	2.8	2.7	2.8	3.1	3.6	3.4	n.a.	n.a.	n.a.	n.a.	3.0	3.0	3.0
Access to low-cost financing	2.8	2.8	3.1	2.8	3.1	3.0	3.0	n.a.	n.a.	n.a.	n.a.	2.9	2.9	2.9
Easing remittance restriction	3.6	3.8	3.5	3.6	3.3	3.4	3.4	n.a.	n.a.	n.a.	n.a.	3.1	3.1	3.1
Exemption from trade restrictions	3.6	3.8	3.4	3.6	3.7	3.7	3.7	n.a.	n.a.	n.a.	n.a.	3.0	3.0	3.0
Foreign ownership restriction	3.3	3.5	2.9	3.3	3.0	3.5	3.3	n.a.	n.a.	n.a.	n.a.	3.1	3.1	3.1
Prioritized supply of utility services	3.1	3.0	3.4	3.1	3.5	3.8	3.6	n.a.	n.a.	n.a.	n.a.	2.9	3.0	3.0

Notes: as same as Table 2.
Source: as same as Table 2.

2.7. Effectiveness of Investment Incentives

Table 12 shows the results of evaluation of the effectiveness of investment incentives. Tax incentives like tax holidays rated higher than 3.8 in Phnom Penh, Bavet and Savannakhet while those in the three cities in Myanmar rated lower than 2.0.

The tax holiday system in Cambodia guarantees three years after a 'triggered period' if an investment project is classified as Qualified Investment Project (QIP). The triggered period refers to the three years or a period before the QIP earns a profit. In addition to the triggered period and the three years, priority period – as provided for in the financial management law – for a maximum of six years can be added. The priority period is determined according to the specifications of the project (CDC 2007).

The tax holiday period in Lao PDR is divided into three categories according to the level of infrastructure development in the investment area: seven years for the first category (lower development area), five years for the second category (medium-level development area) and two years for the third category (the most developed area). Three

years and two years of tax reduction are given to the second (7.5%) and third categories (10%) after the exemption period. After the reduction or exemption (the first category), the tax rates are pegged at 10% for the first category, 15% for the second category and 20% for the third category (Suzuki 2009).

In Myanmar, a three-year tax holiday is given to the companies established in accordance with the requirements of the foreign investment law.[10] The corporate income tax rates and the exemption and reduction periods are different in Vietnam, as shown in Table 13. The standard tax rate is 28%, which applies after the years subject to the incentive tax rate are over. The exemption period begins after the investor begins to earn profits. Thus the period when an investor enjoys the incentive tax rate without exemption and reduction differs in accordance with the period before the investor begins to earn profits.

The evaluations on subsidies are lower than 3.0 except in Savannakhet and it is just 3.3 even in Savannakhet. Access to low-cost financing merited a lower rating both in Cambodia and in Vietnam. This result suggests that the governments do not offer such kinds of financing in these countries. In Lao PDR, based on the Decree on the

Table 13: The Conditions of the Tax Rates, Exemption and Reduction in Vietnam

	Incentive Tax Rate	Exemption Period	Conditions for 50% Reduction
Investment in Promoted Sector	20% (10 years)	2 years	3 years (10%)
Investment in Promoted Area	20% (10 years)	2 years	6 years (10%)
Investment in Specially Promoted Sector	10% (15 years)	4 years	7 years (5%)
Investment in Specially Promoted Area	10% (15 years)	4 years	9 years (5%)

Notes: 1) After the years given for incentive tax rates, standard tax rate (28%) is imposed.
2) Exemption periods begin after the investment project begins to earn profits.
Source: Website of JETRO.

[10] Based on website of JETRO.

Management Regulations and Incentive Policies Regarding the Savan-Seno Special Economic Zone, such financing is inexistent. The evaluations on rent-free or subsidized also yielded relatively lower ratings, especially in Phnom Penh and Sihanouk Ville. Savannakhet, on the other hand, obtained higher ratings because investors leasing land inside the SEZ for a period of 30 years is exempted from paying rent for 12 years as earlier explained.

In terms of remittance restrictions, Cambodia, especially Sihanouk Ville, rated higher than it did on access to loan. Dollar-based business is common in Cambodia although the law, particularly the sub-decree of 1992, prohibits doing business in foreign currency. The law of September 1997 on foreign exchange stipulates that there shall be no restriction on foreign exchange operations through authorized banks, which in turn must report to the National Bank of Cambodia each transfer amounting to US$10,000 or above. Investors can freely remit foreign currencies abroad in accordance with Article 11 of the amended law on investment of 2003 (CDC 2007).

In Lao PDR, foreign investors remit their profits, dividends, capital and other incomes to foreign countries through commercial banks in Lao PDR as far as related financial obligations are fulfilled (Suzuki, 2009). On the other hand, in Vietnam, depositing into and withdrawing from bank accounts, including remittances abroad, are undertaken by accomplishing the required forms in advance.[11] Vietnam has stricter procedural requirements than Cambodia and Lao PDR. Respondents' ratings for the three countries reflect the complexities of said requirements. The complexities of foreign exchange regulations in Myanmar are well known. For instance, foreign currencies needed to import products shall be earned by exporting, and bringing in and

[11] From the JETRO website, accessed on January 19, 2010.

out foreign currencies over US$2,000 shall be reported to the authorities.[12] Respondents' lower ratings for foreign exchange regulations in Bavet and Savannakhet compared what they gave Mandalay are attributed to the difficulty of procurement of foreign exchanges in these two areas, given their distances from the capital cities.

Trade restrictions obtained higher ratings in Sihanouk Ville, Vientiane and Savannakhet while Danang rated lower than 3.0. Foreign ownership restrictions in Table 12 scored higher than 3.0 but lower than 3.7 while Bavet obtained only 2.9. Restrictions for foreign companies setting up in Cambodia are not considered strict, which makes it a wonder why the country rated low on this factor.

Basic utilities such as electricity and telecommunications received ratings between 3.0 and 4.0 except in Ho Chi Minh City. Lao PDR rated 3.6, higher than other cities. Yet, the author had difficulty accessing phone numbers in Lao PDR and Myanmar while at the Narita Airport in August 2008. On the other hand, it is said that getting a specific phone number makes easy connections in Lao PDR is easy, although it entails quite a sum of money.

Electricity supply is gets higher priority in industrial estates in Vietnam compared to non-industrial ones. All six respondent companies in industrial estates in Ho Chi Minh City gave it a rating of 3 while four out of 19 companies outside industrial estates and SEZ rated it 2. The lower evaluation is manifest among companies located outside of industrial estates and SEZ.

[12] From the JETRO website, accessed on January 19, 2010.

3. LOGISTICS

3.1. Domestic and Foreign Markets

Respondents to the survey were likewise asked to evaluate the domestic and foreign markets as destinations of goods (Table 14). Based on the respondents' evaluation, the size of the domestic market and the local purchasing power are serious concerns in Cambodia. Most of the respondent companies are garment and footwear exporters, who consider the domestic market too small compared to those of foreign developed economies. As of 2008 Cambodia's population was 14.7 million.

In Lao PDR, the small population – estimated at 5.8 million as of 2008[13] – is not a major concern. In fact, there are more companies catering to the domestic market compared to Cambodia, and they generally seem satisfied with how their businesses are doing, as evidenced by the relatively higher ratings they gave to the domestic market.

The evaluation on smuggling control in Phnom Penh, Bavet, Savannakhet and Ho

Table 14: Evaluation on Domestic Market and Foreign Market

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Domestic market size	2.0	3.0	1.9	2.0	3.0	3.2	3.1	3.1	3.2	3.0	3.1	3.1	3.2	3.2
Local purchasing power	2.0	2.8	1.7	2.0	3.0	3.3	3.2	2.8	3.6	3.0	3.1	3.2	2.9	3.1
Smuggling Control	3.2	3.0	2.3	3.1	2.7	2.6	2.6	3.1	3.2	2.6	3.1	2.7	3.1	2.9
Export procedure	3.4	3.3	4.0	3.4	3.7	3.2	3.5	3.2	3.1	2.8	3.1	3.2	3.5	3.3
Export tax	3.5	3.2	4.5	3.5	3.8	3.5	3.6	3.0	3.1	2.0	2.9	3.1	3.1	3.1
Rules of Origin for GSP	3.4	3.8	4.2	3.5	3.8	3.4	3.7	2.6	2.9	2.8	2.7	3.2	3.4	3.2
Uncertainty of GSP	3.0	3.5	3.8	3.1	3.4	3.1	3.3	2.7	3.3	2.8	2.9	3.0	3.0	3.0

Notes: as same as Table 2.
Source: as same as Table 2.

[13] Referred to on the website of ASEAN Secretariat on January 19, 2010.

Chi Minh City are lower than 3.0. On export procedure and export tax, Bavet and Vientiane got more favorable evaluations. These two cities are located near the border with Vietnam and Thailand, respectively. To export to the third countries from these two cities, transit transport is necessary. In Vientiane, trucks from Thailand can transport to the Laem Chabang Port or Khlong Toey Port directly after containers are sealed at Thanalane in Lao PDR (Suzuki 2009). At Bavet, trucks can go directly to ports in southern Vietnam such as that of Saigon after securing a customs clearance in Manhattan SEZ (Shiraishi 2010). These cities obtained higher ratings in terms of customs clearance.

Cambodia, Lao PDR and Myanmar belong to the least developed countries (LDC). Firms in Cambodia can benefit from the Generalized System of Preferences (GSP) of the United States, European Union (EU) and Japan; Lao PDR from those of EU and Japan; and Myanmar, Japan. The higher values of GSP and uncertainty over GSP in Sihanouk Ville, Bavet and Vientiane are reflected by the completeness of GSP. Firms interested in availing oneself of the GSP incentives can go directly to the local administrative office in Bavet while firms in Savannakhet have to go to Vientiane for the same purpose.[14] The benefits of GSP can be suspended for a country with serious labor issues. The relatively lower rating obtained by Phnom Penh on the uncertainty of GSP is attributed to its labor problems.

3.2. Domestic and Foreign Procurements

Table 15 shows the respondents' evaluations of domestic and foreign procurement systems. Ratings given to information on and quality of local suppliers in Phnom Penh

[14] Based on an interview with a garment factory worker in Savannakhet on August 5, 2006.

Table 15: Evaluation on Domestic and Foreign Procurement

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Inf. Local Suppliers	2.8	3.0	2.0	2.8	3.3	2.9	3.1	3.3	3.9	2.7	3.4	3.1	3.2	3.2
Quality of L Suppliers	2.8	3.2	1.8	2.7	3.4	3.1	3.2	3.3	3.5	2.8	3.3	3.0	3.2	3.1
Access to Foreign Supplier	3.4	3.3	3.7	3.4	3.6	3.8	3.7	3.3	3.6	2.9	3.3	3.2	3.1	3.2
Foreign Procurement	3.5	3.7	4.2	3.5	3.6	3.6	3.6	3.0	3.4	2.8	3.1	3.0	3.5	3.3
Customs clearance	3.3	3.3	3.7	3.3	3.6	3.5	3.5	3.5	3.4	2.9	3.4	3.1	3.4	3.2
Tariff barrier	3.3	3.3	3.3	3.3	3.5	3.5	3.5	3.1	3.7	3.0	3.3	3.0	3.3	3.1
Non-tariff barrier	3.1	3.2	2.8	3.1	3.4	3.1	3.2	3.5	3.4	3.0	3.4	3.0	3.2	3.1
Drawback of import duty & VAT	3.2	3.2	3.2	3.2	2.8	3.6	3.2	2.3	3.0	2.3	2.5	2.9	3.3	3.1
Trade regulation	3.3	3.3	3.5	3.3	3.6	3.6	3.6	3.0	3.5	2.7	3.1	2.9	3.3	3.1
Foreign exchange regulation	3.4	3.5	3.3	3.4	3.5	3.2	3.4	3.3	3.4	2.9	3.3	3.0	3.2	3.1

Notes: Same as Table 2.
Source: Same as Table 2.

and Bavet are lower. These are attributed to the fact that many companies in Cambodia are "enclave companies" in garment and footwear industries, which import raw materials and intermediate goods and export the finished products. These "enclave companies" do not have to search for local suppliers; as a result, the local suppliers have not well-developed so far. In Lao PDR and Myanmar, the respondents' ratings are more moderate except in Savannakhet, where there are less export-oriented companies compared with Cambodia. In terms of access to foreign suppliers and foreign procurements, the evaluations in Bavet, Vientiane and Savannakhet – being border areas – are relatively higher. In short, access to companies in Vietnam and in Thailand is easier for companies located at border areas.

As for tariff and non-tariff barriers, respondents' ratings in Ho Chi Minh City are lower than 3.0 and those on non-tariff barriers in Bavet also fell below 3.0. Most raw materials and intermediate goods needed in Bavet are procured through the Saigon port

or from Ho Chi Minh City. These ratings suggest that companies in Ho Chi Minh City still face difficulties on tariff and non-tariff barriers even if there have been efforts to eliminate these hurdles since Vietnam became a member of the World Trade Organization.

Import tariff and value added tax (VAT) merited less than 3.0 in Vientiane, Yangon, Myeik and Ho Chi Minh City. In terms of trade regulations and exemptions from trade restrictions, the evaluations in Sihanouk Ville, Phnom Penh, Vientiane and Savannakeht are relatively higher. The Automatic System for Customs data (or simply referred to as ASYCUDA) introduced in Sihanouk Ville in 2008 is expected to have raised the respondents' rating. On the other hand, the evaluations on trade regulations in Ho Chi Minh City and on trade restrictions in Danang turned out lower than 3.0. The corresponding rating for Myeik is 2.7.

As shown in Tables 14 and 15, all trade-related items except tariff and non-tariff barrier relating to Myeik rated lower than 3.0 whereas Bavet got higher values. These higher values maybe reflect the effects of the one-stop service and services given by SEZ, both of which help reduce the service link costs.

3.3. Transport and Communications

Table 16 shows the evaluations on more detailed items under transport and communication. Cost, efficiency and reliability of land transport rated 1.1 and those of air transport got 0.7. In Ho Chi Minh City, the emerging lower value may be traced to the bad condition of land transport. Cost, efficiency and reliability of land transport rated 2.8, 2.8 and 2.9, respectively. These are collectively attributed to the traffic jams in the highly populated city – home to major ports and many business activities. This

Table 16: Evaluation on Transport and Communication

	Cambodia				Laos			Myanmar				Vietnam		
	PP	SHV	BVT	Total	VT	SVK	Total	YG	MDL	MYK	Total	HCM	DN	Total
Cost of land transport	2.9	2.6	3.5	2.9	n.a.	n.a.	n.a.	1.2	2.3	1.1	1.6	2.8	3.0	2.9
Efficiency of land transport	3.3	2.8	3.8	3.3	n.a.	n.a.	n.a.	1.3	2.7	1.1	1.7	2.8	3.1	3.0
Reliability of land transport	3.5	2.8	3.8	3.5	n.a.	n.a.	n.a.	1.4	2.5	1.1	1.7	2.9	3.2	3.1
Cost of sea transport	3.2	3.0	3.5	3.2	n.a.	n.a.	n.a.	3.3	1.9	2.8	2.7	3.1	3.2	3.1
Efficiency of sea transport	3.5	3.5	3.3	3.4	n.a.	n.a.	n.a.	3.3	1.9	2.6	2.7	3.3	3.3	3.3
Reliability of sea transport	3.6	3.5	3.7	3.6	n.a.	n.a.	n.a.	3.7	2.1	2.7	3.0	3.4	3.4	3.4
Cost of air transport	2.6	2.3	2.8	2.6	n.a.	n.a.	n.a.	1.1	0.0	0.7	0.7	3.1	3.0	3.1
Efficiency of air transport	3.3	2.3	2.7	3.2	n.a.	n.a.	n.a.	1.7	0.0	0.7	1.0	3.3	3.1	3.2
Reliability of Air Transport	3.6	2.3	2.5	3.4	n.a.	n.a.	n.a.	2.1	0.0	0.7	1.2	3.4	3.6	3.5
Cost of communication	2.9	3.0	3.2	2.9	n.a.	n.a.	n.a.	2.2	3.1	2.6	2.6	3.2	3.4	3.3
Efficiency of communication	3.1	3.0	3.3	3.2	n.a.	n.a.	n.a.	2.5	3.0	2.6	2.7	3.2	3.4	3.3
Reliability of Communication	3.3	3.0	3.0	3.3	n.a.	n.a.	n.a.	2.5	3.3	2.7	2.8	3.3	3.4	3.3

Note: Same as Table 2.
Source: Same as Table 2.

shows that improved road infrastructure cannot cope with the increased demand of the regional economies. In the near future, most of the functions of ports and harbors will be moved to Thivai and Caimep area in Baria-Vuntau Province. The heavy traffic load in the city will lighten while that of National Road of No. 51 to Baria Vuntau is expected to increase.

Based on the respondents' evaluations, transportation rated 3.2 in Yangon and 3.8 in Mandalay (Table 6). However, the evaluations showed land and air transport in both two cities is faced with a lot of problems. In Mandalay, which is 833km away from Yangon, in addition to land and air transport, the cost, efficiency and reliability of sea transport rated 1.9, 1.9 and 2.1, respectively. As for Cambodia, particularly Sihanouk Ville, land transport and air transport got lower than 3.0 in terms of cost, efficiency and reliability. The cost of land and air transport similarly rated less than 3.0. This is

understandable when seen in light of the landing fee at the Phnom Penh International Airport, which is US$ 25 – considered higher than those of other international airports.

As for communication, telecommunication rated 2.8 in Sihanouk Ville, slightly lower than the rating obtained by the cost of communication in Phnom Penh, with 2.9. In Cambodia, several mobile phone companies compete in the market, but the communication fees between different companies is set to be higher; as a result, not a few people has two or three mobile phones.

In Myanmar, the evaluations of the cost, efficiency and reliability of communication obtained ratings lower than 2.0 in Yangon and Myeik. The cost of telecommunications in the country is exorbitant while Internet connectivity is poor. The initial cost of registration for a mobile phone and a fixed phone is US$1,500. An long-distance call to Japan, for example, costs US$8.1 per three minutes. [15]

CONCLUSION

The survey detailed above yielded very useful findings on the investment climates in major cities in the CLMV countries. Yet they may not have always brought out other important facts. This is partly because the survey – owing to certain limitations – may not have covered all pertinent questions, especially those that concern multi-national companies operating in the CLMV countries. Thus the search for suitable facts should continue.

In Phnom Penh and Sihanouk Ville in Cambodia, challenges like access to loans, corruption, the educational attainment of the labor force, electricity cost, air and land

[15] Based on the JETRO website.

transport and telecommunication became evident through the survey among respondent firms. Corruption, smuggling control and level of education are challenges also in Bavet. Based on the survey, Lao PDR is confronted by challenges like policy of macro economy, corruption, smuggling control, education, road infrastructure.

In Myanmar, Myeik rated low on many questions. Yangon and Mandalay are similarly confronted by a number challenges to the investment climate. Considering economies of scale, improvement of the factors underlying such challenges in Yangon and Mandalay – particularly macro economy, electricity, quality of policy, corruption, one stop service, tax rate, tax incentives, electricity and telecommunication – should be prioritized. In Vietnam, Ho Chi Minh City is besieged with more problems than Danang. Trade facilitation by decreasing tariff and eliminating non-tariff barriers should be required. In addition, improving land transport, especially, in the city and in areas leading to the Thivai Caimep port, is necessary. Increase in power supply is also needed to cover not only the industrial estates but also other areas where businesses operate.

However, the education level of workers is relatively higher in Ho Chi Minh City and Danang. Thus efforts should be channeled to the improvements of power supply, transport infrastructure and trade facilitation. By doing so, Vietnam can further diversify the industrial structure. In Cambodia, Bavet rated remarkably higher. Making the most of the benefits of better infrastructure like electricity and ports of Vietnam and of lower wages and GSP in Cambodia will make the border area more attractive. This same approach can be used in Poipet, another border area with Thailand. Also worth noting is one of the factors underlying the competitive investment climates in Bavet – a good trade facilitation system, which can reduce the service link cost. Efforts toward trade facilitation by establishing SEZ and setting up a one-stop service can improve the

investment climate dramatically.

In Cambodia, the diversification of industrial structure is possible, especially along border areas like Bavet. However, it should be pointed out that labor force is limited in such areas. In Lao PDR, the fee waiver for land lease in Savannakhet SEZ, stable labor relations and power supply were rated highly. This leaves out human resource development and transport infrastructure, which needs to be improved. The one-stop service in Savannakhet can further improve the investment climate.

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CHAPTER 3

EVALUATION ON FRAGMENTATION AND RELOCATION OF ELECTRONICS INDUSTRIES TO CLMV COUNTRIES: VIEWPOINTS FROM MALAYSIA

Chang Yii Tan[1]

Abstract

This is a Malaysian case study on the possibility of fragmentation and relocation of the electronics industries to the CLMV countries. An overview and historical sketch of the structure of the electronics industry in Malaysia is described. Its key feature is the GPN or global production networks, which accounts for the distributed nature of the firms throughout the world. A survey of firms was also undertaken identifying key features and rationalizing their presence in Malaysia. The firms' perceptions were used as a basis for examining the key issues in terms of relocating to CLMV countries. A set of approaches were discussed with respect to improving their attractiveness, correcting their weaknesses, and taking advantage of the strategic orientation of the GPNs of the electronic industry.

[1] With assistance from Lim Ai Lee, Muhammad Nasir Hanifah, Low Swee Heong; and grateful acknowledgements to Ms Lim Pao Li.

INTRODUCTION

This chapter is the Malaysian case study of ERIA on upgrading infrastructure in the CLMV countries. The main subsections include a discussion on the industrial structure, history, current situation of key electronic subsectors and industries, possibility of fragmentation and challenges for CLMV countries, and policy recommendations based on perspectives of advanced ASEAN countries.

1. STRUCTURE OF THE ELECTRONICS INDUSTRY IN MALAYSIA

Malaysia is a middle income country in 2010. With a population of 28 million, it has Gross Domestic Product or GDP estimated at US$222 billion in 2008 and a per capita GDP of US$8,000[2]. In terms of industrial structure, the manufacturing sector comprised 32 percent of Malaysia's economy (i.e., value added)[3]. Within the manufacturing sector, electronics has the most contribution to total exports being 45 percent. Its 2008 performance posted a 55 percent of Electrical & Electronics or E&E exports among the other manufactured products for exports.

The electronics industry in Malaysia started in the early 1970s when the Government adopted an export-oriented strategy to promote industrial development. The late 1960s and the early 1970s coincided with the first wave of multinational firms

[2] International Monetary Fund (http://www.imf.org/external/pubs/ft/scr/2009/cr09253.pdf, accessed 20 February 2010).

[3] Ninth Malaysia Plan 2006-2010, page 50.

moving their operations to Asia[4]. Texas Instruments set up their first plant in Singapore in 1967. Penang's first foreign direct investment in 1972 was from the US and Europe, i.e. Clarion, National Semiconductor, Robert Bosch, Microsystem International and Litronix (now Osram). Subsequently, the Plaza Accord of 1985 saw another round of firms from Japan and Korea, moving investments offshore.

The electronics industry in Malaysia can be classified into three broad categories and the details are shown in Table 1:

a) Electronic components;

b) Consumer electronics; and

c) Industrial electronics

Table 1: Major Electronic Products Made and/or Assembled in Malaysia

Semiconductor Devices	Other Electronic Components	Consumer and Industrial Electronic Equipment
• Linear and digital ICs; • Memories and microprocessors; • Opto-electronics; • Discrete devices; • Hybrids; • Arrays; • High-reliability military products	• Capacitors, relays, switches, resistors; • Quartz crystals/oscillators; • Connectors, wire harnesses transformers, lead frames disk-drive parts; • Audio and videocassette mechanisms; • Magnetic heads, coils ferrite; • Micro-motors; • Printed circuit boards (PCBs)	• Colour TV receivers; • Audio products; • DVD players & recorders and home theatre systems, blue ray, mini disc, electronic games consoles and digital cameras; • Paging systems, walkie talkies, telephone sets; • Digital transmission equipment, satellite receivers; • Personal computers disk-drives, monitors, CD-ROM drives, keyboard and printers; • Telecommunication systems, public telephone exchanges

Source: MITI 1998 updated 2009 (http://www.mida.gov.my/en_v2/index.php?page=ee).

[4] Penang Development Corporation. Penang: Looking Back, Looking Ahead, 20 Years of Progress (circa 1990).

There are more than 1,695 E&E companies operating in Malaysia with US$24.5 billion worth of investments. Employment includes more than 596,000 persons or 37.8 per cent of the total employment in the manufacturing sector in 2006.[5] Table 2 shows the growth of the electronics industry over the past 20 years by output, employment, and exports. Output of the electronics sector reached about US$48 billion with an export value of US$67 billion in 2008. Almost 300,000 persons were employed in the sector. Table 3 shows its export performance by subsectors (components, consumer, and industrial). Since 1990, the dominance of the components (mainly semiconductors) had reduced, with industrial electronic products having top share.

The electronic components subsector mainly comprised of semiconductor devices and passive components. Malaysia is a base for many leading semiconductor companies

Table 2: Performance of the Electronics Industry, 1990-2008

Year	Output		Employment		Exports		Imports	
	US$ (bil)	% growth	No.	% growth	US$ (bil)	% growth	US$ (bil)	% growth
1990	7.5	27.7	144,000	17.1	8.6	28.5	-	-
1995	27.9	25.9	313,000	12.6	33.5	28.0	25.1	29.9
2000	44.0	31.0	423,600	10.9	56.0	18.4	37.7	30.6
2003	38.7	7.7	360,048	4.2	48.2	-2.8	36.4	-0.2
2008	48.3		296,870		67.5		-	
AAGR 2003-08	-	23.2	-	13.4	-	25.1	-	24.0

*Source:*http://moeaitc.tier.org.tw/idic/mgz_topic.nsf/6258d3c9832b5df548256a8e001ffa63/cdcc4bc550022b30482567820021da98?OpenDocument, and MIDA (2007). Business Opportunities in Malaysia's Electronics Industry and MIDA website (http://www.mida.gov.my/en_v2/index.php?page=ee) accessed 24 Oct 2009.

[5] Source: MIDA (2007), *Electronics Manufacturing Services*, MIDA; 90% comprise of electronics.

Table 3: Export-Import Performance of the Electronics Industry by Sub-sector

(US$ billion)

Year	Electronic components		Consumer electronics		Industrial electronics		Total	
	Export	Import	Export	Import	Export	Import	Export	Import
1990	4.7	4.6	2.0	0.1	1.8	1.8	8.6	6.6
1995	14.3	18.4	8.4	0.3	10.7	6.4	33.4	25.1
2000	22.1	29.4	7.0	0.2	26.7	7.9	55.8	37.5
2005	26.6	31.9	6.0	0.5	30.5	14.4	63.1	46.9
2008	28.3	33.2	6.2	0.7	33.0	15.4	67.5	49.3

Source: MIDA, 1998, IMP3 and http://digitalibrary.mida.gov.my/equip-mida/custom/p_presentation/Electronics/2009/Statusperformanceofelectronicsindustry2008.pdf.

from the USA (Intel, AMD, and Spansion), Asia (Toshiba, NEC, and ASE) and Europe (Infineon, Qimonda, and STMicroelectronics). For 2008, exports of semiconductor devices amounted to US$28 billion accounting for 38.6 percent of the total electronics exports for the period. Interestingly, there are more imports of components than exports, and they become inputs to the consumer and industrial electronics subsectors.

Semiconductor companies continue to expand and diversify their products in the country. Beginning with the simple packages such as CERDIP, PDIP and later moving on to more advanced packages (flip chip, ball grid array, chip scale packages, multilevel packages and system-on-chip), to meet the growing demand of the multifunctional products. The packaging technology has also moved from micron level to nanotechnology. Some of these companies are now using 45nm technology in the production process and undertaking R&D on 32nm technology.

The Malaysian electronics industry has moved from low-wage, labour-intensive manufacturing to low-cost, rapid ramp up, high volume, and increasingly automated

manufacturing industries, with special capabilities in assembly, testing and packaging of semiconductors and hard disk drives (Best 2007). Many of the world's top electronics companies have set up their assembly plants in Asia in the early years of the development of electronics industry. Malaysia has become a significant production base where the MNCs manage to enjoy good relative infrastructure, bureaucratic quickness when dealing with MNCs, political stability, muzzled labour organization and an English speaking labour force (Rasiah 2003).

As Penang was the first location to woo foreign direct investment or FDI in this area, it has developed into the semiconductor hub for the region and has the relevant infrastructure and resources in place to spur investment in the industry. However, it is important to note that there is no room for complacency. In order to maintain the industry's competitiveness, the Malaysian Government has identified the 'widening and deepening of semiconductor value chain' as one of the strategic thrusts under its Third Industrial Master Plan (IMP3)[6]. A total of 35 semiconductor projects with investments amounting to US$4.53 billion were approved during the first three years of the IMP3 period (2006-2008). Table 4 shows the number of projects that were approved for the electronics sector between 1985 and 2008.

In 2008, a total of 39 projects were approved in the electronic subsector with investments amounting to US$1.5 billion. The projects approved were for the production of semiconductor devices, printed circuit boards, substrates, passive components and high brightness light emitting diodes (HBLED).

[6] Industrial Master Plan 3: 2006-2010, chapter 8 (Electrical and Electronics)

Table 4: Number of Electronics Projects Approved by Sub-sector 1985-2008

Year	Electronic Components		Consumer Electronics		Industrial Electronics		Total	
	No.	Capital Investment (US$ mil.)	No.	Capital Investment (US$ mil.)	No.	Capital Investment (US$ mil.)	No.	Capital Investment (US$ mil.)
1985	17	43.1	9	1.9	11	8.9	37	53.9
1990	143	1,029.8	25	419.6	38	210.3	206	1,659.7
1995	95	371.4	29	79.8	50	764.5	174	1,215.7
2000	75	3,010.8	45	142.6	87	1,392.2	207	4,545.6
2005	n/a	2,142.9	n/a	59.3	n/a	1,269.8	n/a	3,472.0
2007	44	3,228.5	15	589.1	31	231.5	90	4,049.1
2008	39	1,511.7	7	45.4	40	996.1	86	2,553.2
2009	32	858.5	7	119.3	25	117.8	64	1,095.5

Source: MIDA, 1998 and Various Issues of MIDA Performance.

Also, seven other projects were approved in the consumer electronics subsector with US$45.4 million in investments. Two of these were new projects amounting to US$40.94 million (90.1%) and five were expansion/diversification projects of US$4.47 million (9.9%).

For industrial electronics, 40 projects were approved with a total investment of US$996 million, a three-fold increase compared to 2007. The development of the Electronics & Electrical (E&E) industry in Malaysia is mainly due to FDI and is very much a part of the global production network (GPN) of multinational companies (MNCs). This phenomenon has been analysed in the literature by various economists. In particular, Ernst (2001) argued that the GPN was much broader than merely production. He disclosed that these MNCs controlled all stages of the value chain. Their flagships dominate over the network resources as well as decision making and used knowledge diffusion to keep the networks growing.

Table 5 summarises the typology of electronics production networks in Asia since the early days of the electronics industry. US companies produced more sophisticated industrial electronics especially involved in the manufacture of hard disc drives (HDDs), PCs, printers, and telecommunications products. The Japanese and Korean owned companies in Asia mostly produce consumer electronics and components with a closed, centralised, long-term and stable cross-border production networks. The Taiwanese-owned electronic companies have become more heavily specialised in PCs

Table 5: Typology of Electronics Production Networks in Asia

Characteristics	**US owned**	**Japanese Owned**	**Taiwanese Owned**	**Korean Owned**	**Singapore Owned**
Production Mix	Sophisticated industrial electronics	Consumer and low-end components, commodity industrial	PC electronics	Consumer, some components	Disk drive and PC electronics
Accessibility	Open	Closed	Open	Closed	Open
Permanence	Fluid	Long-term	Fluid	Long term	Long term
Ability to adjust to market/tech shifts	Fast	Slow	Moderate and fast	Slow	Moderate
Governance	Decentralised	Centralised	Centralised	Centralised	Centralised
Supply base preference	Anyone meeting price, quality, delivery constraints	Domestic and local affiliated	Domestic and local Chinese	Domestic	Local Chinese
Exploitation of intra-Asia value-added	Maximises local Asian value-added	Maximises Japanese value-added at home and locally; minimises rest of Asia value-added	Maximises Taiwanese value-added but exploits local Chinese value-added where necessary	Maximises domestic Korean value-added	Maximises high domestic and low local Asian value-added

Source: Borrus, M., D. Ernst and S. Haggard, 2000, "*Cross-Border. Production Networks and the Industrial Integration of the Asia-. Pacific Region*".

and its components. Singapore-owned companies manufacture computer peripherals and some high-end products of these categories.

The GPNs comprise of flagships which are considered the heart of the network. They command use of resources and direct strategic decisions of the network. These include the following: (1) Original Equipment Manufacturers (OEMs) and (2) Contract Manufacturers (CMs) or Electronic Manufacturing Services (EMS). It should be noted that the EMS are more typical of the US-based system, whereas the Asian electronics manufacturers are known to have their own set of supplier firms.

Ernst (2001) posited that GPNs had multi-tier network of networks. At the first level, the OEMs and the EMS have a global network of operations. In addition, within each location they also have built up a network of suppliers and service providers who can provide local services and support (second level). It is also important to note that this network is not confined to one location but extends to the region (third level). Wong (1999) documented that for the hard disk drive industry in Singapore, the network extended to Penang, Thailand and others. Key observers of the industry interviewed for this project claimed that components are still supplied from Singapore.

The local players within the GPN, such as the service providers and suppliers, provide various services ranging from contract chip assembly to design and manufacturing to post-manufacturing services.[7] The higher-tier suppliers have capabilities such as new product introduction (NPI), embedded software (system on chip), system integration and in the management of network resources, supply chain and customer relations. They are the intermediaries between the flagships and the second

[7] Source: http://www.mida.gov.my.

lower-tier suppliers.

The lower-tier suppliers are usually the Asians, which are identified as the weakest link in the GPNs. They specialised in automation, plastics, precision engineering and metal work, chemical products and packaging of various kinds. Their main competitive advantage is low cost, speed, and flexibility in delivery. They are usually the most vulnerable to abrupt changes in markets and financial crises.

All elements of the GPN are visible in Penang, but the GPN have clearly evolved in tandem with the industry and global-regional changes taking place.

The electronics industry started in Penang, a small state in the northern part of Peninsular Malaysia, since 1971. The island became highly industrialised when it was able to attract the first wave of electronics firms from the US, Japan, and Germany. Over the years Penang has attracted more than 200 MNCs high-tech electronic plants. The flagship OEM firms include Dell, Intel, AMD, Altera, Motorola, Agilent, Hitachi, Osram, Bosch, Fairchild, and Seagate. These are located within the Bayan Lepas Free Industrial Zone.

Electronic Manufacturing Services (EMS) companies have established in Penang as part of a global trend. The larger EMS companies such as Flextronics (which bought over Selectron) and SCI-Sanmina have been in Penang for several years. There are also the smaller EMS companies such as Jabil, Venture, Plexus (all in Penang), and Celestica (in Kulim). The larger EMS companies focus on volume production, earning 2-3 per cent margins. The smaller EMS companies get 6-8 per cent margins as they take on smaller customized jobs. The major concerns for the EMS companies are the supply chain as this is where they make their profits, while their business model is volume and low price.

An important strategy that has supported the GPNs of the electronics industry has been the development of the industrial cluster. When the first MNCs set up in Penang, they were very much having self-contained operations, in so far as the production aspect was concerned. Due to various changes in the industry, particularly the decentralisation of procurement responsibilities to individual establishments in the mid-1980s, local suppliers flourished. The Malaysian government also promoted the development of the industrial cluster in the Second Industrial Master Plan (1995-2005). In Penang, more than 1,200 local support industries have sprung up within and around the Bayan Lepas area. The Penang Automation Cluster that was formed in 2005 comprises over 50 local firms that provide automation support and services, from production to communications and networking to the MNCs[8]. Such cluster helped keep Penang competitive.

The electronics industry is extremely dynamic because it is based largely on technology, which is a major driver of change. These changes also characterised the pattern of industrial development in Penang. Its electronics industry started with consumer electronics and semiconductor assembly, packaging, and test. Disk drive manufacturers had set up in the late 1980s but could not survive the competitive nature of the industry. With the Asian financial crisis of the late 1990s, electronic firms have relocated the lower value parts of the business from Penang to China, Thailand, and Vietnam. Since the mid-1990s, some flagship manufacturing firms have started to divest their manufacturing operations to the EMS. In recent years, many EMS firms have considered shifting out of Malaysia after their initial contracts expired. This trend continues. Since the late 1990s, Penang has been experiencing a gradual decline of FDIs

[8] Penang Economic Monthly, Volume 8 Issue 7, July 2006, also available at (accessed 20 Feb 2010) http://www2.seri.com.my/Economic%20Briefing%20-%20Pg%20Econ%20Rept/EconBrief2006-07.pdf.

due to factors like cheaper labour costs in China, India, Thailand, and Vietnam.

Due to the nature of the electronics industry, the OEMs and EMS companies in Penang have also established their investments in other locations. For instance, INTEL Inc., an OEM, has been operating in 48 countries. Their operation includes fabrication, test, and assembly facilities. Renesas Technology Corporation (formerly Hitachi), a Japanese OEM semiconductor manufacturer, is engaged in manufacturing, design, and sales operations in 20 countries with a global workforce of 25,000. Jabil Inc., an EMS company, has 59 facilities in 22 countries with 85,000 employees. Flextronics, an EMS company in Singapore is present in 30 countries. Hence, it is not surprising that many of their suppliers are also found in these locations. Even the larger local-based suppliers in Penang have started operations elsewhere (e.g., Eng Teknologi has operations in the Philippines, Thailand, and China). However, most of the local suppliers opted to remain in Penang, although they have seen the disruptive changes in the industry and in some cases were even invited to move with the other OEMs and the EMS.

Many of the world's top electronics companies have set up their assembly plants in Asia in the early years of the development of electronics industry. Malaysia has become a significant production base where the MNCs manage to enjoy good infrastructure, bureaucratic quickness when dealing with MNCs, political stability, muzzled labour organization, and an English speaking labour force (Rasiah 2003).

2. POSSIBILITY OF FRAGMENTATION AND CHALLENGES FOR CLMV COUNTRIES

Although the electronics industry in Malaysia is part of a multi-tiered network of GPNs,

it is not clear whether firms would choose to stay or move to other locations that offer more competitive environments. It is clear that the OEMs and EMS companies in Malaysia are continually searching for locations that would reduce their risks and lower production cost. To understand how decisions are made, a survey was conducted among firms in the electronics industry in Penang. This section describes their characteristics and conditions of their continued operation. The next section discusses their responses to the attractiveness of the CLMV countries.

2.1. Characteristics of Electronics Firms that were interviewed

Two major types of data gathering were undertaken. First, 15 institutions were selected for formal interviews using a semi-structured questionnaire that was standardised across the countries. Second, informal interviews were also conducted among key respondents with insights in the industry, especially those who recently retired from the major firms. Table 6 shows the firms that were formally interviewed.

Nine of the firms had 100 percent foreign owned capital (Table 7). Out of nine foreign investors, five are EMS companies and four are OEMs. Of the foreign

Table 6: Number of Firms by Industry Category

Industry Category	Number of firms	%
EMS companies	5	33
OEMs	5	33
Tooling Shop	3	20
Institutional	2	13
Grand Total	15	100

Source: Survey results.

Table 7: Number of Firms by Capital Structure and Industry Category

Industry Category	Capital Structure			
	100% Local	100% Foreign	Joint Venture	Total
EMS companies	-	5 (100%)	-	5 (100%)
OEMs	1 (20%)	4 (80%)	-	5 (100%)
Tooling Shop	3 (100%)	-	-	3 (100%)
Total	4 (31%)	9 (69%)	-	13 (100%)

Source : Survey results.

Table 8: Nationality of Major Foreign Investor(s)

Country	Canada	German	Singapore	US	Total
EMS companies	1	1	1	2	5
OEMs	-	2	-	1	3
Total	1	3	1	3	8

Note: One missing case.
Source : Survey results.

shareholders, German (n=3), United States (n=3), Singapore (n=1) and Canada (n=1) emerged as the largest owners (Table 8).

Table 9 shows the distribution of firms by factory location. Out of the 13 firms interviewed, about 54 percent of the firms were located in the export processing zones (EPZ[9]) and 46 percent were located in industrial estate. Firms that are located in industrial estates are EMS companies (n=2), OEMs (n=1) and Tooling Shop (n=3). Of those firms located in SEZ or in EPZ, three are EMS companies and four are OEMs. The major difference between EPZ and Industrial Estate is that the latter is in the

[9] In Malaysia, they are known as Free Industrial Zones (FIZs).

Table 9: Number of Firms by Factory Location

Industry Category	Factory Location			
	In Ind. Estate	In EPZ	Outside of EPZ	Total
EMS companies	2 (40%)	3 (30%)	-	5 (100%)
OEMs	1 (20%)	4 (80%)	-	5 (100%)
Tooling Shop	3 (100%)	-	-	3 (100%)
Total	6 (46%)	7 (54%)	-	13 (100%)

Source : Survey results.

principal customs area, and is therefore subjected to import duties and taxes.

In terms of size, their annual sales value and employment size were good indicators. About 20 percent of the firms (n=2) had annual sales exceeding US$289 million, one firm had annual sales of US$144 million to US$289 million, two firms claimed that their annual sales ranged from US$28.9 million to US$144 million,

Table 10: Share of Firms by Annual Sales

Annual sales	EMS Companies	OEMs	Tooling Shop	Total
Less than US$7.2 mil *(Less than RM 25 mil)*	0	1 (20%)	1 (100%)	2 (20%)
US$7.2 mil to US$28.9 mil (*RM25 mil to RM100 mil*)	0	3 (60%)	0	3 (30%)
US$28.9 mil to US$144 mil (*RM100.1 mil to RM500 mil*)	1 (25%)	1 (20%)	0	2 (20%)
US$144 mil to US$289 mil (*RM500.1 mil to RM1 bil*)	1 (25%)	0	0	1 (10%)
More than US$289 mil (*More than RM1 bil*)	2 (50%)	0	0	2 (20%)
Total	4 (100%)	5 (100%)	1 (100%)	10 (100%)

Note: 3 missing cases.
Source : Survey results.

whereas 3 firms have US$7.2 to US$28.9 million annual sales, and two firms indicated that their annual sales are less than US$7.2 million (Table 10).

Table 11 shows the share of firms by number of full time employees. The number of full times employees of the companies surveyed ranged from 30 to 8,000. About 9 percent of the firms interviewed have between 5 and 50 full-time employees categorized as small firms[10]. Two firms have 51 to 150 full time employees, and 3 firms claimed that their workers are in the range of 151 to 500 persons. The total employment of the respondent firms was 20,344. Foreign firms account for 20,130 workers.

Table 12 shows the share of firms by export ratio of manufactured goods. All EMS companies interviewed (n=5) and one tooling shop reported 100 percent export ratio for their manufactured goods respectively. Sixty percent of the OEMs interviewed have indicated 100 percent export ratio. One OEM firm exported 90 percent of their manufactured goods and another OEM only exported 40 percent of its product.

Table 11: Share of Firms by Number of Full Time Employees

Number of full time employees	EMS Companies	OEMs	Tooling Shop	Total
Between 5 and 50 *(Small Enterprise)*	0	1 (20%)	0	1 (9%)
Between 51 and 150 *(Medium Enterprise)*	0	1 (20%)	1 (100%)	2 (18%)
Between 151-500	1 (20%)	2 (40%)	0	3 (27%)
More than 500	4 (80%)	1 (20%)	0	5 (45%)
Total	5 (100%)	5 (100%)	1 (100%)	11 (100%)

Note: 2 missing cases.
Source : Survey results.

[10] Small enterprise refers to a company with sales turnover between RM250,000 and less than RM10 million or with full time employees between 5 and 50; medium enterprise is company with sales turnover between RM10 million and RM25 million or having full time employees between 51 and 150.

Table 12: Share of Firms by Export Ratio for the Manufactured Goods

Export Ratio	EMS	OEMs	Tooling Shop	Total
40 per cent	0	1 (20%)	0	1 (9%)
90 per cent	0	1 (20%)	0	1 (9%)
100 per cent	5 (100%)	3 (60%)	1 (100%)	9 (82%)
Total	5 (100%)	5 (100%)	1 (100%)	11 (100%)

Note: 2 missing cases.
Source : Survey results.

Table 13: Number of Firms by Export Market

Export Market	EMS	OEMs	Tooling Shop	Total
US	4	2	1	7
EU	5	2	1	8
Australia	1	2	1	4
China	1	2	1	4
ASEAN, esp.Thai	3	2	2	7
Japan	0	2	0	2
Vietnam	0	0	1	1
Asia Pacific	0	0	1	1
Total	14	12	8	34

Note: This is a multiple response answers with 34 valid cases.
Source : Survey results.

The major export markets are United States (n=7), Europe (n=7), Australia (n=4), China (n=4), and Thailand (n=4). The details are summarised in Table 13.

2.2. Characteristics of Operations

The attractiveness of a particular location depends on the efficiency in the firms' operations. This section discusses various aspects of efficiency.

Table 14: Lead Time of Electronics Firms (period between a customer's order and delivery of products)

Lead Time	EMS Companies	OEMs	Tooling Shop	Total
Less than 2 weeks	2	4	0	6
2 weeks to a month	2	1	0	3
More than a month	1	0	3	4
Total	5	5	3	13

Source : Survey results.

An important aspect of any GPN operation is the ability to respond to customer's order and organise production to meet those orders. Table 14 shows the lead time to fulfil customer's orders. Out of the 13 firms interviewed, six OEMs and EMS companies are able to meet the targets in less than two weeks while three finished within a month. Three tooling shops and only one EMS made it after more than one month.

The lead time of their suppliers is less tight. In general, the OEMs have tighter deadlines than the other two types. Two EMS companies said that orders were fulfilled within a month but the rest were almost five months. It is important to note that these results fit with the understanding that EMS companies are not that flexible as their strength is high volume and low margins. Thus, the entire production process requires time to set up and produce. Tooling shops reported supplier's lead time was less than two months (Table 15).

Table 16 shows the transport mode of the firms. Majority of them (92%) used multimodal transport mode, which is important not to over-emphasize on any one mode.

Table 15: Lead Time of Supplier Firms (period between respondent's order for import materials and its delivery)

Lead Time	EMS Companies	OEMs	Tooling Shop	Total
Within 2 weeks	0	1	0	1
2 weeks to 1 month	2	1	0	3
1-2 months	0	2	3	5
3 months	0	1	0	1
>3 months	3	0	0	3
Total	5	5	3	13

Source : Survey results.

Table 16: Share of Firms by Transport Mode

Transport mode	EMS	OEM	Tooling Shop	Total
Airplane	0	1 (20%)	0	1 (8%)
Multi modals	5 (100%)	4 (80%)	3 (100%)	12 (92%)
Total	5	5	3	13

Source : Survey results

In terms of time consumed for customs clearance, two firms indicated that it took them less than 2 hours to bring out their container of goods from port or at the airport. Another 2 firms reported that it took them about 2 days to process customs clearance. Table 17 shows the details of the time required for exports customs clearance by different unit quantities.

With regard to the time consumed for import customs clearance, three firms indicated that about one to two days were spent processing. Six firms reported between two to four hours, and one firm experienced around 72 hours to clear their imported goods per one bill of lading (Table 18).

Table 17: Number of Firms by Time Consumed for Export Customs Clearance

Time (hours)	EMS	OEM	Tooling Shop	Total
Per Container				
0.5 hours	0	1	0	1
2 hours	1	0	0	1
2 days	0	2	0	2
Per Carton				
1 hour	1	0	0	1
3 hours	1	2	2	5
4 hours	1	0	0	1
1 hour per machine	0	0	1	1
8 hours per shipment	1	0	0	1

Source : Survey results.

Table 18: Number of Firms by Time Consumed for Import Customs Clearance

Time consumed for customs clearance	EMS	OEM	Tooling Shop	Total
Per Container				
2 hours	1	0	0	1
24 hours	0	1	0	1
48 hours	0	2	0	2
Per carton				
1 hour	1	0	0	1
3 hours	1	1	0	2
4 hours	1	1	2	4
2 hours per machine	0	0	1	1
72 hours per one bill of landing	1	0	0	1

Source : Survey results.

The average monthly wages or salaries of employees comprised the following: (1) workers US$196; (2) middle managers US$1,783; and (3) engineers US$882. As seen in Table 19, OEMs give higher wages to their employees compared to EMS companies

Table 19: Average Monthly Wages and Salary by Type of Employees (US$)

(US$/Month)	EMS	OEMs	Tooling Shop	Mean
Workers	178	217	191	196
Middle Managers	1,267	2,286	1,809	1,783
Engineers	750	1,029	857	882

Source : Survey results.

Table 20: Number of Firms by Educational Background and Type of Employees

Educational Background	EMS	OEMs	Tooling Shop	Total
Workers				
Almost 100% High School	3 (60%)	2 (40%)	1 (33%)	6 (46%)
81-85% High School	1 (20%)	2 (40%)	2 (67%)	5 (38%)
<80% High School	1 (20%)	1 (20%)	0	2 (16%)
Middle Managers				
98-100% College/university	4 (80%)	5 (100%)	3 (100%)	12 (92%)
95% College/university,	1 (20%)	0	0	1 (8%)
Engineers				
100% College/university	5 (100%)	5 (100%)	3 (100%)	13 (100%)

Source : Survey results.

and Tooling Shops.

Table 20 shows the employees' educational background by industry type. About 85 percent of firms interviewed (n=11) reported that more than 80% of their workers received high school education. Among the middle managers of the firms, 92 percent of the firms interviewed (n=12) reported that 98% of their middle managers had attended college or university. Only one EMS firm responded that 95% of their middle managers received college or university education and 5% from vocational school. All engineers of the firms graduated from college or university. Thus, the general education level of

the workers appears to be fairly high.

Table 21 summarises the firm's labour turnover ratio for 2008. About 62 percent of the firms interviewed (n=8) had labour turnover of 1-5%. Two OEMs reported labour turnover of 6-10% and 11 percent to 15%. One firm reported a labour turnover of 20 per cent. This is possible if there was a change in migrant labour.

An average of 54 days takes a new worker to become productive. Table 22 shows the various response times for a new worker to be productive. Workers of an EMS firm

Table 21: Share of Firms by Labour Turnover Ratio

Turnover Ratio	EMS	OEMs	Tooling Shop	Total
1% to 5%	2 (40%)	3 (60%)	3 (100%)	8 (62%)
6% to 10%	0	1 (20%)	0	1 (8%)
11% to 15%	0	1 (20%)	0	1 (8%)
Above 15%	3 (60%)	0	0	3 (23%)
Total	5 (100%)	5 (100%)	3 (100%)	13 (100%)

Note: Labour turnover ratio= number of workers who left the firm/total number of workers in 2008.

Source : Survey results.

Table 22: Time Required for a New Worker to Become Productive

Average Days	EMS	OEM	Tooling Shop	Total
Less than 2 weeks	1 (20%)	1 (25%)	0	2 (17%)
2 weeks to One month	3 (60%)	2 (50%)	0	5 (42%)
One month to 2 Months	0	1 (25%)	2 (67%)	3 (25%)
More than 2 months	1 (20%)	0	1 (33%)	2 (17%)
Total	**5**	**4**	**3**	**12**
Total Average days	*41*	*27*	*113*	*54*

Note: 1 missing case.

Source : Survey results.

Table 23: Share of Firms by Frequency of Black-Out

Black-out Frequency	EMS	OEM	Tooling Shop	Total
Have not experienced in a year	4 (80%)	5 (100%)	3 (100%)	12 (92%)

Source : Survey results.

need 41 days, an OEM firm 27 days, and tooling shop 113 days. Most firms (58%) reported that a new worker needs less than a month to become productive, whereas about 25 percent of the firms indicated that it takes one to two months. However, there are two firms which reported that their new workers need at least 3 months and above to become productive.

About 92 percent of the interviewed firms reported that they have not experienced black-out in a year. Only one EMS firm claimed that it happened once or a few times in a month, which could be due to a situation where there was confusion in response (Table 23).

In summary, Penang as a location has attained a certain level of operational efficiency. Firms are able to respond to customer's order relatively quick (within 2 months). The logistical conditions are good, less time incurred in customs clearing process, and with flexibility in transport modes. Workers are relatively well-educated and can become productive within a short period of time although their wage levels are higher than those of the CLMV countries.

3. CHALLENGES FOR CLMV COUNTRIES: AN EVALUATION OF THEIR INVESTMENT CLIMATE

This part of the report evaluates the perception of firms on the CLMV countries based on investment climate elements such as land price, wages, utilities cost, distance to ports , workers educational level, tax incentives among others.

Among the 13 firms interviewed, only three firms had experienced factory relocation. One OEM had relocated from US/Taiwan to Penang because its operation cost is much cheaper and the competency in product transfer is high. One EMS company expanded in Vietnam due to lower operational cost. One tooling shop relocated from Penang to Bangkok to provide better service to their customers.

Most of the firms interviewed considered the following reasons in factory relocation— provision of infrastructure (nearer to the port) and logistical systems, lower operational cost, opportunity to create new customers (customer driven), availability of tax incentives, availability of unskilled and skilled labour and cost associated with utilities and transport.

Table 24 summarises the weighted scores of investment climate elements by ranking the level of importance. An analysis of the weighted scores revealed that the most important element is the workers' educational level, followed by wage level, access to port and market, and price of energy or electricity. In addition, incentives like tax holiday, price of water for industrial use, and land price for owning or leasing are moderately important elements.

Table 25 shows the perception of the firms interviewed on CLMV countries. Majority of them (85%) indicated that they know CLMV countries well.

Table 24: Importance of the Investment Climate Elements

Investment Climate Elements	Total Scores
Educational level of workers	89
Wage level for workers	83
Access to port & markets	75
Price of energy or electricity	72
Incentives like tax holidays	56
Price of water for industrial use	54
Land price for owning or leasing	53

Note: Total Scores =Sum of Weighted Scores, Weighted scores for most important=9, second most important=8, third important =7; ……. and least most important=1.

Source: Survey results.

Table 25: Perception on CLMV Countries

Do you know CLMV countries well?	EMS	OEM	Tooling Shop	Total
Yes	4 (80%)	4 (80%)	3 (100%)	11 (85%)
No	1 (20%)	1 (20%)	0	2 (15%)
Total	5	5	3	13

Source: Survey results.

Table 26 shows the firm's evaluation of the investment climate in CLMV countries. Most firms (85%) gave Vietnam a "good" rating. Same percentage of firms (85%) gave Laos and Myanmar a "bad" rating. Cambodia was rated "bad" by some 69 percent of the firms while 31percent rated it as "fair." As can be seen, there is a two-tier assessment, with Vietnam standing out as the first tier, and then the others as not being attractive.

About 69 percent of the firms interviewed (n=9) indicated that they would not consider investing or operating in CLMV countries. Only one haven't decided a rating.

Table 26: Firms Evaluation of the Investment in CLMV Countries

Investment in CLMV countries	Good	Fair	Bad	Total
Cambodia	0	4 (31%)	9 (69%)	13 (100%)
Laos	0	2 (15%)	11 (85%)	13 (100%)
Myanmar	0	2 (15%)	11 (85%)	13 (100%)
Vietnam	11 (85%)	2 (15%)	0	13 (100%)

Source: Survey results.

Table 27: Share of Firm in Considering Investing or Operate in CLMV Countries

Whether would consider investing or can operate in CLMV countries.	Frequency	%
Yes	3	23
No	9	69
Not yet	1	8
Total	13	100

Source: Survey results.

The rest have already considered investing in Vietnam (Table 27).

Table 28 summarises the advantages and disadvantages of investing in CLMV countries. The common advantages are labour availability, lower labour cost, availability of cheap labour, while the common disadvantages are poor infrastructure, poor supply chain, and low educational level. In terms of specific advantages for Vietnam are educational level, incentives and proximity to China and its local market. The firms said that Laos has high logistic cost and Myanmar as having risks in political stability.

It is interesting to note that respondents had emphasized all the efficiency criteria, e.g. labour cost, education, infrastructure, logistics, bureaucracy, and incentives. None

Table 28: Advantages and Disadvantages of CLMV Countries

	Advantages	Disadvantages
Cambodia	• Labour availability • Lower labour cost • Availability of cheap labour	• Poor infrastructure • Poor supply chain • Low educational level
Laos	• Lower labour cost • Availability of cheap labour • No exposure to hi tech industry	• Poor infrastructure • Poor supply chain • Low educational level • High Logistic Cost
Myanmar	• Labour availability • Lower labour cost • Availability of cheap labour • No exposure to hi tech industry	• Poor infrastructure • Poor supply chain • Low educational level • Political concern
Vietnam	• Labour availability • Lower labour cost • Availability of cheap labour • No exposure to hi tech industry • Educational Level • Incentives • Proximity to China • Local market	• Poor infrastructure • Bureaucratic inefficiency • Lack of supporting services • Poor supply chain • Availability of skilled labour and managerial staffs • Discipline of workers • Low educational level • Expensive land

Source: Survey results.

have mentioned markets or resources (other than labour), which is the other main consideration of firms opting to relocate. In this regard, one can conclude that firms seek to be cost efficient.

Table 29 shows the perception on other countries in comparison with CLMV countries. About 92 percent of the firms interviewed indicated that China is better than CLMV countries as a potential location for investment. All firms interviewed agreed that Bangladesh and Pakistan are worse than the CLMV countries. In comparing India with CLMV countries, 54 percent indicated that India is worse than the CLMV

Table 29: Perception on Other Countries in Comparison with CLMV Countries (as a potential location for investment)

	Better	Same as Vietnam	Worse	Uncertain	Total
China	12 (92%)	0	1 (8%)	0	13 (100%)
India	4 (31%)	1 (8%)	7 (54%)	1 (8%)	13 (100%)
Bangladesh	0	0	13 (100%)	0	13 (100%)
Pakistan	0	0	13 (100%)	0	13 (100%)

Source: Survey results.

countries, 31 percent responded that India is better and only one firm agreed that India is same as Vietnam being a potential location for investment.

Presumably, the MNCs in Malaysia measure the total cost of production (not just labour). However, as labour is likely to be the most attractive feature of the CLMV countries, there is a need to investigate whether the total cost of production is lower in Malaysia or CLMV, and secondly, how important is the labour component. For example, if direct labour cost is only 10 percent, and CLMV countries have a 50 percent lower labour cost, then their advantage is only 5 percent lower cost of production. Would this translate into MNCs shifting out to these CLMV countries? If the risks of establishing in the countries have not been evaluated yet, then it is not likely that there is enough information to suggest a relocation potential.

4. CONCLUSION AND POLICY RECOMMENDATIONS

What lessons can be learned from the Malaysian experience? The following observations are pertinent. First, the GPNs are deeply entrenched in the electronics industry. Many of the OEMs and EMS companies have worldwide production. Since 2000, they have been expanding their Asian operations, hence, here lies the opportunity. It is also important to note that Malaysian investments were made in some CLMV countries since the mid-1990s. These investment areas include textile and garment manufacturing, hotels and resorts, infrastructure upgrading and development. Hence, investing in CLMV countries is not new to Malaysian bas11ed firms.

Second, in order to attract firms, a stable, conducive investment climate must be in place. Investors need to be assured that they can take advantage of the "attractiveness" of the country whether it is the cost of labour, availability of supplier firms or a cluster of manufacturing sub-contractors, supply chain and logistics opportunities, or even the incentives, etc. that add to a good investment climate. Hence, countries should work on reducing their weaknesses.

Third, the competitiveness of the country must respond to the needs of the investors, if this development strategy is the desired path. In this regard, a 2007 study in Penang found that electronic firms saw Malaysia's strengths in its infrastructures—physical information, and financial as well as tax incentives, supplier base, and employees' skills. Hence, Malaysia's operational excellence appeals to them. However, when asked for the key drivers to their continued investment, their top 3 responses are: tax incentives, overall production cost, and skills. It can be concluded that such firms take operational excellence for granted, and they are looking for the icing on the cake

(incentives and overall production cost). Countries should work on their strengths in order to make it attractive to investors (Penang Skills Development Centre, 2007).

There is no certainty that the electronics industry would remain in Malaysia forever. In fact, several studies have shown that there are major weaknesses in Malaysia (Ernst, 2001 and Best, 2007). For instance, Malaysia is no longer a low-wage economy and labour scarcity has emerged—an estimated 1 million foreign workers. A good understanding of the weaknesses of the country, like trying to understand how investors see their country, is a major step to getting a list of priorities on what to do about the perceived problems.

Hence, the strengths of CLMV countries seem to be the availability of labour. However, low skill manufacturing has already exited Malaysia in the late 1990s. It seems that the approach to be taken is to upgrade skills and training, to develop a pool of technical and professional workers that have the capacity to work in a multinational environment. This is one approach that all countries must try to do. Investing in human resource development (engineers, technicians, and even scientists) has been the approach taken by many of the advanced ASEAN countries.

There are various paths of attracting FDIs. One can try to make a pitch that the markets in CLMV are large enough for OEM firms to consider a strategic investment. In this regard, INTEL Corporation could have taken a strategic position in HCMC. The same can be said of Jabil Inc. A second approach could be to try to attract a cluster of certain types of firms such as precision metals and engineering or firms making specialised motors (e.g. Nidec). Some Japanese firms have recently made investments in Vietnam. Indeed, targeting which firms to attract is important for countries to bring along their network of supplier firms and services. A third approach could be to examine

the possibility of opening up a corridor to link various industrial clusters or agglomeration centres. There are several opportunities for linking with Myanmar, Laos, Cambodia, and also toward southern Vietnam (through Bavet).

A common approach in many other countries is to improve the operational capacity of the country to manage FDI. In Malaysia, investors rated this factor as very high. To do this well takes not just infrastructure investments, it also requires to ensure that these infrastructures operate and perform efficiently. Thus, while it is necessary to develop sufficient power for manufacturing, but the key factor that most firms look for is the ability to ensure that there are no blackouts or brownouts. To do this well in the CLMV countries will require both focus and investment which also takes time to get a good level of performance.

Other types of operational infrastructure that Malaysia has are free industrial zones or FIZs and licensed manufacturing warehouses (LMWs) have been established to attract FDIs over the years. Such infrastructure are important in the major towns but they could also be good in the less urban areas, especially when utility facilities are poor, and economic processing zones (EPZs) can ensure that sufficient power is available. These facilities can act to develop a cluster or at least be a centre for agglomeration of industrial activities that could be linked up with the industrial corridors.

Communications and service links must be improved considerably as these are the elements that attract the attention of potential investors. In this regard, the airline and port facilities must be improved together with the shipping and airline services in the CLMV countries. These elements drive cost of relocation down and improve the overall attractiveness of the CLMV countries.

In conclusion, there are opportunities for CLMV countries to take advantage of

attracting the electronics industry. They will need to work on rectifying their weaknesses and improving more their strengths as well as take advantage of the GPNs continuing search for low cost production sites.

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CHAPTER 4

EVALUATION OF THE FRAGMENTATION AND RELOCATION OF ELECTRONICS AND AUTOMOTIVE AND RELATED INDUSTRIES TO CLMV COUNTRIES: VIEW POINTS OF THAILAND

Apichat Sopadang and Korrakot Yaibuathet

Abstract

The electronics and automotive sectors in Thailand are among the forefront businesses that generate major export income for the country. This study aims to identify factors that are associated with the possible fragmentation and relocation of these sectors to CLMV countries. Primary data collection was conducted through direct interviews of ten electronics, six automotive and six business organizations and policymakers. Based on cost structure, preliminary results revealed that instead of being labor intensive, the sectors appear to be heavily material intensive. In contrast to the previous push factor of inducing companies to relocate due to cheap labor, the actual reasons found by this study relate to: (i) political climate and government stability; (ii) market volume; and (iii) access to port facilities. Based on the respondents' answers, Viet Nam was ranked no. 1 among the CLMV countries where companies would want to relocate. Challenges have been identified and recommendations have been proposed to steer this group of

countries towards becoming strong investment bases for electronics and automotive industries.

INTRODUCTION

At present, the automotive and electronics industries are considered as the most important sectors in Thailand's industrial goods export since they generate an annual income of over 2,000 billion THB (USD 59 billion) for the country. In 2008 and 2009, the electronics industry took the highest share among the industrial goods group at around 27 percent while the automotive sector captured the second spot with 10 percent share of the country's total earnings. The value and proportion of the export goods are shown in Table 1.

Moreover, the electronics and automotive industries play a significant role in supporting the country's workforce. More than 750,000 employees have been employed in these sectors, an extremely high number when compared with other industries. The Thai workforce has long been recognized worldwide for being highly skilled with inexpensive wages.

In recent years, the electronics and automotive industries have experienced a continuous increase in productivity. One of the reasons may be due to the government support which provided tax reduction for eco-car and labor training per industry requirements, among others. However, because of the global economic crisis in early 2009, industries, in general, experienced a slowdown in sale, leading to a great reduction in productivity. The electronics and automotive industries in Thailand were

Table 1: Thailand's export value of goods in 2008-2009

	Value : Million $US			Expansion Ratio (%)		Share (%)	
	2008 (Jan-Dec)	2009 Target	2009 (Jan-Jul)	2008 (Jan-Dec)	2009 (Jan-Jul)	2008 (Jan-Dec)	2009 (Jan-Jul)
1.Agriculture goods	29,366	27,241	13,559	30.1	-23.3	16.5	16.7
2.Industrial goods	117,981	119,509	54,732	12.0	-22.0	66.4	67.5
Electronics	**329,134**	**49,131**	**22,052**	**6.9**	**-25.2**	**27.6**	**27.2**
Automotive	**19,601**	**19,603**	**7,118**	**21.3**	**-38.6**	**11.0**	**8.8**
Plastics	8,212	8,623	3,661	9.3	-28.9	4.6	4.5
Fabric	7,200	7,343	6,667	2.4	-14.0	4.0	4.5
Construction materials	8,035	8,277	3,949	17.5	-14.6	4.5	4.9
Gem	8,270	8,270	5,686	53.7	25.4	4.7	7.0
Elastics	4,550	4,550	2,323	24.5	-12.4	2.6	2.9
Others.	30,428	31,091	12,825	17.2	-31.3	17.1	15.8
Total	177,775	177,841	81,115	15.5	-23.9	100.0	100.0

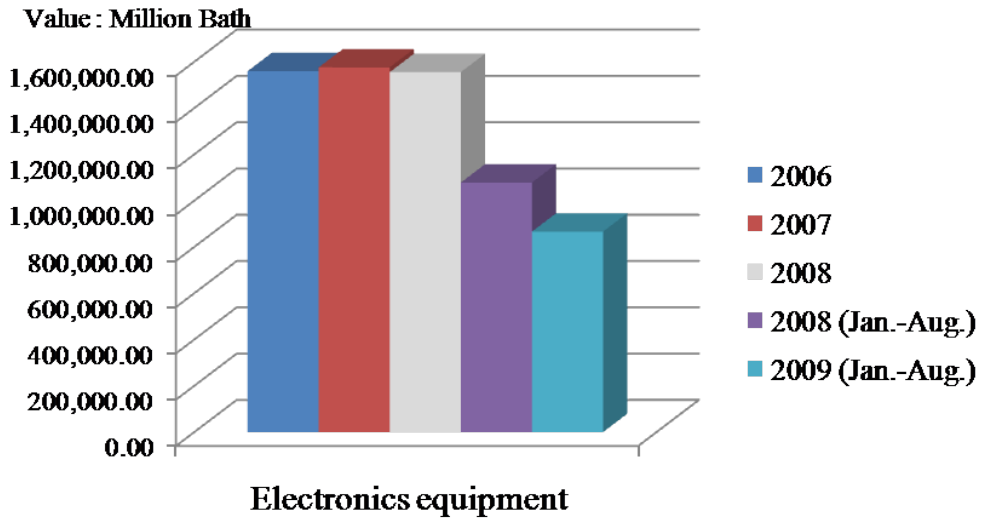
Source: Office of the Permanent Secretary of Commerce. http://www.ops.moc.go.th/MocCMS/.

affected as well, resulting in a number of layoffs among the labor force. The production capacity picked up, though, when the economy recovered in the latter part of 2009, leading to high labor demand and re-employment. The export values of electronics equipment and the automotive sector from 2006-2009 are seen in Figures 1 and 2, respectively.

Thailand is rated as the largest producer of electronic goods in the world. Government policies have been formulated for domestic industries to support domestic manufacturing. Later on, the Government introduced measures to promote production for export by inviting foreign investors to relocate their production activities to Thailand. Large investments from multinational companies or joint ventures between domestic and foreign firms were encouraged. To maintain the competence level of

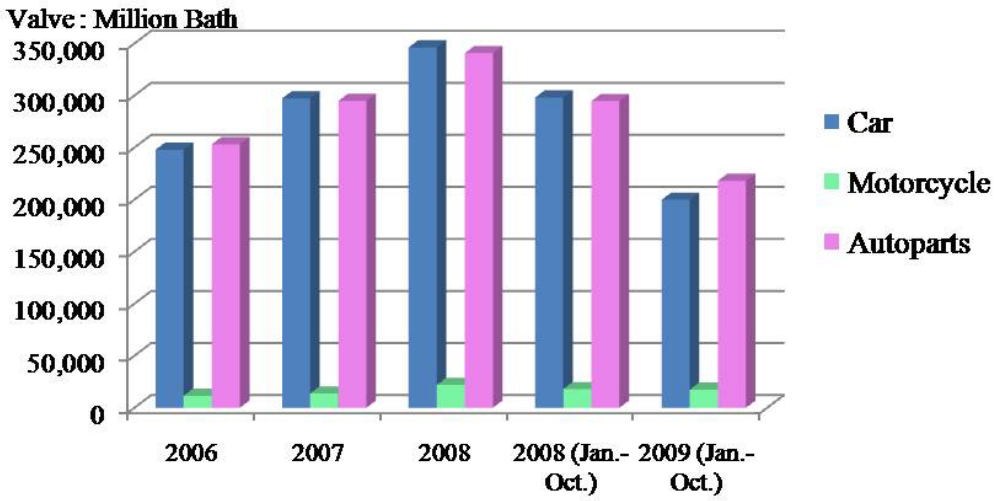
industries, the Government introduced many support projects for the electronics and automotive

Figure 1 : Export value of electronics equipment from 2006-2009



Source: Office of the Permanent Secretary of Commerce. http://www.ops.moc.go.th/MocCMS/.

Figure 2: Export value of automotive sector from 2006-2009



Source: Office of the Permanent Secretary of Commerce. http://www.ops.moc.go.th/MocCMS/.

industries such as investment promotion for electronic goods production, training and research for local companies to improve manufacturing technology and product development. These were meant to prepare the industries for increased competition from domestic and international sources.

For the automotive industries, majority are large investments by foreign investors. The Government has policies to support the growth of this industry, as can be clearly seen from the many support projects such as efficiency improvement in manufacturing technology for Thai auto parts manufacturers, and improvement of quality and standards to meet the internationally accepted level. Budget has been allocated to provide a technology database for the automotive industry, and infrastructure and promotion to further attract foreign investors to Thailand. Examples of these projects include the following: eco-car promotion, free trade area agreement, labor training to improve skills, and tax-related investment measures, among others.

Thailand is ready to provide great support for both industries in terms of labor force, infrastructures, government support policies, raw materials, and location. The country is considered to be a good logistic hub. Thai hospitality is well known. The workforce is relatively open-minded and happy to learn new technology and tools. As a result, the country had welcomed many investors in the past. In his study on automotive cluster, Leclear (2002) concluded that FDIs chose Thailand as their production base for three reasons, namely: (i) the size of market, which is the biggest among the ASEAN countries, (ii) the development of parts industry which is particularly important for the car industry, and (iii) the quality of infrastructure, especially the physical infrastructure. However, Thailand is no longer the only country in the region that offers great potential

for electronics and automotive industries. Other countries in Southeast Asia have also emerged as competitively attractive, providing more options for foreign investors.

The purpose of this study is to identify the possibility of fragmentation of industries from Thailand to CLMV countries, focusing on the electronics and automotive sectors. The significant relocation factors considered by investors in Thailand as well as an analysis of the attractive incentives for investors are presented. Guidelines and recommendations based on certain Thai good practices are likewise proposed for CLMV countries, if and when relocation is implemented.

1. INDUSTRIAL STRUCTURE

1.1. Thailand Automotive Industry

1.1.1. History

For the past 40 years, the Thai automotive industry has been developed with the objective of substituting imports with local vehicles. Large auto manufacturers established themselves in Thailand primarily to boost domestic sales, with exports meant only to be secondary targets. In 1997, however, the situation unexpectedly changed in the wake of Thailand's economic crisis which immediately cut the domestic demand for automobiles. Under this situation, automotive makers had to solve the problem of excess production capacity. As a solution, they decided to export their products to other countries. This led to the rapid increase of Thai auto exports from 14,020 units in 1996 to over 775,652 units in 2008, growing 55.3 times within the period of 12 years. Thailand's automotive industry is therefore poised for an accelerated

growth, currently employing more than 300,000 people and generating 12 percent of the national gross domestic product (GDP).

As a global player, the Thai auto industry has grown from an uncomplicated assembler into a major automotive production center. In 2008, more than 770,000 units of completely built up (CBU) automobiles have been exported to over 130 countries worldwide. At the moment, Thailand is the world's largest producer of one-ton pick-up trucks and the seventh-largest automotive exporter overall[1]. It is the top manufacturer in all of Southeast Asia, with great possibilities for expansion. This growth positively affects the fast rise of supporting extension industries involved in the auto parts production.

1.1.2. Current Situation of Thai Automotive Industry

With the second highest export value of all industries which brings in over 60 billion baht (around USD 2 billion) in excise tax alone, it is not surprising that the Thai government puts considerable effort in promoting and supporting the automotive industry.

In June 2009, the Thailand Board of Investment (BOI) expanded its automotive incentive scheme to cover automobiles that have high technologies that are new to Thailand such as hybrid drive, brake energy regeneration and electronic stability control. The BOI's new policy, which is designed to attract international automakers that are restructuring by relocating production facilities overseas, provides a range of incentives, including corporate income tax holidays of between 5 and 7 years. To be

[1] BOI: Thailand Investment Review, "Thailand's automotive industry to see growth accelerate", November 2009.

eligible, a project must involve a minimum investment of 10 billion baht[2]. Tax-based incentive also includes the exemption or reduction of import duties on machinery and raw materials as well as corporate income tax exemptions. At the same time, there are also non-tax incentives which offer even more advantages such as the permission for the international companies to bring in foreign experts and technicians, and allow them to own land and remit foreign currency abroad.

At present, there are 16 vehicle assemblers in Thailand, all large-scale enterprises that are either foreign-owned or joint ventures. In addition, Thailand also has more than 700 large-scale enterprises and small and medium enterprises (SMEs) which work as suppliers of original equipment manufacturers (OEM). This segment consists of companies with foreign majority shares (287), companies with Thai majority shares (68) and companies that are wholly Thai-owned (354). The OEM part suppliers in Thailand are employing more than 130,000 workers. In addition, the industry also accounts for 1,100 companies which all work as local suppliers who manufacture replacement equipment (REM). These are mainly SMEs.

The automotive industry in Thailand is very concentrated, with most factories located in the greater Bangkok area. The Thai government has announced that it has allocated around USD 2 million to promote clusters and one sector being targeted in this promotion is the automotive industry.

One of the most important reasons why Thailand has been considered an attractive country for automotive investment is that Thailand has no "national car program" like some of the other ASEAN countries. For example, the Malaysian national car is believed to be blocking the growth of foreign automobile sale. However, the Malaysian

[2] Source: BOI, 2009.

program has had enormous benefits for Thai auto part clusters because most of the assembly parts for the Malaysian car have been imported from Thailand.

Apart from this reason, Thailand is also geographically attractive in terms of being a gateway to Asia. Thailand provides easy access to the regional market. The country's many free trade agreements (FTAs) include terms that are advantageous to local auto parts producers. In particular, the agreement with ASEAN opens the door to a collective market of 585 million people in the association's member nations.

The automobile parts manufacturing sector in Thailand is considered to be the largest and the most capable in Southeast Asia. According to the Japan Automobile Manufacturers Association (JAMA), the quality of automotive parts in Thailand is rated as the best among ASEAN countries. The local part manufacturers supply approximately 80 percent of all parts being used in the assembly of pick-up trucks, approximately 55 percent for passenger cars and nearly 100 percent for motorcycles. Locally produced or assembled parts include engines, suspension control and spring, axles, hubs, propellers shaft, brakes, clutches, steering system, body parts, electronic parts, air conditioning, tires, wheels, internal and external trim components, and glass.

Since around 80 percent of the country's overall auto assembling capacity belongs to Japanese makers, most of the OEMs are mainly members of Japanese Keiretsu groups supplying to their own customer base. These companies can be categorized into three groups: a member in Japanese family companies, a joint venture with Japanese technology owners and a company having technical assistance or licensing agreements with Japanese firms. However, in recent years, the number of auto parts manufacturers for non-Japanese assemblers has increased significantly as a result of the establishment of Ford and General Motors in Thailand. The American assemblers have brought in a

number of their own first tier suppliers to the country. Although European assemblers have entered the market earlier, they tend to have fewer local parts suppliers due to their small assembling volume. The majority of the wholly Thai-owned companies are in the second and third tier suppliers business as well as REM business.

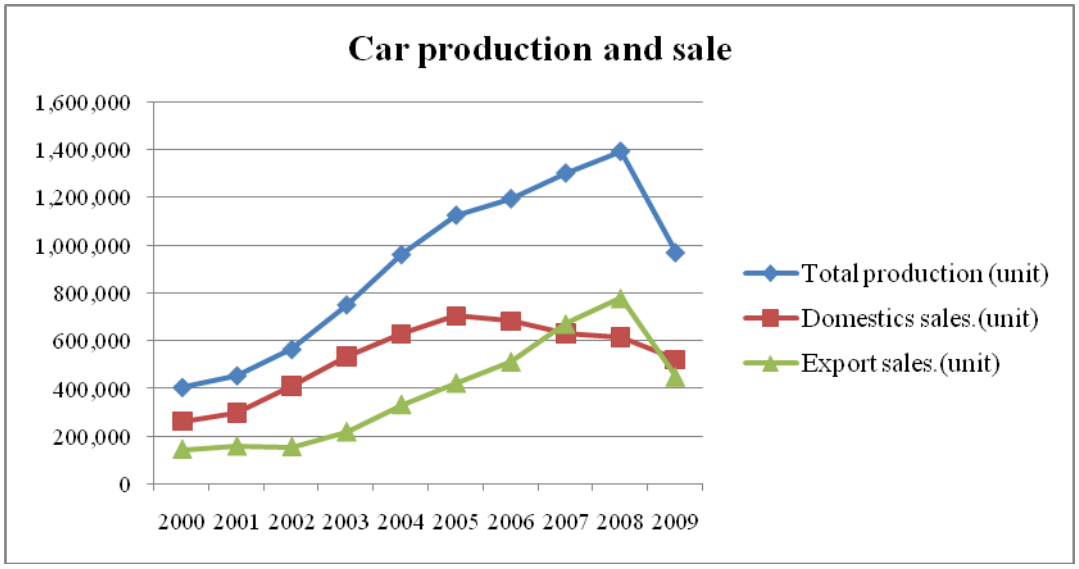
The Thai people are a plus factor as well, with many of them being skilled workers. Labor costs in Thailand are lower than in many other areas in Asia. The land and facility costs are also competitive. Moreover, the government is encouraging the development of so-called auto parts clusters, where proximity between manufacturers and suppliers will result in further cost and efficiency benefits.

1.1.3. Competitive Environment

(1) Current Export Potential

Thailand's automobile cluster has grown rapidly after the 1997 Asian financial crisis to become one of the leading exporting sectors of the country. By 2008, Thailand has become the largest production hub of automobiles in ASEAN, exporting more than 770,000 cars per year and generating over 385 billion THB (around USD 11 billion) of export revenue. Thailand is also currently the largest exporter of pick-up trucks in the world and has more model variations than any country in the world. However, during the global economic crisis in early 2009, the level of production and exports of the automotive sector dropped by around 30 percent. The level began to revive in the final quarter of 2009, with prospects for further increases in the coming years. The levels of production, exports and domestic sales of automobiles from 2000-2009 are shown in Figure 3.

Figure 3: Total Number of Production, Export, and Domestics Sale on Passenger Car

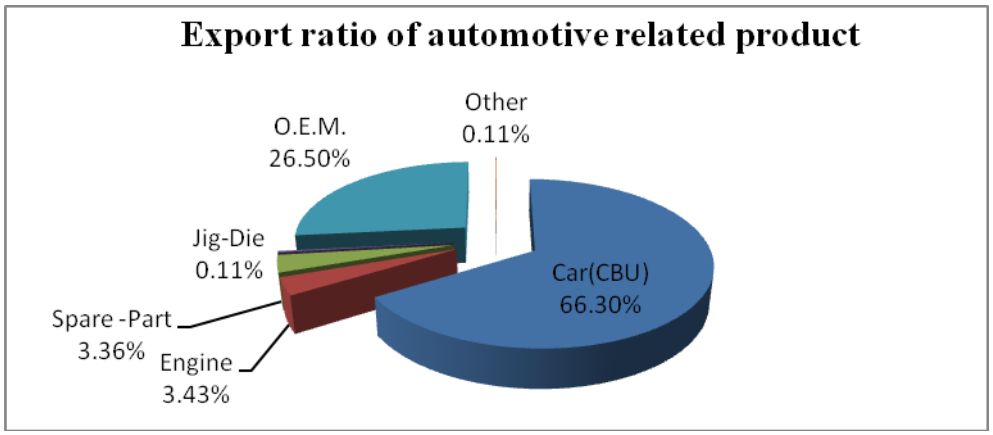


Source: Thai Automotive Industry, 2009. www.thaiauto.or.th.

Apart from automobile exports, auto parts such as engines, spare parts and OEM have also generated enormous income for the country. The export ratio of automotive-related products may be gleaned from Figure 4.

The launching of the ASEAN Free Trade Area (AFTA) scheme on January 1, 2010 could provide tremendous benefits for the automotive sector in Thailand. The five percent tax on automobiles and parts traded among the six founding ASEAN countries-Thailand, Malaysia, Singapore, Brunei, the Philippines and Indonesia - was abolished in the move toward turning the ASEAN into a single market. This could dramatically reduce the cost of purchasing parts, leading to a strengthening of manufacturing and raising the level of competitiveness for the region.

Figure 4: Export ratio of Automotive Related Products in 2009



Source: Thai Automotive Industry, 2009. www.thaiauto.or.th.

This agreement would help the ASEAN countries become more competitive against China and India. And since the markets such as the United States (US), Europe and Japan are already saturated and stagnant, any growth in the automotive industry is foreseen to take place in the ASEAN region.

Kasikorn Research Center; KResearch (2010) stated that Thailand's export of auto parts could expand by 18-22 percent this year from the AFTA. OEM (original) auto parts will be the main category benefiting from these changes, given their high export value that is nine times higher than REM (spare) items. Indonesia is expected to be the most promising market for Thai parts exports, followed by Malaysia and the Philippines. As a result, the government earns more income from increased excise, value-added and corporate taxes[3].

[3] Source: The Nation, "Thailand auto industry to benefit hugely from AFTA", January 25, 2010.

(2) Domestic market

Thailand's market has been dominated by multinational companies, especially Japanese makers. By the second quarter of 2009, Toyota, the most famous brand in Thailand, leads with 40.6 percent of the domestic market share while Isuzu and Honda had the second and third highest shares at 21.5 percent and 17.4 percent, respectively.

In 2009, the automobile market suffered a 28 percent plunge in the first half of the year, but there was a rebound in the second half and the year ended with sales of almost 550,000 units (dropping by 10.8 percent on a year-on-year basis). The fall in the passenger car market was limited to only 1.4 percent because of the increased popularity of small and fuel-efficient models. The market for commercial vehicles declined by almost 18 percent in 2009 to nearly 320,000 units. Of these, 240,000 were pick-up models, representing a fall of 20.4 percent in this segment.

The increase of auto sales in the fourth quarter of 2009 was due to the rising confidence of consumers and the auto industry. In addition, it may have resulted from several economic stimulus packages introduced by the government such as Thai Khemkhaeng projects which aimed to invest in the economic system, an increase in agricultural product prices and tax privileges under various FTAs.

Major auto-makers expect a growth of 9 percent domestic sales in 2010[4] if there are positive changes in the Thai politics. The risk factors, including increased oil prices and strengthening of the Thai Baht, are likewise being considered.

The attractive car financing in Thailand is believed to be one of the most important factors behind the speedy growth of domestic sale. Most cars sold in Thailand are sold on credit, as typical buyers are medium-income earners who need loans for

[4] Source: The Nation, "Toyota predicts 9% growth in 2010", January 20, 2010.

their purchases. Normally, automotive financing consists of hire purchase and leasing plans, with almost 80 percent of consumers choosing the hire purchase option because there is no need to pay a lump sum upfront and it is relatively less complicated than leasing. Automotive financing is provided by banks, bank-backed financial service firms, and independent leasing companies. Competition is strong, with various market strategies being offered, including extended installment duration (as long as 84 months in some cases), lower down payment and offers of lower-than-market interest rates. The hire purchase rates for a new car is around 25 percent lower than the adjusted rate for used car (approximately 3.0% and 4.0%[5] for a new car and an old car, respectively).

1.2. Thailand Electrical Appliance and Electronics Industry

1.2.1. History

Thailand's electrical appliance and electronics (E&E) industry has been experiencing a strong and steady growth for more than 25 years now, playing a significant role in the country's economy as an important export earner. The electronics industry is one of Thailand's largest in the manufacturing sector. Thailand's electrical appliance and electronics industry is forecast to have continued growth and could soon eclipse the USD50 billion mark in annual exports. The country is ASEAN's largest electrical appliance production base, with air conditioners and refrigerators leading the way. Thailand's electronics sector is also energized by shipments of hard disk drives (HDDs) and integrated circuits (ICs).

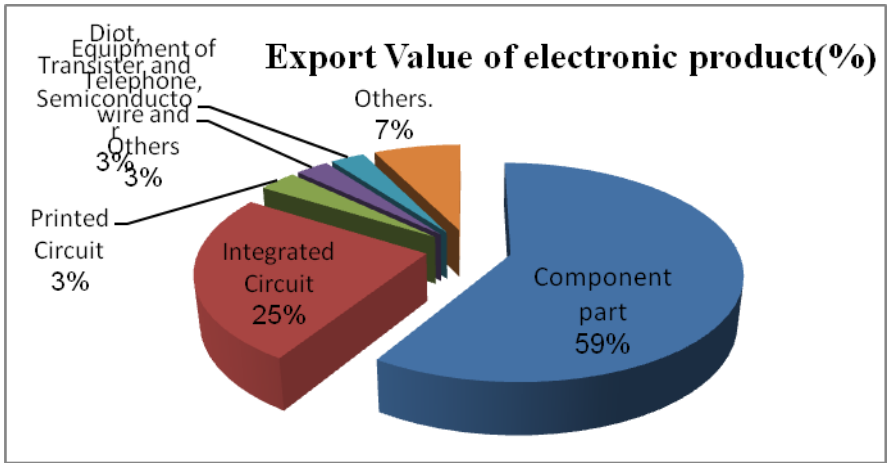
[5] Source: Ernst & Young 2008.
http://www.ey.com/Publication/vwLUAssets/Industry_Automotive_market_in_Thailand/$File/Industry_Automotive_market_in_Thailand.pdf

In the heart of the electronics sector are the HDDs and ICs, accounting for 40 percent and 23 percent of the country's total electronics exports, respectively. In fact, Thailand is the world's largest manufacturer of HDDs, overtaking Singapore's output in 2006. Thailand is also one of the biggest assembly centers for ICs and semiconductors in Southeast Asia. The proportion of export value for electronics products is shown in Figure 5.

The country's output of HDDs shot up by 20 percent in 2008. Since 2005, Thailand has supplied nearly half of the world's HDDs, and demand for the product is estimated to grow by at least 14 percent in the next couple of years. Producers are supported by the country's busy network of companies that supply the parts and subcomponents used in HDDs, from suspensions and gaskets to motors and covers.

The government-backed cluster development program fosters growth by putting HDD and component factories in proximity, reducing makers' transportation costs and

Figure 5: Proportion of Export Value for Thailand's Electronics Products



Source: Customs Department, Oct.2009, Access: 31 Jan 2010.

thereby helping to keep prices competitive through efficient supply chain management. These zones are located mainly in the central and northeast regions.

Respect is the word for Thailand's electrical appliance manufacturing sector, which is highly regarded among global buyers. The country is ASEAN's largest production base in the sector, and the world's second-biggest maker of air conditioners and fourth largest for refrigerators. Made-in-Thailand is seen as a mark of quality for such products.

By export value, Thailand's leading electrical appliances are air conditioners, refrigerators, and digital cameras and video camera recorders. Air conditioners account for 16 percent of value[6]. The strongest growth is seen in the digital camera and video camera recorder line, which in 2008 jumped by one-fifth in value compared with the previous year's exports. Electrical appliance makers in Thailand also benefit from the strong local presence of compressor, motor, and plastic and metal part suppliers, and other support industries.

More than 480,000 people are employed in the industry. Foreign direct investments (FDIs) currently dominate this large and fast-growing sector. Multinational companies, mainly from Japan, the US, Netherlands and Taiwan, generally establish their product, testing and assembling facilities in Thailand.

Feeding the country's business expansion, the electrical appliance and electronics industry is a main driver of the export sector, accounting for a large 30 percent of Thailand's outbound shipments. With the government viewing development of the industry a priority, E&E businesses are enjoying favorable policies for even further growth, an attractive environment for investors.

[6] Statistics from the Bank of Thailand, 2009.

1.2.2. Current Situation of Thai Electrical Appliance and Electronics Industry

The nature of investments of major electronics operators is to use Thailand as a production base for export to the mother company's home country or export to other countries. The electronics industry is capital intensive and requires know-how. Thailand can mainly provide low labor cost, incentives and privileges offered by its BOI for investors in this sector. Furthermore, Thailand serves as a good hub for activity in Southeast Asia, with good transportation links to the rest of the region and to China.

The government is committed to further developing this industry. Hence, the BOI has accordingly taken steps to ensure that the investment climate remains favorable and that special tax incentives are granted to investors in the industry. These incentives include:

- Maximum tax incentives for high-technology investment projects totaling more than 30 million baht that would manufacture products not yet made in Thailand;
- Exemptions for import duties on machinery, raw materials and components;
- Exemption from corporate income tax for a period of 8 years for projects in Zone 3, 7 years for projects located in an industrial estate or a promoted industrial Zone, 6 years for projects in Zone 2 and 5 years for projects in Zone 1.

Additional incentives are also available to investors who locate in Zone 3 regions of the country, in accordance with Thailand's decentralization policy.

Apart from attractive tax incentives, the BOI provides investors with comprehensive business services. It assists locators by identifying potential suppliers, allowing them to own land, permitting them to bring in foreign experts and technicians to the country, and facilitating the work permit and visa application process for foreign employees working in Thailand.

Moreover, several incentives are available to companies that invest in R&D. The BOI grants these companies a three-year extension of the corporate income tax holiday while the Revenue Code of Thailand allows for the double deduction of R&D expense from corporate income taxes.

The country also offers abundant technical training facilities, including the Thai Microelectronics Center, Hard Disk Drive Institute, Electrical and Electronics Institute and National Electronics and Computer Technology Center.

1.2.3. Competitive Environment

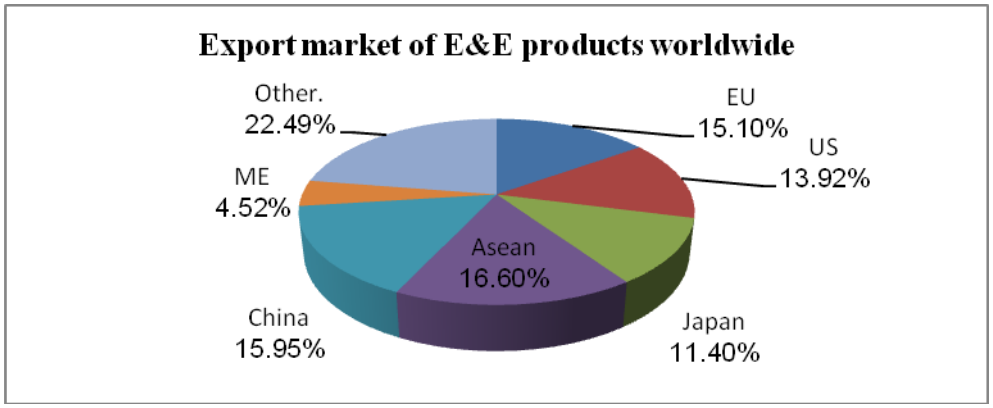
(1) Current Export Potential

In 2009, Thailand's exports of electrical appliances and electronics (E&E) hit USD38 billion, with ASEAN member nations taking in a share of the exports at 16.6 percent. Other top destinations in 2009 were the European Union (EU) with a share of 15.1 percent, China (15.95%), the US (13.92%), and Japan with an11.4 percent share. The Middle East absorbed 4.52 percent of the Thai exports of E & E. The export market of Thailand for these is shown in Figure 6.

In 2009, in terms of the global exporter ranking, Thailand was ranked as the largest out of 22 manufacturers from around the world. The ranking can be seen in Figure 7.

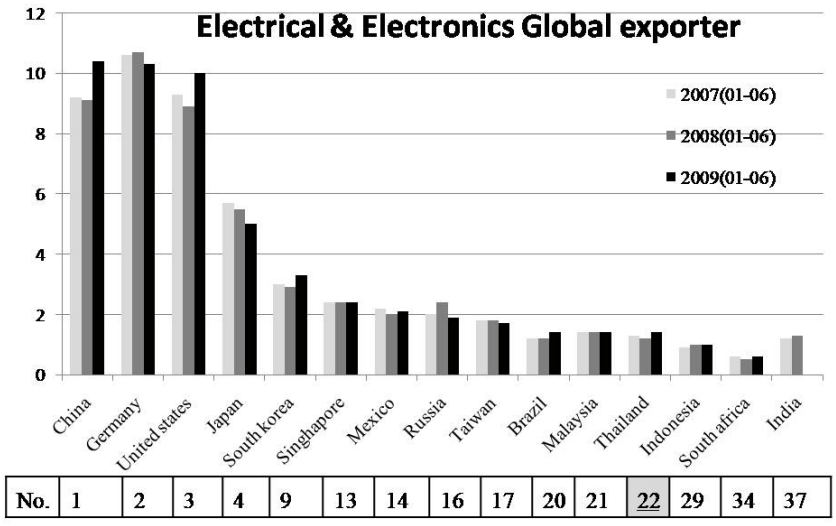
Increasing demand for LCD and Plasma TV has also been detected since the product has been proven to be more environment-friendly than the previous model with CRT type. Samsung and LG have been recognized as major players in this market, with their main manufacturing bases located in Thailand. Since Thailand is considered as a

Figure 6: Export Market of Thailand on Electrical Appliances and Electronics Products



Source: Customs Department, Oct 2009, Access: 31 Jan 2010.

Figure 7: Ranking of Electrical and Electronics Global Exporter, 2009



No.	1	2	3	4	9	13	14	16	17	20	21	22	29	34	37

Source: World Trade Atlas, November 2009, www.thaieei.com. Access: 31 Jan 2010.

gateway to Indo-China for LCD and plasma TV, the opportunity exists for the country to be the top exporter in this market sector in the future.

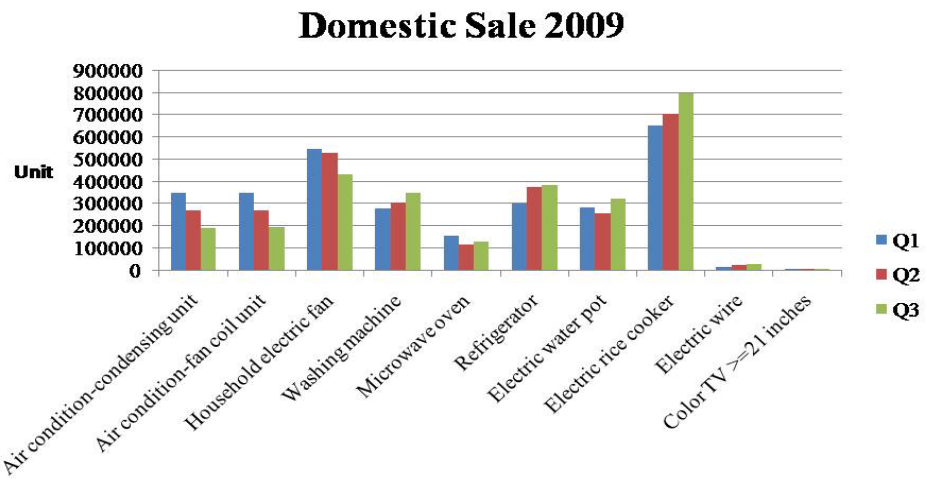
E&E companies are being encouraged to upgrade their technical capability in order to expand beyond OEM into ODM production. This is part of a greater effort to position Thailand as a center of cutting-edge technologies.

Thailand's pre-eminent position as the world's largest production base for HDDs and components offers suppliers within the HDD value chain the opportunity to develop world-scale manufacturing capacity within a dynamic and highly concentrated cluster. Almost all of the world's key HDD manufacturing players are located within a 250 km radius of Bangkok or within the AFTA, offering unparalleled opportunities for manufacturers within the HDD industry.

(2) Domestic market

Domestic sale of electrical appliances and electronics products is around 10-20 percent of overall sale value. For the electric appliance industry of Thailand, the main players are from Japan, China and South Korea. The forefront market share occupants are Japanese-owned SONY and PANASONIC, which provide fierce competition in the industry. However, the company with the highest growth in this sector is owned by South Korea's Samsung. Figure 8 shows the domestic unit sale of electrical appliances in the first three quarter of 2009. Best-selling products are electric rice cooker, household electric fan and refrigerator, respectively, for the three periods.

Figure 8: Domestic Unit Sale of Electrical Appliance in 2009



Source: The office of industrial economics, www.thaieei.com. Access: 31 Jan 2010.

2. SURVEY RESULTS

The survey in Thailand was conducted from November 2009 – January 2010 among firms in the automotive and electronics sectors. There was a total of 16 private companies interviewed, consisting of 10 electronics and 6 automobile-related producing companies. Representatives from business organizations, including policymakers from 6 main associations, were interviewed regarding the perception and possibility of fragmentation to the CLMV (Cambodia, Laos, Myanmar and Vietnam) countries. They represented Thai Automotive Institute (TAI), The Federation of Thai Industry (FTI): Automotive sector, Motorcycle and parts Cluster, Electrical and Electronics Institute,

and the Thai National Shippers' Council (TNSC) and the National Science and Technology Development Agency (NSTDA): Hard disk drive program.

2.1. General information of participating companies

Based on the company profiles gathered from the initial survey, the ownership of the participating companies can be summarized in Table 2. Over 60 percent of the respondents are Japanese investors. The rest are from the US, Korea and Switzerland, among others.

The survey was conducted in three main industrial areas of Thailand, namely, Ayutthaya, Lamphun and greater Bangkok area as can be seen in Figure 9. Most of the electronics respondents were from Ayutthaya and Lamphun. Meanwhile, the automotive respondents were located in greater Bangkok area.

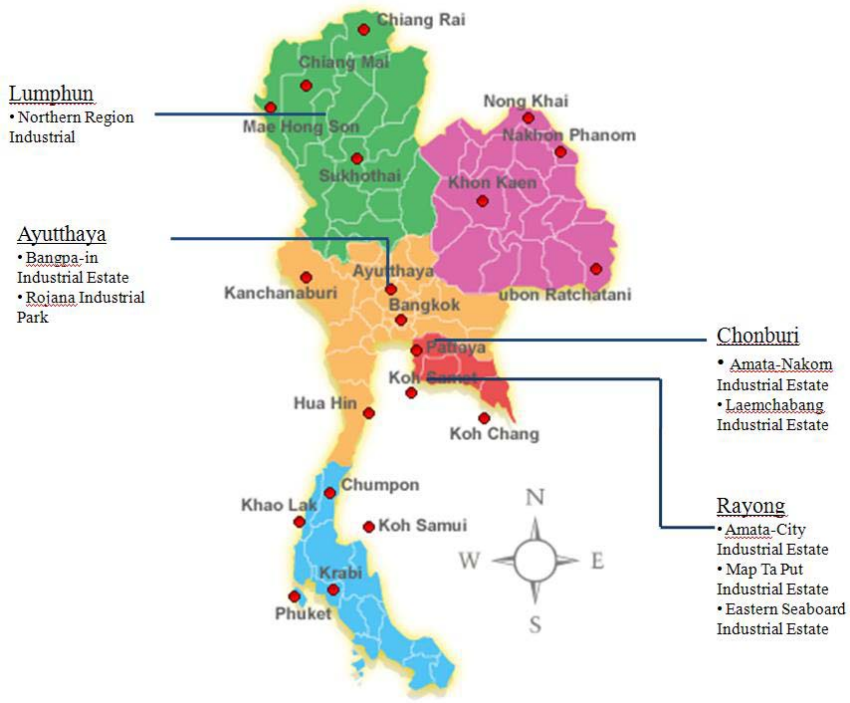
Table 3, meanwhile, presents other information about the surveyed companies which includes the annual sale, total asset, and the number of full-time employees. Said information indicate the company scale which varies from medium to large industry, with assets ranging from 90 to 9,000 million THB.

Table 2: Ownership Status of Participated Companies.

Ownership status	Number of company
Foreign Direct Investment (FDI)	9
Joint Venture (JV)	3
Thai Owned	3
Stock Market	1
Total	16

Source: Survey results.

Figure 9: Location of Participants



Source: Authors.

Table 3: Annual sales & Total Asset & No. of Full Time Employees.

	Electronics (10)			Automotive (6)		
	Max	**Min**	**Average**	**Max**	**Min**	**Average**
Annual sales (million THB)*	250,000	18	36,393	245,838	3,523	73,398
Total asset (million THB)*	9,000	90	2,263	7,520	200	2,284
Full-time employee	37,000	215	7,326	13,500	500	3,941

Source: Survey results.

2.2. Cost Structure

The cost structure of the automotive and electronics industries were broken down into unit cost structure and total cost structure. The comparative data are presented in Tables 4 and 5. For the unit cost structure, the main expense is derived from domestic and imported materials. The material cost in the automotive business captures more than 64 percent of overall cost while the electronics industry pays almost 68 percent for components alone. A balanced usage of domestic and imported materials can be found among firms in the automotive sector whereas the electronics firms tend to use more of imported parts. Recently, however, the electronics players have made an effort to replace the imported parts with local content in order to reduce their production cost.

The information on both industries further indicate that the electronics and automotive industries are not labor-intensive since the labor cost from both players is less than 12 percent of total cost. In terms of transportation cost, the automotive sector

Table 4: Unit cost structure of Automotive and Electronics Industries

Unit Cost Structure	Automotive	Electronics
a. Labor force	11.6 %	9.65 %
b. Imported parts, components & raw materials	29.8 %	40.72 %
c. Parts, components & raw materials procured from domestic market	34.4 %	26.94 %
d. Transportation	4.88 %	1.87 %
e. Electricity	5.60 %	4.83 %
f. Other energies	3.60 %	1.65 %
g. Depreciation on machinery	5.20 %	8.00 %
h. Other elements	8.13 %	4.97 %
Total	100 %	100 %

Source: Survey results.

Table 5: Unit cost structure of Automotive and Electronics Industries

Total Cost Structure	Automotive	Electronics
a. Labor force	13.8 %	10.46 %
b. Imported parts, components & raw materials	24.8 %	33.51 %
c. Parts, components & raw materials procured from domestic market	32.6 %	28.30 %
d. Transportation	4.4 %	2.65 %
e. Electricity	8.8 %	5.48 %
f. Other energies	3.6 %	2.88 %
g. Depreciation on machinery	5.2 %	7.38 %
h. Other elements	6.8 %	9.66 %
Total	100 %	100 %

Source: Survey results.

takes up 4.88 percent while the electronics industry takes only about 1.87 percent. The difference between the two industries may be attributed to differences in carrying load, number of components per shipment, transportation mode and distance involved. Other expenditures such as electricity and alternative energies do not yield any significant difference between the two industries. A similar trend in the total cost structure of these two sectors has been noted, as can be seen in Table 5.

2.3. Business Climate

2.3.1. Export Ratio

The respondents from the electronics companies are mostly located in Special Economic Zones (SEZ) or in Export Processing Zones (EPZ). Hence, one can see that they focus mainly on the export market. On the other hand, the automotive companies, especially the auto parts sector, target more on the domestic market. They are main

suppliers for several auto assembly players in the country. The export ratio of the participants as collected from the survey is presented in Table 6.

2.3.2. Lead Time

Lead time has been surveyed in two different channels: upstream and downstream. The upstream lead time is considered between the time of the respondent's order of import materials and the date/time of their delivery. It varies from 3 to 70 days for electronics' import parts and from 7 to 90 days for automotive sourcing. On average, the automotive industry respondents experience 20 days more than the electronics respondents to obtain their materials. Most of the automotive import parts are delivered by sea freight while up to 20 percent of the electronic firms' import components are delivered by air.

Meanwhile, the downstream lead time is the duration computed between the time of a customer's order and the time of delivery of the product. In this survey, the electronics sector performs better market response than the automotive sector, running almost 17 days faster. The shipment mode of outbound logistics could be one of the main reasons for this divergence since the electronics sector employs more air shipments than the automotive sector. Focusing solely on the automotive group, the lead time for the auto parts sector is a lot shorter than auto assembly because their major

Table 6: Export Ratio of Participated Companies

Export ratio	Min	Max	Average
Electronics (10)	30	100	81.89
Automotive (6)	1	100	43

Source: Survey results.

Table 7: Upstream and Downstream Lead Time of Electronics and Automotive Respondents

Industry	Upstream lead time*			Downstream lead time**		
	Max	Min	Average	Max	Min	Average
Electronics	3	70	31.6	1	30	12.4
Automotive	7	90	52.5	7	90	29.0

Source: Survey results.

customers are located domestically. Upstream lead time in both cases take longer than the downstream channel. The upstream and downstream lead time for both industries can be seen in Table 7.

2.3.3. Custom Clearance Time

Custom clearance time for the survey sample varies from 1 hour to 48 hours with the average interval of around 20 hours (Table 8). The length depends on the congestion at the custom office and the completeness of the required documents for clearance. However, the time consumed for custom clearance is still uncertain in this survey because most of the respondents have subcontracted their incoming and outgoing

Table 8: Custom Clearance Time of Electronics and Automotive Respondents

Custom Clearance time	Min (hour)	Max (hour)	Average (hour)
Electronics (10)	1	48	19.3
Automotive (6)	1	48	23.5

Source: Survey results.

custom clearance activities to third party logistics companies. Lack of information seems to be a limitation for this particular survey issue.

2.3.4. Distance to Major Harbors and Airport

Road transportation is mainly utilized for the domestic market. Appropriate means of transportation are selected for each company. Logistics service providers play important roles in distributing components to local customers.

The survey results also indicate that the outbound logistics of exporting electronics component sometimes require air shipment. The distance from major industrial estates to Suvarnabhumi (Bangkok International Airport) is presented in Table 9. These designated industrial zones are home to the electronics and automotive industries in Thailand.

Inbound logistics for both industries are mostly done via sea shipment. The distance from the Laem Cha Bang (LCB) port and Bangkok (Khlong Toey) port which are the main ports of Thailand to major industrial areas are presented in Tables 10 and 11. LCB port is located in the Southeastern direction of Klong Toey port, with a

Table 9: Access of Major Industrial Areas to Bangkok Airport (Suvarnabhumi)

Industrial Zone	Distance(Km.)	Time
Amatanakhon (Chonburi)	60.4	50 min
Laem Chabang Industrial Estate (Chonburi)	86.7	1hr 17 min
Maptaput (Rayong)	162	2hr 23 min
Eastern seaboard (Rayong)	125	1hr 50 min
Bang pa in Industrial Estate (Ayutthaya)	74.5	49min
Rojana industrial park (Ayutthaya)	79.3	59min
Lamphun Industrial Estate	677	9hr 33 min

Source: http://maps.google.co.th/.

Table 10: Access of Major Industrial Areas to Laem Cha Bang Port.

Industrial Zone	Distance(Km.)	Time
Amatanakhon (Chonburi)	27.4	24 mins
Maptaput (Rayong)	79	1hrs 19mins
Eastern seaboard (Rayong)	68.7	1hrs 5mins
Bang pa in Industrial Estate (Ayutthaya)	151	1hrs 45mins
Rojana industrial park (Ayutthaya)	164	2 hrs
Lamphun Industrial Estate	767	10hrs 44 mins

Source: http://maps.google.co.th/.

Table 11: Access of Major Industrial Areas to Klong Toey Port.

Industrial Zone	Distance(Km.)	Time
Amatanakhon (Chonburi)	83.7	1 hour
Laem Chabang Industrial Estate (Chonburi)	96.4	1hr 30 min
Maptaput (Rayong)	172	2hrs 37mins
Eastern seaboard (Rayong)	150	2hrs 4mins
Bang pa in Industrial Estate (Ayutthaya)	62.8	1 hrs
Rojana industrial park (Ayutthaya)	74.9	1 hrs 4 mins
Lamphun Industrial Estate	665	9hrs 34mins

Source: http://maps.google.co.th/.

distance of 96.4 km. From the survey results, the automotive industry is seen to utilize Laem Chabang port more frequently than the electronics industry does. Shipments of electronics commodities and parts are normally done at Klong Toey port. The distance from the industrial zone to ports is one of the most important criteria for the port service selection. The transportation networks from the industrial zone to ports are in good condition, thus making the road travel very efficient.

2.3.5. Black-out Frequency

Black-out frequency indicates the stability of electrical supply for designated industrial zones. In recent times, the black-out problem in Thailand has been more seldom since the electrical supply system has become more reliable. Preventive maintenance has been done more regularly to ensure efficient electric supply especially in the industrial zone.

Data collection regarding black-out shows that companies experienced 1-3 times of black-out every 6 months. Most of the time, the duration is between 5-30 minutes. At least 4 companies did not experience a black-out in a year (Table 12). Large scale industries invested in their own electric generators and sub-stations to avoid black-out problem. For the industrial estate, a black-out plan has always been announced in advance .

2.3.6. Wage and Educational Level

Wages and educational levels of staffs were studied to indicate the education required

Table 12: Frequency and the longest hours of black-out

Industry	Average		Min		Max	
	Freq.	Longest hours	Freq.	Longest hours	Freq.	Longest hours
Electronics	1.7	2.60	1.0	1.0	2.0	5.0
Automotive	1.8	2.67	1.0	1.0	2.0	4.0

Note: 1) "Freq." means frequency of black-out. The level indicator of frequency is:
1= have no experience in a year 2= Once or a few times in six months 3= Once or a few times in a month 4= Once or a few times in a week 5= Several times in a day.
2) "Longest hour" mean the longest hours among the cases of black-out. The level indicator of frequency is: 1= less than a few second 2= a few seconds – one minute 3= one minute – five minutes 4= five minutes – thirty minutes 5= Longer than thirty minutes.

Source: Survey results and interview with respondents.

for each position. The operators for both industries are required to graduate at least from middle high school. It is necessary for middle managers and engineers to obtain at least a bachelor's degree to qualify for these positions. However, some of the middle managers have been promoted from production line staffs because of their abundant experience. Therefore, being a college graduate is not required in this case. Unlike engineers who have to graduate with no less than a bachelor's degree to become eligible to apply for a professional engineer's license. The educational level of engineers for both industries is not much different. For operators and middle managers, the automotive employees tend to have higher educational levels than the electronics staffs.

The salary for each position is also summarized in Table 13. Operators in electronics companies receive higher salaries than automotive workers. On the other hand, middle managers and engineers in the automotive sector earn slightly more than those in the electronics sector.

Turnover ratio of staffs is considered a small number for both sectors. The ratio varies from 0.2 to 5 percent per month with an average of 1.70 percent. The highest turnover ratio is among operators, especially in the industrial zone where several

Table 13: Salary and Educational Level of Three Different Positions in Automotive and Electronics

Wages	Electronics				Automotive			
	Max (US$)	Min (US$)	Average (US$)	Education Level *	Max (US$)	Min (US$)	Average (US$)	Education Level*
Operator	300	191	232	3.50	283	183	224	3.80
Middle Manager	2,520	850	1,293	6.06	2,400	760	1,300	6.26
Engineer	2,400	460	900	6.16	2,200	400	920	6.12

Note:* Education: 1= no formal school, 2= elementary school, 3= middle high school, 4= high school, 5 = vocational school, 6= college/university, 7= graduate school

Source: Survey results.

Table 14: Summarize of turnover ratio in electronics and automotive sectors

Turnover ratio (% per month)	Min	Max	Average
Electronics (10)	0.2	5	1.74
Automotive (6)	0.2	5	1.71

Source: Survey results.

companies are located. They decide to move when better incentives are offered.

High turnover is also detected among engineers, especially from being auto parts to auto assembly players. A perception has been made that working in the auto assembly sector could provide a better career path. This could be one of the main reasons for the job hopping in the automotive sector. The turnover ratio in both industries is summarized in Table 14.

3. POSSIBILITY OF FRAGMENTATION TO CLMV COUNTRIES AND CHALLENGES FOR CLMV COUNTRIES

3.1. Investment Climate- Evaluation by Electronic and Automotive firms

This section provides a survey of the kind of investment climate that influences relocation decisions. The respondents were asked to give rankings on nine elements affecting the investment climate as shown in Table 15. Based on the rankings, access to port and market is rated as the most important factor for both the automotive and electronics clusters. Then for the electronics sector, the elements that rank second and third are the educational level of workers and incentives for investors, respectively, whereas for the automotives sector, their focus is more on GDP per capita followed by

Table 15: Priorities on Conditions for Deciding Locations of Manufacturing Factories: excluding other factors

Investment Climate	Electronics		Automotive	
	Score	Rank	Score	Rank
1. Land price	2.9	6	1.6	8
2. Wage of workers	5.9	4	5.0	5
3. Price of energy and electricity	4.8	5	3.0	6
4. Price of water	2.8	7	2.2	7
5. Access to port and market	6.7	1	6.2	1
6. Educational level of worker	6.4	2	5.4	3
7. Population and GDP per capita	2.6	8	5.8	2
8. Incentive like tax holiday	6.1	3	5.4	3

Source: Survey results.

educational level and incentives. Purchasing power appears to be drawn from the population and income, which would explain why the automotives group rated GDP per capita on a high scale. On the other hand, since the electronic respondents are mostly export-focused, the elements of population and GDP per capita are less important for them.

Educational level is found to be essential for both clusters because a high level of responsibility is necessary for the manpower in view of the clusters' work production complexity. Wage level is not a big issue for these clusters because they are not labor-intensive industries. The cost structure specifies that automotive and electronics industries spend only 11.6 percent and 9.65 percent, respectively, on labor cost. The quality of workers in these industries is more focused.

Table 16: Priorities on Conditions for Deciding Locations of Manufacturing Factories: Include Others

Investment Climate	Electronics		Automotive	
	Score	Rank	Score	Rank
1. Land price	2.9	11	1.6	13
2. Wage of workers	5.9	6	5.0	9
3. Price of energy and electricity	4.8	10	3.0	11
4. Price of water	2.8	12	2.2	12
5. Access to port and market	6.7	3	6.2	3
6. Educational level of worker	6.4	4	5.4	7
7. Population and GDP per capita	2.6	13	5.8	5
8. Incentive like tax holiday	6.1	5	5.4	7
9. Others: Political stability	8.0	1	7.8	2
10.Others: Market Volume	7.4	2	8.0	1
11.Others: Infrastructure	5.9	6	60	4
12.Others: Investment regulations	5.0	8	5.8	5
13.Others: Available of suppliers	5.0	8	4.5	10

Source: Survey results.

Land price and utility cost are, on the other hand, evaluated lowest in both sectors. This could be described by the product cost structure in section 3.2 where cost of electricity usage is less than 6 percent of total production cost.

Conditions for relocation included other factors as shown in Table 16. These other factors include political stability and market size which seem to be the most important criteria for fragmentation as gathered from the electronics respondents. Since a substantial investment is required for both industries to set up their production plant, they would like to ensure that the political issue in the place to be relocated would not delay and obstruct their business.

Market size appeared to be the most important reason for the automotive players to relocate. Most of the auto part respondents tie their decision with the relocation policy of their main customers whereas auto assemblers would decide to transfer to a new market with high purchasing power. For example, the motorcycle business has transferred to Vietnam because of its attractive market size. As a result, motorcycle parts makers have followed their customers to Vietnam.

Logistics infrastructure, availability and variety of suppliers, and investment regulations have been considered imperative by some respondents. Two electronics companies mentioned about the investment regulation which should be flexible and more investor-friendly. Availability of qualified local contents is crucial for these industries because over 60 percent of total cost is paid for material. The presence of competitive local suppliers could thus reduce the manufacturing cost of these sectors.

3.2. Possibility of Fragmentation to CLMV countries

Previous studies indicated that the primary reasons for moving manufacturing offshore are access to low labor cost, access to markets and/or access to skilled labor (Steenhuis and Bruijn, 2005). A similar result was detected in a survey of Southeast Asia by Suzuki (2009) indicating that a firm relocated from Thailand to Lao PDR because the wage in Thailand was around 4.8-8.0 times higher than that in Lao PDR. Thus, the firm could save significant labor cost from fragmentation to a low-wage country.

Several studies have looked at the motives for relocation in such a strict sense. From a sample of business relocation announcements in the US, Chan *et al.*(1995) found that the main reasons for the business relocation are cost savings and business expansion. Within a European context, Brouwer *et.al*. (2004) speculated that

restructuring and flexible responses to new market conditions for innovative products are equally, if not more, important motives. However, market access is a weak point in less developed countries, especially small countries such as Lao PDR and Cambodia (Kuroiwa, 2009). They cannot provide lucrative markets for FDIs.

Cost of relocation has been reported from the previous work of Kuroiwa (2009) indicating that it involved three kinds of additional costs when production fragmentation occurs. They are (i) business set-up cost which is incurred when the firm sets up a new factory in a new country, (ii) additional business operation costs which are incurred when a less developed country has a less favorable business environment than a developed country, and (iii) service link costs or logistics costs which are incurred when intermediate freight to another country and final products are carried back and forth between the two countries. Hence, these additional costs may be considered as one of the significant factors for fragmentation to CLMV countries.

This section presents an evaluation of the CLMV countries by the survey respondents from electronics and automotive companies in Thailand. After showing the table of basic information on investment climate in the CLMV countries, respondents were requested to answer if investing in CLMV is good, fair or bad. Pros and cons on investment in each of the CLMV countries were asked, based on the respondents' perception.

From the initial survey results, the respondents agreed to have Vietnam as the first priority among the CLMV countries if and when they would consider relocating or extending their production base. Lao PDR, Myanmar and Cambodia were then ranked/ considered in said sequence.

Automotive and electronics industries in CLMV countries have been classified as “new industries”, with the supporting infrastructures not yet put in place. For this reason, not many respondents had direct experiences in terms of relocation to CLMV. An additional survey was conducted with companies who already decided to extend their business or move to CLMV. From this additional survey, most companies agreed that access to low labor cost was the most important push factor. Then, access to market was also pointed out, especially by auto-part makers. These answers are thus similar to findings of previous research.

At present, there is still no obvious sign of fragmentation to CLMV for the automotive and electronics sectors from Thailand. However, an opportunity still exists for CLMV countries in view of some advantages enumerated by the respondents.

3.2.1. Opportunity for Vietnam

Several perceptions and comments were achieved from Thai respondents regarding the opportunity of investing in Vietnam. The advantages that were often pointed out by respondents were access to a larger market (automotive sector) and access to lower wage (electronics sector).

Opportunity clearly exists for the motorcycle assembly industry because of its sizeable market in Vietnam. Same goes for the parts makers, especially motorcycle parts and low-tech uncomplicated parts such as injection forming, metal cut, metal stamping and press. These supporting industries do not require skilled workers to operate and the investment on this sector is relatively not high. Hence, a number of Thai parts makers decided to transfer to Vietnam. Additionally, Korean and Chinese car makers are now

making efforts to penetrate the Vietnamese market, with the expectation of a market expansion to the Southeast Asian region in the near future.

Meanwhile, in terms of labor issue in Vietnam, the major survey participants expressed similar opinions that the Vietnamese are hard-working people and are eager to learn. Moreover, the proportion of the working-aged population in Vietnam is 54 percent or around 46 million people who are ready to work[7]. Labor cost, especially among unskilled labor, is much lower here than in Thailand.

More valuable perceptions on the advantages of fragmentation to Vietnam were derived from a single comment as follows:

- Investor-friendly environment, with the Vietnamese government concerned a lot on diplomacy issue,
- Promotion and investment policy of the government which is beneficial for investors, and
- English communication skill of Vietnamese is an advantage over the CLM countries.

However, some disadvantages were also discerned from the other respondents' perceptions which could impede the growth of automotive and electronics investment in Vietnam. Several respondents worried about the unavailability of supporting industries, infrastructure, and qualified skilled labor. Lack of experience in the automotive industry, including low purchasing power for passenger cars and trucks, were always mentioned by many Thai companies.

[7] Source: Board of Investment, 2010: http://www.boi.go.th/thai/clmv/2009_vietnam/2009_vietnam_d5_5-1.html (accessed February 15, 2010).

The supporting industry for the automotive and electronics industries in Vietnam was evaluated to still be immature. Thus, imports of significant parts and materials would inevitably be required. This could increase the production costs of the company. Basic infrastructure facilities and logistics network are likewise not yet fully arranged or put in place. The report from the BOI (2009) pointed out that electricity was found to be deficient in Vietnam, resulting in frequent black-out problems. However, the Vietnamese government plans to construct new power plants throughout the country, including a nuclear power plant.

Although many people in Vietnam are of working age, they are not completely prepared for the automotive and electronics-related industries. Skilled labor, including middle managers, are still not sufficient and somehow not qualified. Since the country has only 10 years of experience in the automotive industry, it was felt that the knowledge on automotive production was not yet enough.

Additional concern from automotive sectors pointed out that the passenger car makers are still unable to penetrate the domestic market because second-hand cars remain to be more popular among Vietnamese car users. The volume of car production is nowhere near its economy scale as well as truck production. Flexible motorcycle usage could limit the growth of truck sale. Second-hand or inexpensive conventional truck is very popular among users in CLMV countries. The truck is not viewed as a status symbol among users in these countries. Rather, its use is strictly for business. Therefore, sale of elegantly designed trucks is still experiencing a rough sailing in these countries.

Other drawbacks, which were considered crucial for investors, are shown below. These comments were drawn from the participants' responses that were mentioned only once:

- Disaster in Vietnam,
- High humidity which is not suitable for electronic device manufacturing,
- The population is too large which could result in insufficient resources,
- Corruption problem wherein companies have to pay hidden fees to custodians to smooth the progress of their businesses,
- Ambiguous and inconsistent investment policy and laws for investors from overseas, and
- Low purchasing power for luxury products which could be a main reason of electrical appliance manufacturers for not transferring.

The positive and negative perceptions on fragmentation to Vietnam are again summarized in Table 17

Table 17 : Summary of Perceptions Regarding Fragmentation to Vietnam

	Perception from several respondents	Perception from single respondent
Positive	1. Cheap labors 2. High quality of staff- hard working and eager to learn 3. Promising market growth	1. Investor friendly environment 2. Attractive promotion and investment policy from the government 3. Working staff is capable in English communication
Negative	1. Unavailability of supporting industries 2. Infrastructure is not fully prepared to support industry such as undersupplied electricity 3. Lack of qualified skilled labors 4. Lack of experience in automotive industry 5. Low purchasing power on new passenger cars and trucks	1. Possible natural disaster 2. High humidity which is not suitable for electronic device manufacture 3. Corruption problem 4. Ambiguous and discontinue investment policy and investment law 5. Low purchasing power on luxury product

Source: Survey results.

At the moment, some Thai automotive industries from the survey have extended their operations to Vietnam. The main push factors are high market volume and cheaper wage. When a car assembly industry decided to start up a production line in Vietnam, it is unavoidable for its main supporting industry to follow.

Further interviews were conducted with other industries to verify the push factors. A similar response was registered in the textile industry with regard to the labor issue, which included cheaper wage, hard-working workforce, and eager-to-learn employees. These factors could prove to be more advantageous than the Thai operations and will increase the competency of the Vietnamese company vis-à-vis other companies operating in Thailand. Nonetheless, bribery in facilitating business in Vietnam was seen to be a disturbing factor for Thai investors.

One valuable comment from the glass disk industry regarding the fragmentation factor is on the availability of water for production. A limited supply of water has been found to be critical in Thailand, and the glass disk company-respondent noted that water resources in Vietnam are more abundant and ready to use.

Meanwhile, a wrong perception has been detected on the ability to speak English by the Vietnamese. This skill is actually limited only to a specific group of well-educated people. The English language is not currently used as the official language in Vietnam. It is still necessary to use the Vietnamese language to make contact with government officers and domestic customers. However, studying the Vietnamese language is not too difficult for Thai investors because the language structure of the two is quite similar (BOI, 2009).

Another incorrect perception is the readiness of infrastructure in Vietnam. From the interview, Vietnam has proven that they are ready for FDIs and many multinational

companies have relocated there. Recently, a software industry has been transferred to Vietnam. These evidences could verify that the existing infrastructure in Vietnam may be enough for the electronics and automotive sectors although only in specific industrial estates.

Additionally, the investment promotion policy in Vietnam was found to be consistent, particularly for overseas investors. Comments and suggestions from the private sector have continuously been considered and adopted to revise the policy and make it more appropriate. If the new investment law has lessened privileges, investors may choose to apply former-issued laws to maintain their benefits[8]. The previously stated perception regarding the ambiguous investment law was found invalid. Vietnam's investment policy is clear and consistent although announcements may not be made in appropriate ways.

3.2.2. Opportunity for Lao PDR and Cambodia

Perception and comments obtained from survey respondents were quite similar for Lao PDR and Cambodia. Majority of the respondents agreed that the following issues are the advantages in investing in Lao PDR and Cambodia:

- Average wage for worker is considerably cheap,
- Tax advantages and some exceptions have been continually offered by the Lao PDR government, especially for the car assembly industry,
- The offer on tax holiday is very attractive in the case of Cambodia.

[8] BOI (2009), "Investment in Vietnam", : http://www.boi.go.th/thai/clmv/2009_vietnam/2009_vietnam_d5_5-1.html (accessed February 15, 2010)

However, important issues on fragmentation were derived from comments that appeared only once. Among these are:

- The identity of the people in Lao PDR is quite impressive. Investor-friendly environments are always conveyed. This could be one of the decision points, especially for Lao PDR, and
- Communication with Thai investors is made easily through a similar language. However, some communication problems may occur with non-Thai investors who basically use English and other languages.

Regarding the weak points of investing in Lao PDR and Cambodia, majority of the respondents shared similar views that the environment of both countries did not appear to be suitable for an industrial system, especially for high-tech manufacturing. Lack of skilled labor who could take in heavy responsibilities was a significant issue for the automotive and electronics sectors. Additionally, the presence of underdeveloped infrastructure was also repeatedly commented on, especially in terms of logistics infrastructure.

For several automotive makers, on the other hand, the limited market size for cars and trucks in Lao PDR and Cambodia seems to impede the investment of car manufacturing to these countries since the automotive relocation criteria are based mainly on market volume. The usage of car and truck in both countries is not popular because the utilization is restricted by the law of truck usage. Moreover, the car financing is not fully supported by the government unlike in Thailand. One off payment could delay a decision on purchasing a new car or truck for people in Lao PDR.

A significant factor why many respondents from Thailand put the lowest rating on Cambodia may be due to the present political conflict between Thailand and Cambodia.

This could tremendously reduce investment confidence in Cambodia from the view point of the Thai investor. An additional survey was conducted on tangible Thai investors in Cambodia. It was agreed that business between the two countries will be developed soon after the conflicts are resolved.

Valuable comments mentioned only once were also obtained from the survey, which include:

- Lao PDR's being a landlocked country may result in difficulties in dispatching goods outside the country,
- Unfamiliarity with industry work and system. Gathered perceptions indicated that working during night time is prohibited in Lao PDR, making flexibility for the manufacturing system limited, and
- Low marketing potentials in Lao PDR and Cambodia in view of the low GDP in these countries.

The perceptions on fragmentation to Lao PDR and Cambodia are summarized in Table 18.

In terms of wrong perceptions, the view expressed on the issue of overtime work is one. Currently, operators in Lao PDR can and are willing to work overtime; no law has prohibited them from working overtime. This fact was conveyed by one electronics part maker who relocated to Lao PDR ten years ago.

The main push factor for actual relocation to Lao PDR and Cambodia was access to cheaper wage. In Lao PDR, the labor cost is 4 times less than that in Thailand. This finding was gathered from an electronics-related company which is now expanding its business to Lao PDR. However, according to this company, the problem with regards to the availability of qualified staffs still exists. The capability of middle to high level

Table 18 : Summary of Perceptions Regarding Fragmentation to Lao PDR and Cambodia

	Perception from several respondents	Perception from single respondent
Positive	1. Cheap labors 2. Attractive privileges offered from Lao PDR and Cambodia to promote foreign investment 3. Attractive tax holiday from Cambodia	1. Investor friendly environments in Lao PDR 2. Communication with Thai investor is made easily through similar language
Negative	1. Working environment is not suitable for automotive and electronics industry 2. Lack of skilled labor for electronic and automotive sector 3. Underdeveloped infrastructure 4. Limited market size of car and truck 5. Political contradiction between Thai and Cambodia	1. Landlocked country of Lao PDR 2. Unfamiliarity with industry work and system especially on overtime work 3. Low marketing potential in term of GDP

Source; Survey results.

managers, including engineers, is indeed somewhat lower. Although the company has been relocated to Lao PDR more than ten years ago, many of its staff are still sourced from Thailand.

3.2.3. Opportunity for Myanmar

Only a slim chance for relocating to Myanmar was given by Thai respondents. Nonetheless, some benefits were mentioned by other respondents in terms of Myanmar's geographical location, labor cost, and extensive resources.

Myanmar is believed to have high potentials as a strategic gateway to South Asian and Southern Chinese markets. Products made in Myanmar could enter the Indian and Chinese markets easily from the point of view of logistics operation. In addition, the distance to port and harbor from the industry zone is not too far since the industry zones

are located around Yangon, which is only less than 30 kilometers away from Yangon port.

Cheap labor with considerable skills in the English language could be found extensively in Myanmar. This could be beneficial for the multinational companies (MNCs) and for FDIs and may attract some companies to transfer to Myanmar.

Abundant unexploited resources such as energy, land, and labor could be considered as one of the substantial benefits for Myanmar. With the presence of FDIs, approaches to utilize these resources efficiently for business may be tapped. Apart from this, it is considered that appropriate industry system could be embedded in the society's grassroots because Myanmar's social and economic systems are still unadulterated. Well-organized bases of the industry system could lead to a speedy growth of the manufacturing sector in Myanmar, something that the automotive and electronics groups have not yet discovered or realized. High population in Myanmar is also seen as a promising opportunity for the future market growth.

On the other hand, several disadvantages of Myanmar, as gathered from the survey, seem to undermine the benefits that have just been mentioned. These include:

- Political issue. Since the country has been occupied by a military government, this could bring about a high level of uncertainty for foreign investors. Business security is somehow not guaranteed.
- Unstable investment policies, supports and guidelines from Myanmar's military government. It was believed that the promised policy could be changed without logical explanation and notification.
- Corruption issue in Myanmar's government system.

- Lack of reliable basic infrastructure such as electricity. This could impede the growth of the manufacturing sector. Abundant resources have not been exploited in appropriate ways.
- Ineffectual trade relations with European countries and the US. This may cause troubles in trading such as economic sanction. Products made in Myanmar may not be allowed to export to particular countries within protocol. The country image is thus unimpressive from the foreign viewpoint.

Some comments were gathered only once but they were considered valuable to share. They are:

- Problem in the diversity of minorities, which could induce civil wars any time if suitable prevention measures are not in place,
- Low purchasing power of the population, which is realized from the fact that high tech equipment may not be considered necessary for people in Myanmar. Hence, the market size for technologically advanced electrical appliance is insignificant,
- Unavailability of qualified engineers and skilled labor, making imported working staffs necessary for plant relocation. FDIs could suffer from this overcharged set-up cost to launch their projects. The big difference in educational levels among the people was also raised as another population problem.

The perceptions of the respondents on fragmentation to Myanmar are summarized in Table 19.

At the time of the survey, no electronics and automotive company has as yet relocated from Thailand to Myanmar. Investment could be found only in some business

Table 19: Summary of Perceptions Regarding Fragmentation to Myanmar

	Perception from several respondents	Perception from single respondent
Positive	1. Promising strategic gateway to South Asian and Southern Chinese market 2. Cheap labor 3. Abundant unexploited resources 4. Opportunity for future market growth	
Negative	1. Political issue which could diminish foreign investor confidence 2. Instability investment policy from government 3. Corruption issue 4. Lacking of reliable basic infrastructure 5. Ineffectual trade relations with European members and USA	1. Variation of minority tribes 2. Low purchasing power 3. Quality and education of working staff

Source: Survey results.

sectors such as agricultural product, cosmetic, paper, plastic, consumable product, energy, and service industries. The push factor gathered from investors on fragmentation was the access market in Myanmar for consumable products. The market volume in this sector is around ten times bigger than in Cambodia[9]. Customers in Myanmar believe that the quality of products from Thailand is higher than that from China[10]. Opportunity is still available for products from Thai companies. Additionally, access to cheap labor and cheap facilities, including the grant of tax privileges, were indicated as other driving forces for Thai investors.

[9] Source: Conclusion of seminar, "Trade Opportunity in Myanmar", Department of Export Promotion, 12 January, 2009. www.depthai.go.th (access on February, 2010).

[10] Source: Conclusion of seminar, "Trade Opportunity in Myanmar", Department of Export Promotion, 12 January, 2009. www.depthai.go.th (access on February, 2010).

CONCLUSION: CHALLENGES FOR CLMV COUNTRIES AND POLICY RECOMMENDATIONS

The formulation of policy recommendations for this study is based on the interviews of related industries and business organizations. Representatives from the Thai Automotive Institute (TAI), The Federation of Thai Industry (FTI): Automotive sector, Motorcycle and parts Cluster, Electrical and Electronics Institute, and the Thai National Shippers' Council (TNSC); and the National Science and Technology Development Agency (NSTDA): Hard disk drive program, were asked to provide potential roadmaps for CLMV to attract FDIs from the electronics and automotive sectors. Among the common issues raised concerned political stability, investment security of investors, attractive privileges for investment promotion, and flexible investment regulations. On this basis, policy recommendations are drawn up for three stages, namely: short, medium and long term, as outlined in Table 20.

Political stability has been noted as the leading criterion for FDIs because investment in the automotive and electronics sectors is considerably expensive. As such, investors have to make sure that the benefits that they can gain will not face any hindrance. Moreover, socialist governments could slow down the decision on relocation because the investors believe that the regulations and benefits offered by socialist governments can change any day. Investment security seems to be uncertain. Under such circumstance, investors prefer the free enterprise system, not the socialist system, in bringing in FDIs.

Attractive privileges should be continuously offered to investors. These include tax exemptions on imported material, extended tax holidays and reduction of corporate

Table 20: Conclusion of Policy Recommendations in Three Stages

	Policy Recommendation
Short term	1. Strengthen political stability 2. Consolidate investment promotion policy- make it clear and attractive 3. Publicize investment promotion policy and privileges to the investor worldwide 4. Increase confidence in business security for investors
Medium term	1. Increase flexibility in investment regulation 2. Develop quality and awareness of operators in automotive and electronics industry 3. Endorse supporting industry to increase consumption of local contents 4. Establish different privileges for different industry zoning 5. Distinguish privileges for different industry type; labor, machine and material intensive 6. Initiate border zone industry to gradually increase knowledge and skill on electronics and automotive industry
Long term	1. Set up the linkage between education sector and industry to customize workforce to specific labor market 2. Establish industrial specific institution to support specific skill training 3. Prepare contingency plans for investors

Source: Authors.

tax ratio. Each area should provide different advantages to different industries. CLMV countries may learn from the Thai and Chinese experiences on industrial zoning system. Apart from zoning, the privileges from government may be classified into 3 main types depending on industry; labor intensive, machine intensive, and material intensive. Special offers could be provided in a different way to suit each industry type. Moreover, these privileges should be promoted and publicized to investors worldwide. In short, CLMV countries need to do certain national positioning and strategic marketing.

Investment regulation and flexibility are among the most significant challenges for CLMV countries. The investment policy and law should be transparent, traceable and flexible enough to attract investors. This may include an approval process for industry establishment that should not be too problematic and time consuming.

Corruption issues relating to the grant of permits for setting up industry and companies should be taken into consideration. Government should keep the process as simple as possible to reduce bribery behaviors of government officials.

The arrangements to attract foreign investments in electronics encompass the development of quality and awareness of operators of the working environment in the electronics industry. This industry requires heavy responsibilities from operators because they sometimes have to deal with expensive component, often much higher than their own wages. The governments of CLMV should support and pay attention to the vertical integration of the electronics industry which includes materials, manpower, know how, equipment, funding and infrastructure readiness.

Meanwhile, preparations for foreign investments in the automotive industry should focus on the upgrading of the quality of the work force. Staffs should be trained and developed to qualify with and suit the automotive industry. Development of an automotive maintenance network is also necessary to support the growth of the automotive market. This includes the training of repairmen for the automotive service industry. To advance the development of the automotive sector in CLMV, focusing on QCDEM (Quality – Cost – Delivery- Engineering – Management) is considered necessary.

In addition, since the automotive relocation criteria are based principally on market accessibility, car financing practices and mechanisms should be established to ease and facilitate automobile trade, leading to an increase in the market volumes in the CLMV countries.

Along with the major players in the automotive and electronics industries, promotion of the supporting companies should be undertaken simultaneously to increase the consumption of local contents which will result in a balance of trade.

To enhance worker qualification for both industries, the linkage between universities, vocational schools and industries should be seriously undertaken to customize the workforce to specific labor market. Industry-specific institutions such as an automotive institution or an electronics institution should be set up to support specific skills training for workers as well as to install knowledge management and information-sharing practices for both industries. These integrations could bring about the sustainable development of the electronics and automotive clusters in CLMV.

The survey on the electronics industry also indicated that one interesting reason for not transferring to the CLM countries is the difficulty of access to materials and components. Most upstream suppliers are currently located in Thailand especially in the industrial zone where these materials are at the point of use. The idea of a border zone industry seems to present a feasible stepping stone toward the development of CLM countries as electronics-based centers. The idea was pointed out by some respondents. This recommendation can be viewed as a medium term preparation for CLM countries. Initially, manufacturers of the low-tech components for electronics should be encouraged to operate in border zones so that cheap labor from CLM countries can be utilized. Training and skills development can then be given directly to the workers. In this manner, knowledge, know-how and awareness associated with the electronics industry can be transferred to these work forces gradually. Eventually, the opportunity for an electronics sector relocation to the CLM countries will become increasingly possible.

Finally, staff labor unions are one of the main social-related factors in automotive and electronics companies. They should be kept constantly in check to limit the negotiation power. Other challenges include the preparation of a contingency plan for investors in case of unexpected occurrences such as natural disasters, airport closures, protests, and others.

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CHAPTER 5

FRAGMENTATION OF ELECTRONICS AND TEXTILE INDUSTRIES FROM INDONESIA TO CLMV COUNTRIES

Siwage Dharma Negara[1]

Abstract

The electronics and textiles industries are illustrative of the development of Indonesia's manufacturing sector. The two industries experienced ups and downs due to changes in government industrial policy, which, in turn, was made in response to changes in the external environment. In recent years, these industries faced intense competitive challenges both in the domestic and the international markets. This study examines the development of the electronics and textiles industries in Indonesia and assesses the possibility of fragmentation or relocation of some or all parts of production-process activities to other low-labor-cost countries, especially Cambodia, Laos, Myanmar, and Vietnam (CLMV). Results from a small-scale survey find that profit is the main factor for firms in Indonesia to relocate to CLMV countries. Most respondent firms considered Vietnam as one prospective destination for fragmentation due to its relatively strong investment incentives, infrastructure, and access to market. In contrast, CLM countries were perceived to be less attractive compared with Vietnam due to their relatively less

[1] I would like to thank the survey team consisting Inne Dwiastuti, Umi Karomah, Purwanto, Lia Listiani, and Dhani Darmawan for their excellent contribution. This study is part of a big study project titled "Upgrading Industrial Structure in CLMV Countries" under the ERIA research project on the "Comprehensive Asian Development Plan," sponsored by IDE-JETRO, Japan.

favorable business climate. For firms to consider moving to CLM countries, the latter needs to offer more than just lower wages. CLM countries need to provide better infrastructure, better investment incentives, and a more competitive business climate to enable firms to operate efficiently.

Key words: Fragmentation, Electronics, Textile, Garment, ASEAN, CLMV

INTRODUCTION

Since the beginning of the 1990s, trade and foreign direct investment (FDI) patterns in Southeast Asia have changed considerably. Ando and Kimura (2005) observed a gradual shift from the north-south trade pattern toward trade concentration in East Asia. They find considerable development of intense transactions in parts and components among East Asian countries, particularly in line with division of labor in the production process. Export-oriented or network-forming-type FDI has been replacing import-substituting-type FDI. In addition, there is significant development of international production networks (IPN) amplified with growing fragmentation in production activities.

Specifically, the electronics industry was mentioned in Kimura (2007) as a good example of an industry that is suited to fragmentation strategy. In this sector, production processes are well diversified and service link cost, including communication and transportation costs, is low such that the industry can benefit from diversity in location advantages. In contrast to the electronics industry, the textiles industry is characterized by strong economies of scale in production and high service link cost. This latter sector

may not be suited for fragmentation. Examining these two sectors would be of particular interest to add to the empirical stylized facts on the phenomenon of fragmentation.

In Indonesia, the electronics and textiles industries are illustrative of the development of the country's manufacturing sector. The two industries experienced ups and downs due to changes in government industrial policy, which was designed to respond to changes in the external environment. The industries face intense competitive challenges both in the domestic and the international markets. Particularly, Thee and Pangestu (1998) mentioned that both the textiles and electronics industries are confronted with quite different situations. For instance, the textiles industry, including the garment industry, needs to acquire technological capabilities to increase productivity and maintain export competitiveness against other lower-cost countries such as China, India, Bangladesh, and Vietnam. The electronics industry, on the other hand, needs to invest in learning and in sustaining foreign technology linkages to adapt to very dynamic global production and process innovations. Therefore, the latter requires firms' deeper integration into the international production network.

The fragmentation of the electronics and textile industries may be triggered by increased global competition, which motivates firms to relocate part or all of their production-process activities. The motivation could be due to factors such as market expansion, the need to find local resources, the need to increase efficiency, or any combination of these. In particular, for Indonesia, the rise in labor cost in the post-reform era has made labor-intensive industries like textiles and garments become less competitive compared with other low-labor-cost countries such as China, India, Bangladesh, and Vietnam. In addition, the labor regulations in Indonesia have been

perceived as too rigid for firms to make adjustments in the midst of weakened global demand. Therefore, firms are likely to consider moving in order to obtain access to cheaper labor and more flexible labor regulations.

This study examines the development of the electronics and textiles industries in Indonesia and assesses the possibility of fragmentation or relocation of some or all parts of their production-process activities to other low-labor-cost countries—Cambodia, Laos, Myanmar, and Vietnam (CLMV). This study aims to answer the question of why would firms in Indonesia make the decision to relocate some or all of their production activities to CLMV countries or not at all. What factors need to be present in CLMV countries for these Indonesian firms to consider moving? And finally, in terms of set-up cost, operation cost, and service link cost, is relocation to CLMV countries reasonable from the viewpoint of Indonesian firms?

The finding shows that profit is the main factor for firms in Indonesia to relocate to CLMV countries. Most respondent firms consider Vietnam as an attractive destination for fragmentation or relocation. Vietnam offers not only strong investment incentives through tax holidays but also better infrastructure. Meanwhile, firms believe that it currently remains too risky to invest in CLM countries due mainly to the less favorable business climate there. CLM countries need to offer more than just lower wages in order to attract FDI. It is also important for CLM countries to improve the quality of infrastructure, provide strong investment incentives as well as a more competitive business climate to enable firms to operate efficiently.

This report is organized as follows: the next two sections provide a brief historical development of the electronics and textiles industries in Indonesia. The third section

examines the survey findings and assesses the firms' decision to relocate to CLMV countries. The last section concludes and provides some policy recommendations.

1. HISTORY, INDUSTRIAL STRUCTURE, AND CURRENT SITUATION OF THE ELECTRONICS INDUSTRY IN INDONESIA

1.1. Brief History of the Electronics Industry in Indonesia[2]

The history of the electronics industry in Indonesia can be traced back to the 1950s with the pioneering work of PT Transistor Radio Mfg. Co. (now known as PT National Panasonic Gobel Indonesia) as the first domestic producer of transistor radios. The early 1960s became a new beginning for Indonesia's electronics industry with the first production of black-and-white television. At that time, most, if not all, electronic products in the country were imported.

In a bid to boost the development of the local electronics industry, the government in the early 1970s banned imports of television sets and radio receivers in the form of completely built-up (CBU) products.[3] Indonesia's electronics industry was developed starting with the Original Equipment Assemblies (OEA) system, which took advantage of the country's low labor cost. OEA was operated in the form of the semi-knockdown (SKD) production method, which installs components to become a TV set, for instance.

[2] See Thee and Pangestu (1998) for detailed history and development of the technological capabilities of the electronics and textile and garment industries in Indonesia.

[3] The period 1971-1985 is considered as the import substitution phase, when local industries were protected by both quantitative restrictions and tariffs. The quantitative restrictions included the launch of a 'negative list' whereby the import of prescribed items was banned to protect domestic component industries. In addition, the government restricted the import of electronic goods and electrical appliances only for domestic assemblers linked to a foreign principal (Thee and Pangestu, 1998: 222-223).

However, since SKD was later perceived to have low value added, the government encouraged the industry to upgrade its production method from SKD to a completely knockdown (CKD) system. In relation to this, imports of products in CKD form were regulated with low import duty to boost the local assembly industry.

Around the 1970s, the government launched a policy to stimulate joint ventures between domestic investors and foreign companies. The policy resulted in some initial flow of FDI from Japanese and European multinational companies. Japanese companies, like National and Sanyo, and European companies, such as Grundig, Philips, and ITT, established branches in the country. These companies focused on the production of import-substitution products. By 1973, there were about 15 companies operating both as sole agents of foreign brands (*Agen Tunggal Pemegang Merk* or ATPM) and as producers of local brands. Some of the sole agents of foreign brands were PT Yasonta as the sole agent of Sharp television; PT Sanyo Industries Indonesia as the assembler of radio, television, and household electrical appliances under the Sanyo brand of Japan; PT National Gobel as the assembler of radio, television, and household electrical appliances under the National brand of Japan; and PT Asia Electronics Corp. as the assembler of radio and television under the Grundig brand of Germany. Despite those companies selling foreign brands, a few domestic electronics companies with local brands were also established such as PT Galindra Electric Ltd and PT Telesonic as an assembler of radio, television, and tape recorder.

From 1973 onward, the type of products expanded significantly beyond just radio, television, and tape recorder. In 1978, the government issued what was called the "deletion program," setting the schedule for producers to use local components to reduce dependency on imported components. The regulation was expected to encourage

more local electronics producers to become component makers. In addition, the government invited some electronics producers to invest in component production. Some of the producers such as PT National Gobel responded to the call by building production facilities for speakers. Other companies produced mechanical parts, transformers, and cables. The deletion program was later abandoned to coincide with a series of deregulation measures launched by the government in various sectors of trade and industry in the mid-1980s. Since then, the program to speed up the process toward full manufacturing in the electronics industry has been held back.

The mid-1980s was considered a new chapter in the development of the local electronics industry. The introduction of several deregulation measures, which marked the shift from import substitution toward an export-oriented policy, has encouraged both joint ventures and local electronics producers to increase their consumer electronics exports.[4] By 1985, the number of electronics companies increased to 58. In addition, several new brands of electronics entered the market including Toshiba (assembled by PT Wily Antariksa Electronics), ITT (assembled by PT Alfa Intone Internasional), Pioneer (assembled by PT Adab Alam Electronics), Belna (assembled by PT Ben Elektronik Nasional), Polytron (assembled by PT Hartono Istana Electronics), and Intel (PT Panggung Elektronik).

The 1997 Asian financial crisis dealt a big blow to the electronics industry in Indonesia. A number of domestic and foreign companies were forced to stop operations. The industry suffered a sharp decline in domestic demand during the peak of the crisis in 1998 and 1999. The setback was caused by sudden drop of household purchasing

[4] Thee and Pangestu (1998: 226) explain that domestic firms shifted towards exports because of increased competition in the domestic market after export-oriented companies were given official permission to sell some of their output in the domestic market.

power. With the dramatic depreciation of the rupiah, the price of electronic products increased significantly. Since the demand for consumer electronic products is income elastic, a small increase in prices leads to a dramatic fall in demand. Interestingly, the total value of electronics market did not change much in terms of the rupiah. This means that the decline in production has been more than compensated for by an increase in prices following the fall of the rupiah. Another interesting phenomenon is that Indonesia's electronics exports increased following the dramatic fall of the rupiah. This boost in exports has helped the industry recover faster than expected.[5]

Unfortunately, the quick recovery of the domestic market did not contribute to revival of the local electronics industry. On the contrary, the growing market drew large imports that served another blow to the country's industry, producing products for the lower segment of the market. An electronics producers association (GABEL) estimated that illegal imports, mainly from China, accounted for around 30% to 40% of the total domestic market.[6] Due to uncontrollable illegal imports, several local producers were forced to stop operation or become traders. The latter found it more profitable to import products from China to be sold on the local market with their own brands.

A year before the 1997 Asian financial crisis, PT Tabung Gambar Indonesia and PT Goldstar Display Devices Indonesia set up a factory producing cathode ray tubes (CRTs) for televisions. In the same period, other factories, such as PT Sharp Semiconductor Indonesia, PT NEC Semiconductor Indonesia, and PT Panasonic Semiconductor Indonesia opened factories producing active components, mainly semiconductor devices and integrated circuits (ICs).

[5] The competitive gain of electronics exports was only short-lived as high domestic inflation rate finally eroded the international relative price difference. Basri and Hill (2008) show that Indonesia's real effective exchange rate (REER) appreciated by almost 50% during the period 2001-2008.

[6] Based on an interview with GABEL in late October 2009

In the early 2000s, a new era for the TV industry started with technological breakthroughs that included CRT technology, plasma display panels (PDP), and liquid crystal display (LCD) technologies. From then on, the TV market began to be dominated by plasma and LCD TV sets, and consumers slowly moved away from conventional CRT TV sets. Due to high demand for LCD TVs in Indonesia, several principals (e.g., Sharp, Toshiba, Panasonic, LG, and Samsung) have decided to make Indonesia their production base for LCD TVs. In 2005, PT LG Electronics Indonesia (LGEI) opened a production facility for LCD TVs with a capacity of 50,000 units of LCD TVs per month. Similarly, PT Panasonic Gobel Indonesia started producing LCD TVs in January 2007 with a production capacity around 50,000 units of LCD TVs and plasma TVs per month. Around 60% to 90% of television components needed in the country are still imported. LG imports the panels of its LCD TVs from South Korea while about 30% to 40% of the components are procured locally. Panasonic imports its LCD panels from Japan. Toshiba imports most of its components (more than 90%) from Japan and Taiwan.

Currently, the television market is no longer dominated by Japanese and Korean technologies. PT Changhong Elektronik Utama of Sichuan Changhong Electronics Co., Ltd, known as the top producer of television sets in China, has entered the market. Although its market share in Indonesia is still small, Changhong is already the fourth-largest producer of plasma TV panels elsewhere after Panasonic, LG, and Samsung. In a bid to boost its TV sales, Changhong has come out with a number of new models of plasma and LCD TVs for the high-end market.

Part of the reason why the television market is booming is that the government has offered fiscal stimulus, including the abolition of the luxury sales tax for electronic

goods and direct customs control in the red lane in order to support the development of the local electronics industry. After the removal of luxury taxes for electronics in the first quarter of 2003, sales of electronic products grew 6% annually. The reason behind this drive is that previous luxury taxes, because of poor law enforcement and corrupt tax/custom officials, have constrained domestic production but encouraged rampant smuggling.

In retrospect, Indonesia has been quite unsuccessful so far in developing close connections with the international production network. This failure stems from various factors, including an unfavorable investment climate, low labor productivity, poor security, rampant smuggling, and poor infrastructure. The closure of Sony Electronics Indonesia in May 2003 after operating locally since 1991 should actually serve as a warning to the domestic electronics industry. Ironically, Indonesia never seems to learn from its past policy failures. As Booth (1998) argues, Indonesia has missed the opportunity to be part of the semiconductor production network with the relocation of Fairchild and NSC in 1986 due to an unfavorable investment policy that discouraged automation in semiconductor factories. On these two occasions, the companies' drive for efficiency by scaling down their labor force received negative reactions from society and the government, both of which were against any retrenching. These two stories should serve a lesson that it is not very difficult for multinational companies to relocate their electronics production to another place that offers a better environment (e.g., better incentives and facilities, lower production cost). Sony Electronics Indonesia moved to Malaysia and Thailand because these two countries offered a more favorable business environment.

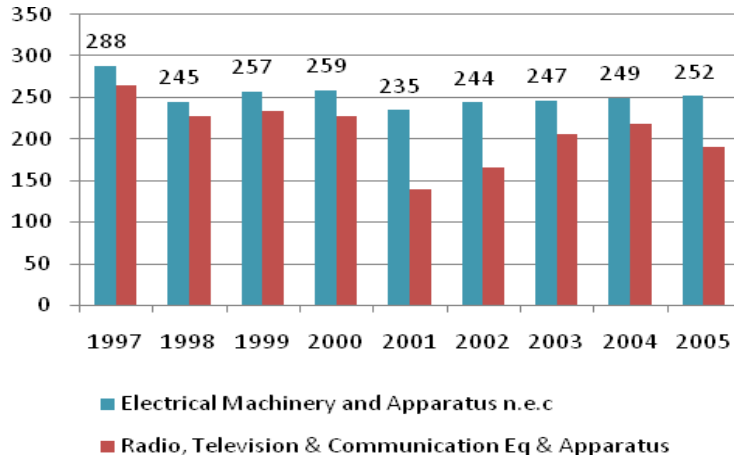
1.2. Structure of the Electronics Industry

The electronics industry can be classified into three categories: consumer electronics (e.g., audio, video, television, air conditioner, refrigerator, and washing machine); industrial electronics (e.g., office equipment, data processors, and telecommunication); and components electronics. Indonesia's consumer electronics industry has been relatively well developed. It uses easily available technology and machines that are also commonly used in other manufacturing industries (e.g., injection-molding machines, inserting machines, dipping machines, press machines, steel roll-forming equipment, other machine tools). The relatively simple technology requirements of the consumer electronics industry has made the relocation of consumer electronics factories relatively easy. The industrial electronics industry has experienced significant development supported by the booming communication and telecommunication sector.

The weakest segment in the electronics industry is the components industry. This supporting industry remains relatively underdeveloped, causing high dependency on imported components. Local component makers are still limited in terms of number and product innovation. Majority of domestic component makers produce low-technology components, such as plastic, rubber, and metal parts; passive components; mechanical parts, such as speakers, transformers, heat sinks, jointing cables, flyback transformers, and printed circuit boards (PCBs).

In terms of number of firms, output, and employment, the electronics industry in Indonesia is relatively small compared with the textiles industry. According to a survey of large and medium-sized manufacturing companies conducted by Statistics Indonesia

Figure 1: Number of Medium and Large Electronics Firms Based on the Manufacturing Survey 1997-2005



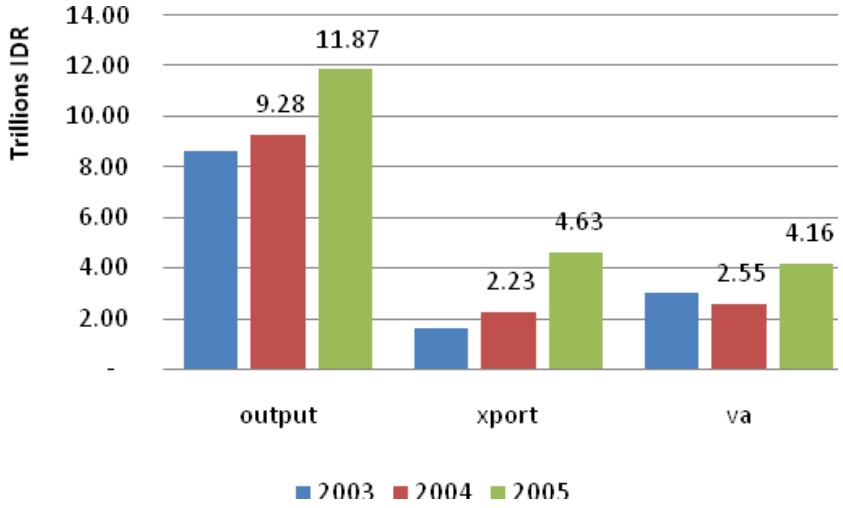
Source: Annual Medium and Large Manufacturing Survey BPS.

(BPS), there were less than 500 firms operating in the electronics industry[7] in 2005 (see Figure 1).

In 2005, the electronics industry produced output valued at IDR 12 trillion (approximately US$1.25 billion), of which about 40% or IDR 5 trillion (approximately US$0.52 billion) was exported. These large and medium-sized electronics firms produced mostly lower-technology electronic products. This is predictable given its high proportion of unskilled labor in its total labor input. About 90% of its total labor input is classified as operators. (See Figure 2 and Figure 3.)

[7] This figure is likely to be undervalued due to under-reporting and missing data. Moreover, it does not include small-scale firms. The BPS survey only includes firms that employ at least 20 workers. Nonetheless, in contrast to the textile industry, this number is very small.

Figure 2: Number of Output, Export, and Value Added in the Electronics Industry Based on the Manufacturing Survey 2003-2005



Source: Annual Medium and Large Manufacturing Survey BPS.

Figure 3: Number of Employment in the Electronics Industry Based on the Manufacturing Survey 2003-2005

Source: Annual Medium and Large Manufacturing Survey BPS.

The electronics industry is dominated by assembly operations with simple modification-of- production capability. Only a small number of companies have the capability for basic modification, design, and engineering innovation. Viewed from the point of production structure, most electronics firms are highly dependent on imported components and parts. Sole agents of foreign brands import components and parts from the principal. Even local brand producers mostly import their main components and parts. This marks the failure of the country's efforts to develop its supporting industry since the late 1970s.

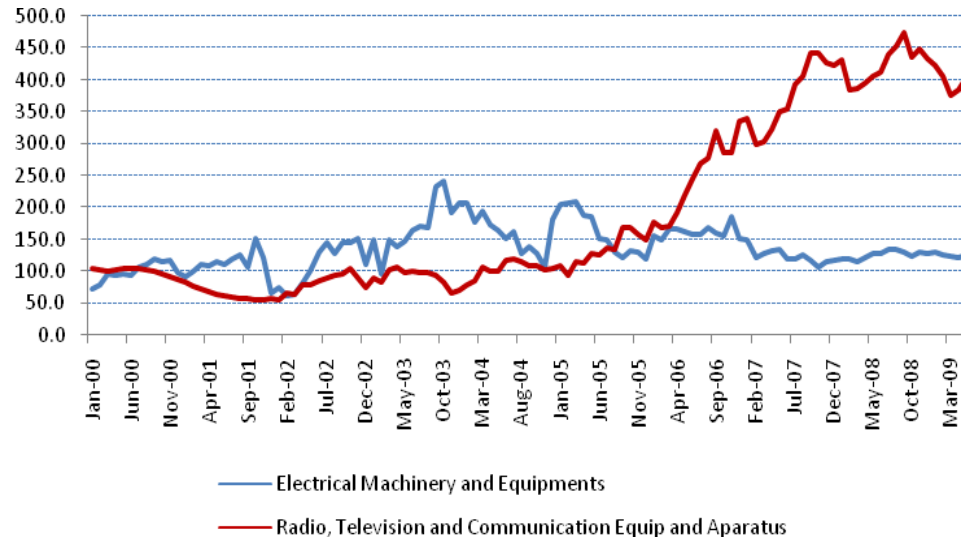
1.3. Current Situation of Indonesia's Electronics Industry

Indonesia has a huge potential for the electronics market. The value of the domestic consumer electronics market in 2008 was estimated at about IDR 29 trillion (approximately US$3.1 billion). Indonesia's Chamber of Commerce projected the domestic demand for TV sets to reach IDR 11.2 trillion (approximately US$1.2 billion) in 2010. In addition, the total domestic demand for air conditioners, refrigerators, and washers is estimated to reach approximately IDR 9.2 trillion (approximately US$ 1 billion) in 2010.[8]

Figure 4 indicates that there has been a sharp increase in demand for TV sets and communication equipment since the second quarter of 2006. In fact, there has been an increased demand for LCD TVs and plasma TVs both domestically and worldwide since 2005. Meanwhile, the production of other electrical machinery and equipment has been relatively stagnant.

[8] US$1=IDR 9,500

Figure 4: Monthly Electronics Industrial Production Index, January 2000 – June 2009



Source: Monthly survey of selected firms (medium and large manufacturing establishments) BPS.

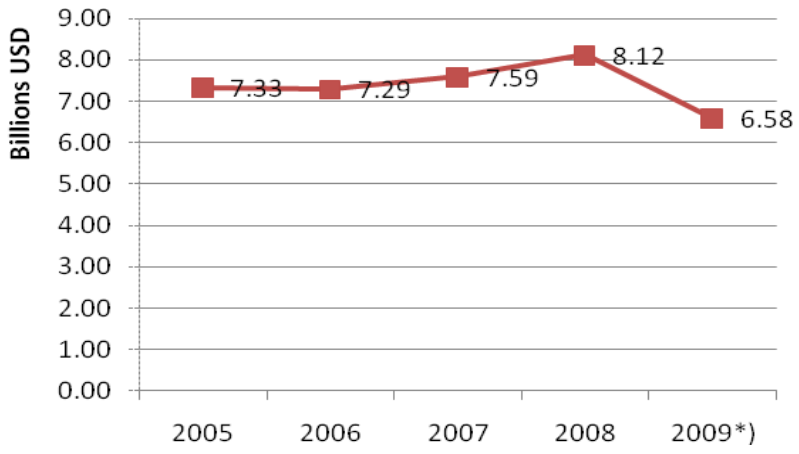
The rate of growth of TV sales in Indonesia is among the highest when compared to other electronic appliances. Cost efficiency of television sets have also improved considerably due mainly to three factors. First, the number of components in a television set has decreased significantly, which has led to shorter assembly lines. Second, there has been a vast increase in automation, which was pioneered by Japanese firms. This has dramatically decreased the cost of labor in production. Finally, the logistic cost for imported TVs is relatively low compared to that of other electronic products, such as refrigerators and washers.

Despite the huge market potential, however, the production capacity of the electronics industry has not been fully utilized. The country's production capacity for

electronic products is more or less the same as in 1997. Therefore, the market does not require expansion of production capacity yet. The low-capacity utilization in the electronics industry is partly contributed by low household purchasing power. Consumers are sensitive to changes in price as indicated by market revival when cheap products from China began to enter the domestic market. Domestic electronics producers, especially the ones operating in the lower segment of the market, suffered the worst setback as they could not compete with cheap imported products mainly from China.

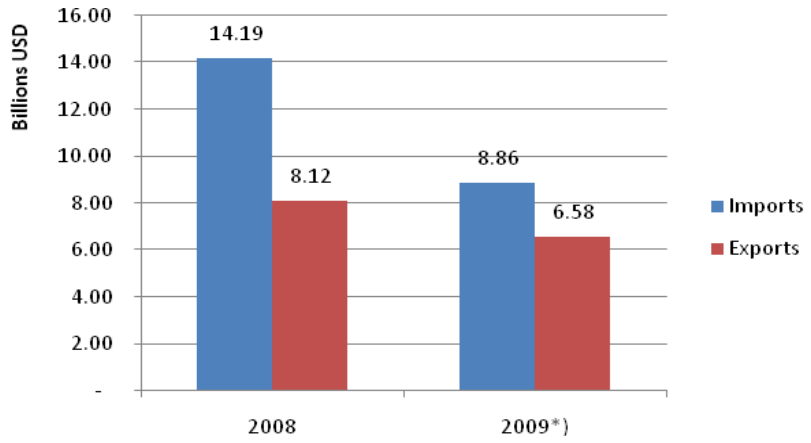
Electronics exports were affected by the global financial crisis as can be seen by the decline in electronics exports from US$8.12 billion in 2008 to only US$6.58 billion in the last quarter of 2009 (Figure 5). In fact, complete trade data incorporating imports

Figure 5: Export value of electrical machinery, sound recorders, TVs, etc., 2005-October 2009



Note: *) Period of January-October.
Source: BPS via CEIC and World Bank.

Figure 6: Trade Deficit in the Electronics Sector



Note: *) Period of January-October.
Source: BPS via CEIC and World Bank.

from all areas in the country, including data from the bonded zones,[9] show that Indonesia has a trade deficit in this sector. In 2008, the deficit in electronics trade reached US$6 billion. In 2009, the trade deficit was expected to be smaller at about US$2 billion (Figure 6).

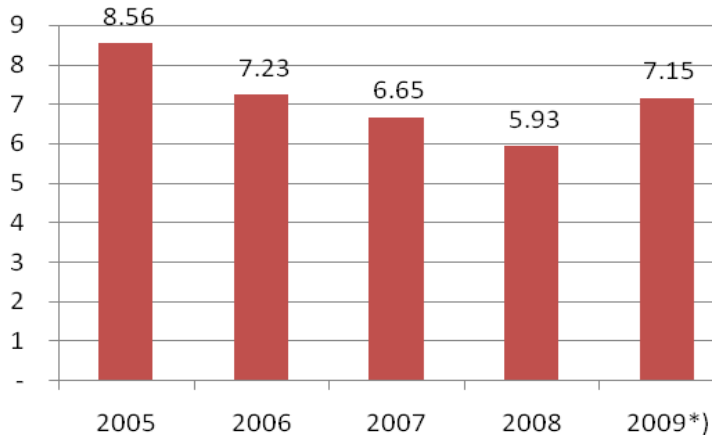
Another interesting phenomenon is that the share of electronics exports of the total manufacturing exports has been continuously declining from 8.56% in 2005 to 5.93% in 2008. In the period 2004-2005, electronics exports, which were valued at US$7.1 billion, still ranked second after textiles out of total manufacturing exports valued at US$48.7 billion. In 2006, steel, machinery, and automotive components exports overtook electronics exports as the second-largest contributor to the country's

[9] A bonded zone is an area of a country where some normal trade barriers such as tariffs and quotas are eliminated and bureaucratic requirements are lowered in hopes of attracting new business and foreign investments. BPS started recording import data in the bonded zone starting January 2008, while in the past it was not counted in the country's import value.

manufacturing exports. Since then, the significance of electronics exports has been reduced. In 2008, it ranked only fifth out of total manufacturing exports valued at US$88.4 billion. Due to a worldwide rise in commodity prices in 2007-2008, particularly in the price of crude palm oil (CPO), the structure of Indonesia's exports changed. During the commodity boom period, exports of the CPO industry emerged as the country's major export revenue earner, surpassing even the textile industry. Indeed, the textile industry has to face its declining importance as the country's export revenue earner due to various domestic obstacles. This is discussed in the next section.

Interestingly, after the drop of in commodity prices since the last quarter of 2008, exports of electronics fell less quickly than the exports of CPO. The latter was affected significantly by the price factor. Meanwhile, the value of electronics exports have been

Figure 7: Share of the Electronics Exports of the Total Manufacturing Exports (in percentage)



Note: *) Period of January-October.
Source: BPS via CEIC and World Bank.

less affected, which made its share of total manufacturing exports jump to 7.2% in the period of January-October 2009 (Figure 7). This phenomenon shows that the structure of Indonesia's exports is determined mainly by its comparative advantage as a country rich in natural resources. It is still highly dependent on products such as CPO, coal, copper, and rubber and less dependent on high-technology exports.[10] This corroborates the study of Coxhead and Li (2008), which found that due to Indonesia's relative resource abundance, the country's effort to diversify its production and trade has been somewhat impeded. Indonesia remains sluggish in developing its skills-intensive manufacturing exports, which constrains it from achieving sustained higher growth rate.

2. HISTORY, INDUSTRIAL STRUCTURE, AND CURRENT SITUATION OF THE TEXTILE AND GARMENT INDUSTRIES IN INDONESIA

2.1. Brief History of the Textile and Garment Industries in Indonesia

The modern textile industry in Indonesia began in 1970 when Japanese investors entered the upstream (spinning and synthetic fiber production) industry. During the period 1970-1985, the industry grew sluggishly, its low production output merely enough to fulfill domestic demand in lower-middle market segment. This period was known as the import-substituting period during which the government policy was to develop local industries by shutting out external competition.

In 1986, the textile and garment industries benefited from a favorable investment climate that fostered considerable growth. The end of the oil boom period in 1983

[10] According to information from the Ministry of Industry, about 60% of Indonesia's total manufacturing exports consist of low-technology type of products.

forced the government to shift its policy and focus instead on manufacturing exports. In the late 1980s, a significant number of Korean and Taiwanese garment firms entered the industry.[11] The coming of these foreign companies changed the orientation of Indonesia's textile and garment industries towards exports and transformed them into manufacturers of high-quality products for the upper market segment. During the period 1986-1997, textile and garment exports grew rapidly and became the strategic industry. Garments, in particular, gained importance as the top nonoil export commodity in addition to textiles.[12]

After the 1997 Asian financial crisis, the textile and garment industries entered a difficult period. Production and exports were highly volatile, and the industry faced financial difficulty as the banking sector collapsed and liquidity became a problem. Before the crisis, around 40% of bank lending was channeled to the manufacturing industry, particularly textiles and garments manufacturing. After the crisis, only around 10% to 15% was provided to the whole manufacturing industry. This trend has persisted up to now.

The period of 2003-2006 was characterized by rehabilitation and normalization for most of the manufacturing industry since the country was adapting to a new social and political environment. There were efforts to revitalize the textile industry through some fiscal incentives; however, these efforts did not prosper due to financing difficulties and an unfavorable investment climate. The latter was due partly to the

[11] This period was marked by the relocation of labor-intensive manufacturing industries, especially garment industries from the newly industrialized economies (NIEs) of East Asia--South Korea, Taiwan, and Hong Kong--in order to supply the unutilized import quota in the major markets (U.S. and the European Union) and make use of the strong comparative advantage of Indonesia's low labor cost at that time (Thee, 2009: 566).

[12] Athukorala (2006: 178) mentioned that the expansion of manufacturing exports played a pivotal role in Indonesia's rapid economic growth from the late 1980s to the early 1990s.

controversial Labor Law No. 13/2003, which was perceived to favor workers over employers (see Manning and Roesad 2007). Despite outcries from the employers' association, it turned out that it is politically difficult to amend said law. The proposal to restrict the right to strike, loosen the minimum wage provisions, allow employers to discipline workers, phase out severance pay for dismissed workers, and reduce required payouts was met with massive rallies by thousands of workers.

In mid-2007, the textile and garment industries started to restructure and replace outdated machinery and equipment. A long-standing restraint on banking loans to the textile industry hampered investment in the sector, which worsened the technology level and lowered productivity. But realizing the strategic position of the textile industry in the economy, the government introduced a subsidy program of US$27 million to modernize the ageing textile industry.

2.2. Structure of the Textile and Garment Industries

The textile industry in Indonesia can be distinguished into three subsectors. The first subsector is the upstream industry consisting of synthetic fiber makers. This subsector is highly capital intensive and large scale in nature. The second subsector is the midstream industry consisting of the spinning industry (yarn), which is relatively capital intensive and large scale in nature, and the weaving industry (fabric), which is relatively labor intensive. The third subsector is the downstream industry consisting of the highly labor-intensive garment industry (Table 1).

Compared to the electronics industry, Indonesia's textile and garment industries are considered well established and already involve vertical integration from the highly specialized upstream fiber production to the labor-intensive finished garments. The

Table 1: Profile of Textile and Garment Firms in Indonesia

	Products	Type of Technology	Market orientation	Main Player
Fiber	Natural fiber Synthetic fiber	High	Domestic (75%) Exports (25%)	Foreign: Japan, India, Austria
Spinning	Yarn	High	Domestic (70%) Exports (30%)	Foreign: Japan, India Domestic
Weaving	Fabric	Low	Domestic (75%) Exports (25%)	Domestic
Garment	Apparel	Low	Domestic (15%) Exports (85%)	Foreign: South Korea, Hong Kong, Taiwan

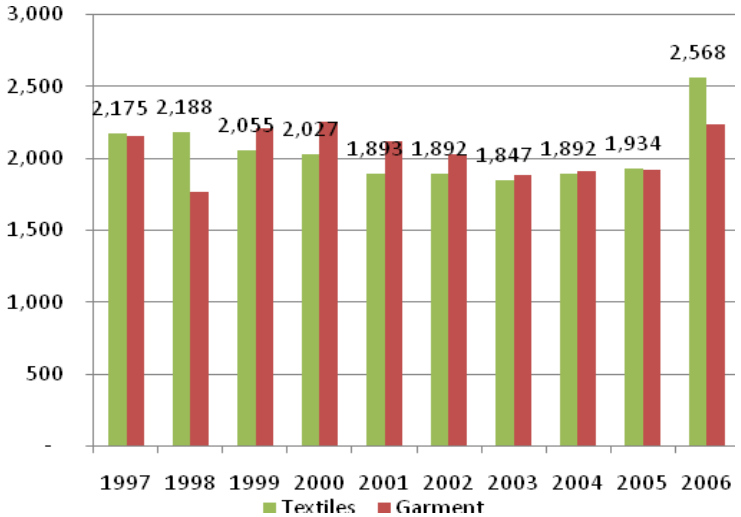
Source: Ministry of Industry 2007.

industry has also developed a strong domestic and international distribution network through years of building working relationships.

Based on data from the Indonesian Synthetic Fiber Makers Association (APSyFI),[13] Indonesia is one of the ten largest producers of synthetic fibers in the world, with a total production capacity of 500,000 tons of polyester staple fiber; 825,000 tons of polyester filament yarn; and 30,000 tons of nylon filament yarn. In Asia, Indonesia is ranked sixth after Taiwan, Korea, China, India, and Japan in terms of synthetic fiber production. The products are mostly sold domestically with an annual sale of approximately IDR 3 trillion to 4 trillion (US$ 315-420 million). According to the Indonesian textile association (API), exports of synthetic fiber from Indonesia reached US$445 million in 2008, with Europe as the main destination.

[13] APSyFI represents 14 synthetic fiber manufacturers in Indonesia.

Figure 8: Number of Medium and Large Textile and Garment Firms Based on the Manufacturing Survey 1997-2005



Source: Annual Medium and Large Manufacturing Survey BPS.

The BPS survey of large and medium-sized manufacturing firms indicate that there were nearly 5,000 firms operating in the textile and garment industries in 2005 (see Figure 8).

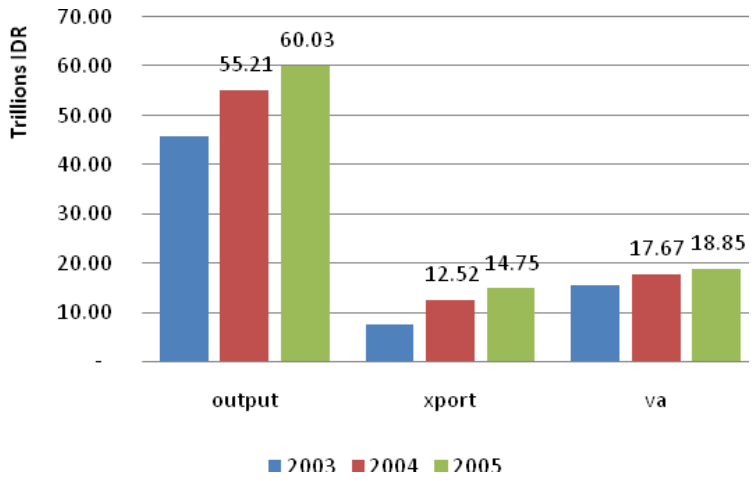
In 2005, the combined output of the textile and garment industries was valued at IDR 60 trillion (approximately US$6.25 billion), of which a quarter, or IDR 15 trillion (approximately US$1.6 billion), was exported. Indonesia's textile producers have been able to continue exporting despite rising competition from other low-cost producers partly because of the quota system in the U.S. and Europe. When the quota system was abolished in 2005, Indonesia's textile industry faced increased competition from China, India, Pakistan, Bangladesh, Vietnam, and Thailand. These countries have been

investing in new machinery and technologies to position themselves strategically in the world market.

In contrast, Indonesia's textile industry is ageing. According to API, around 60% of the installed textile and garment machines are more than 15 years old (API 2009). The technology is obsolete, thus negatively affecting productivity, efficiency, and quality. Approximately 800 out of more than 4,000 textile companies need to replace their old machinery. In short, Indonesia's textile industry needs to revitalize its production facilities through restructuring, reinvesting, and updating existing machines and equipment.

The industry so far plays a bigger role in job creation than in the creation of value added. The low value added of the textile industry can be attributed to its high import

Figure 9: Number of Output, Export, and Value Added in the Textile Industry Based on the Manufacturing Survey 2003-2005



Source: Annual Medium and Large Manufacturing Survey BPS.

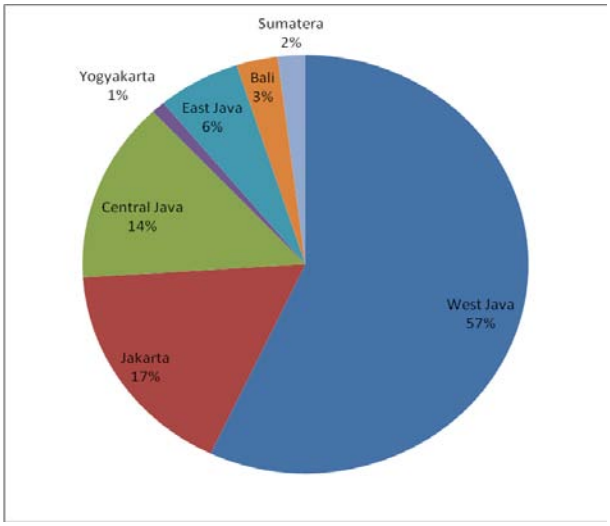
Figure 10: Number of Employment in the Textile Industry Based on the Manufacturing Survey 2003-2005

Source: Annual Medium and Large Manufacturing Survey BPS.

content. This means that the industry has been unsuccessful in creating backward linkages to the local supporting industry. It is also characterized by a high proportion of unskilled labor to its total labor input; about 90% of its total labor input is classified as operator (See Figure 9 and Figure 10).

Figure 11 shows that textile and garment manufacturing firms are concentrated mainly in Java; 95% of the textile industry is located in this area. West Java accounts for almost 60% of the textile and garment manufacturing firms. This phenomenon can be traced back to the founding of the industry in the late 1920s. It started with a cottage industry in Majalaya, West Java, producing traditional woven and knitted products, such as sarong, long cloth, and scarves.

Figure 11: Distribution of Textile and Garment Manufacturing Firms by Region, 2007



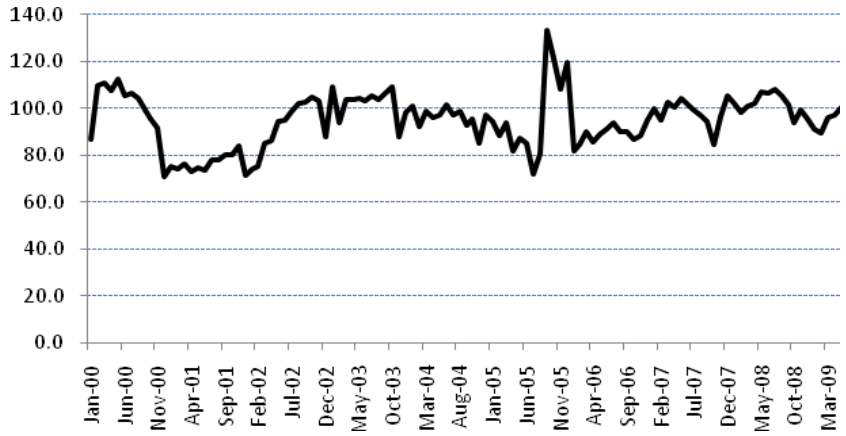
Source: BPS.

2.3. Current Situation of Indonesia's Textile and Garment Industries

According to the World Trade Organization's (WTO) 2008 international trade statistics, Indonesia's textile exports in 2007 were valued at US$3.83 billion, accounting for 1.6% of total world textile exports. In addition, Indonesia's garment exports in 2007 were valued at US$5.9 billion, accounting for 1.7% of total world garment exports. The United States, Europe, and Japan absorbed the bulk of the exports.

In its June report, the World Bank (2009a) reported that even though the textile industry was affected by the global economic downturn, Indonesia's garment exports experienced strong and sustained growth in 2008. Textile production fell in December 2008; however, quarterly data show a revival in 2009. In addition, despite weaker global financial conditions, Indonesia is still receiving considerable FDI in the textile

Figure 11: Monthly Textiles Industrial Production Index, January 2000–June 2009



Source: Monthly survey of selected firms (medium and large establishments) BPS.

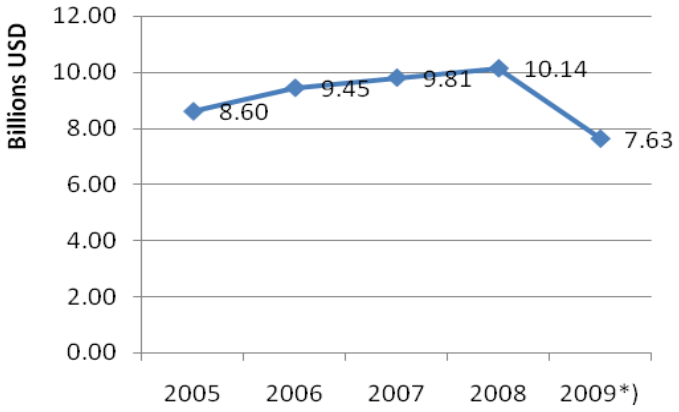
and garment sector. Figure 11 indicates that there was a quick revival of textile industrial production after the market was hit by the global financial crisis.

Like electronics exports, textile exports have also been affected by the global financial crisis as can be seen by the decline in textile exports from US$10.14 billion in 2008 to only US$7.63 billion in the last quarter of 2009 (Figure 12).

While Indonesia is experiencing a trade deficit in the electronics sector, it is still posting a trade surplus for the textile sector. In 2008, the trade surplus in the textile sector reached US$5 billion. The trade surplus for 2009 is expected to be smaller at about US$4 billion (Figure 13).

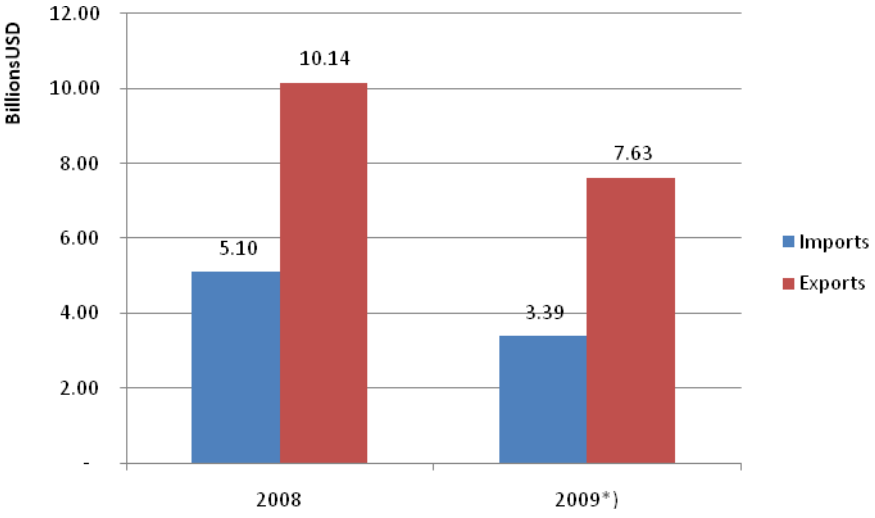
Figure 14 shows the declining share of textile exports in total manufacturing exports. In 2001, textiles and garments accounted for 16.5% of total non-oil exports. This share has been continuously declining since then. In 2009, exports of textiles and garments accounted for less than 9% of total nonoil exports. Like exports of electronics,

Figure 12: Export value of textiles, 2005-October 2009



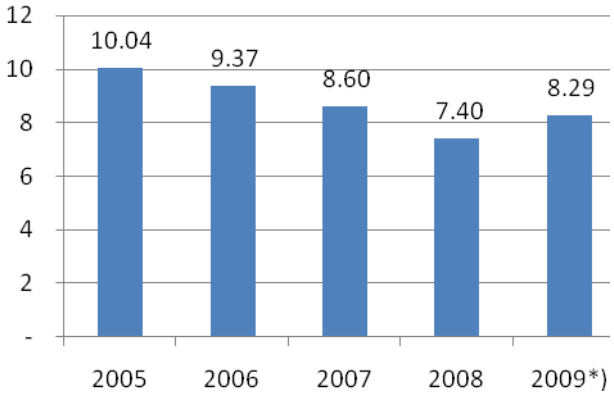
Note: *) Period of January-October.
Source: BPS via CEIC and World Bank.

Figure 13: Trade Surplus in the Textile and Garment Sector



Note: *) Period of January-October.
Source: BPS via CEIC and World Bank.

Figure 14: Share of Textile and Garment Exports of Total Manufacturing Exports



Note: *) Period of January-October.
Source: BPS via CEIC and World Bank.

the declining share of textile exports is partly caused by the increase in exports of commodities such as CPO and coal. These commodities became significant export revenue earners for the country, especially during the period of booming commodity prices in 2007 and the first semester of 2008. As commodity prices slumped, the share of textile exports in total manufacturing exports increased in 2009.

Along with the global economic downturn, the demand for Indonesia's textile exports has also decreased. At the same time, competition among suppliers has become tighter. Indonesia has lost nearly a quarter of a million jobs since September 2008 (World Bank, 2009b). Many companies are scaling down their operation and reducing their employees because of decreased orders. Cognizant of this worrying situation, the government has prioritized the textile industry's development. It has provided various fiscal incentives and a subsidy program to help revitalize old machinery to support the

industry. Local textile and garment producers, however, raised their concern about the implementation of a free trade agreement (FTA) with China that took effect in January 2009. The FTA has created fear that local producers will be swept from the market due to the flood of cheap Chinese textiles and garments.

3. Fragmentation and Relocation to CLMV: A Survey

3.1. Survey Method

This study conducted semi-structured interviews with policymakers, associations, chief executive officers (CEOs), and managers in the electronics and textile and garment industries in Indonesia. The aim was to obtain information on the present situation and competitive environment in said industries. Business associations were asked to introduce target respondent firms that have either relocated some or all of their production blocs to other countries or are likely to relocate to other countries. In accordance with the information gathered from the business associations, the target respondent firms were contacted for further interview. The respondent firms consist of medium-sized and large firms employing more than 200 workers. The choice of sample was quite reasonable since small firms are perceived to be less likely to relocate to other countries.[14] Furthermore, the respondent firms already include local, foreign, and joint-venture firms (Table 2).

The interviews were conducted to cover three main issues. The first issue was information on the firms' cost structure. The components of interest are labor cost; transportation; electricity; imported parts, components, and raw materials; local parts,

[14] Aswicahyono, Hill, and Narjoko (2007) find that larger firms with bigger assets are more likely to relocate to other countries considering the required high set-up cost.

Table 2: List of Respondents

Association	Electronics Association (GABEL): 38 members The Indonesian Textile Association (API): 1,118 members Taiwan Economic and Trade Office (TETO)
Policy maker	Investment Coordinating Board (BKPM)
Electronics Firms	3 Korean-owned firms 1 Japanese-owned firm 1 Joint Venture (Singapore majority) 3 Domestic-owned firms
Textile Firms	1 Japanese-owned firm 5 Domestic-owned firms
Garment Firms	1 Joint Venture (Taiwan minority) 2 Domestic-owned firms

Source: Survey results.

components, and raw materials; and other cost elements. The second issue was information on business climate. This mainly tried to uncover firms' perception of the current global competitive challenge. In particular, the firms were asked whether intense competition in the domestic or exports markets has forced them to experience or to consider relocating some or all of their production blocs to other countries. The interviews also tried to obtain other information such as average wage for workers, level of educational attainment of workers, and quality of infrastructure. The third issue concerned information on fragmentation and relocation. The objective was to obtain firms' perception of CLMV countries and to ask whether firms would consider CLMV countries as their destination for fragmentation and relocation conditional on a set of information about business climate in CLMV countries. The interviews also asked firms' perception on determinants of fragmentation or relocation to other areas.

3.2. General details of the firm respondents

In total, the survey team interviewed eight electronics firms, six textile firms and three garment firms. The electronics firms consisted of three Korean-owned companies, one Japanese company, one joint venture, and three locally owned companies. Most textile and garment firms are locally owned. There is only one foreign (Japanese) textile company in the sample. Most of the electronics firms are located in the industrial zone. In contrast, most of the textile and garment firms are located outside the industrial zone.

Table 3: Respondent Firms' Size

		Annual sales (million USD)	Total asset (million USD)	Number of employee
Electronics 8 Firms	**Max**	193.58	361.37	1,134
	Min	40.74	28.74	600
	Average	108.02	129.79	894
Textile 7 firms	**Max**	89.47	187.62	4,887
	Min	4.89	41.52	479
	Average	31.52	158.15	1929
Garment 3 firms	**Max**	46.11	141.58	5,926
	Min	0.03	41.22	1,200
	Average	22.31	51.51	1,884

Source: Survey results.

Table 3 shows that, on average, the electronics firms interviewed are less labor intensive than the textile and garment firms. The average annual sales of the electronics firms are also significantly larger than the textile and garment firms'. This may be due to the fact that most of the selected electronics firms are multinational companies, which may endow them with better global networking.

Table 4: Firms' Cost Structure

	Electronics	Textile	Garment
Labor force	6.8	5.91	6.59
Imported parts, comp. & raw	73.25	30.18	55.64
Local parts, components & raw	8.8	28.32	3
Transportation	1	3.62	2.3
Electricity	1.38	5.17	5.03
Other energies	-	13.44	16.74
Depreciation on machinery	1.50	8.97	8.63
Other elements	7.23	4.4	2.1

Source: Survey results.

On average, dependency on imported parts, components, and raw materials reaches about 70% of the total cost structure of the electronics firms surveyed. In contrast, textile and garment firms are relatively less dependent on imported components and raw materials. For textile, some firms use cotton extensively as a raw material, almost 90% of which is imported. There are some textile firms that use polyester (synthetic fiber), much of which is locally sourced. For garments, the import content is still above 50% (Table 4).[15] This finding actually corroborates several studies on the weakness of the domestic supporting industries in providing parts, components, and raw materials needed by the industry.[16] Firms find that it is easier and cheaper to import those inputs rather than trying to procure them domestically. Only some big textile and garment companies have the capacity to source the materials domestically since they have an integrated production line from fiber to final textile products. However, most raw materials, like cotton, are still imported.

[15] Gunawan and Siregar (2009:21) reported that the import content levels of electronics, clothing, textiles, and footwear in manufactured exports are between 35% to 85%.

[16] See for examples Thee and Pangestu (1998), Kuncoro (2006), and Narjoko (2007)

Labor cost contributes around 6% to 7% of total production cost in the electronics, textile and garment firms interviewed (Table 4). Interestingly, for the textile and garment firms, which are mostly located outside the industrial zone, energy cost is more of a concern since frequent power shortages have forced them to build their own power generators using gas or coal. The depreciation cost of the machinery is also much higher for the textile and garment industries. The survey revealed that most firms procure cheap machinery from China and India and operate them at full capacity before replacing them with new machines. However, once again, the main constraint to continuous production is the supply of electricity from the state-owned electricity company (PLN).

Most electronics firms interviewed reported that they never experienced blackouts in the last six months (Table 5). Their electricity is continuously supplied by a privately managed electricity generator within the industrial zone. In contrast, most textile and garment firms complained about frequent blackouts that occur once or twice monthly. These firms rely on PLN for their electricity supply. It is important to note that the price for the continuous supply of electricity in the industrial zone is more than double the electricity charge of PLN.

Table 5: Information on Business Climate

Average		Electronics	Textile	Garment
Export Ratio (% of output)		**55.8**	**47.02**	**57.75**
Blackouts per month (frequency)		**1-2 (in 6 months)**	**1 – 2 (in 1months)**	**1 – 2 (in 1months)**
Blackout length (minutes)		**> 30**	**>30**	**>30**
Turnover ratio per month (%)		**1.7**	**0.75**	**1.8**
Transportation mode		**Airplane, Ship, Truck**	**Airplane, Ship, Truck**	**Airplane, Ship, Truck**

Source: Survey results.

Table 6: Customs Clearance

Import		Export	
Time for customs clearance (hour)	**Payment (USD)**	**Time for customs clearance (hour)**	**Payment (USD)**
1-120	**25-350**	**1 - 2**	**50-300**

Source: Survey results.

Table 7: Wage level of Worker (USD per month)

Type of worker	Electronics			Textile			Garment		
	Max	**Min**	**Average**	**Max**	**Min**	**Average**	**Max**	**Min**	**Average**
Operator	214	107	160	130	100	120	130	100	120
Manager[*)]	1,077	536	838	520	300	360	520	300	360
Engineer	536	320	426	500	150	250	500	150	250

Note: [*)] Middle Manager.
Source: Survey results.

For customs clearance, it was revealed that the time taken is longer for imported goods than for exported goods (Table 6). In several cases, import customs clearance takes a maximum of 120 hours. Firms mentioned that the Trade Ministry Regulation No. 56/2008 has identified certain goods that can be imported. The implementation of this regulation has resulted in stricter customs inspection.

In terms of wage level, electronics firms reported relatively higher salary for each type of worker compared with the salary of workers in the textile and garment firms (Table 7). One possible explanation for this wage differential is that most of the electronics firms interviewed are foreign multinational companies, and they tend to pay higher salaries than their local counterparts. This finding is not new as some previous

Table 8: Education Level of Worker (% of total employee)

		Education Level					
		Elementary School	Middle High	High School	Vocational School	College/ Univ.	Grad. School
Operator	Electronics	0.43	2.03	59.28	30.83	7.45	0
	Textile	2.5	10	55	27	5.33	0
	Garment	0	6.3	38	49	6.67	0
	Average	0.98	6.11	50.76	35.61	6.48	0
Manager	Electronics	0	0.66	4.28	24.01	68.93	2.13
	Textile	0	0	3	5.5	90	1.7
	Garment	0	0	0	1.7	77	22
	Average	0	0.22	2.43	10.4	78.64	8.61
Engineer	Electronics	0	1.31	4.38	1.04	88.9	4.38
	Textile	0.67	6	8.67	21	64	0.3
	Garment	0	0	25.3	33	41	0
	Average	0.22	2.44	12.78	18.35	64.63	1.56

Note: *) Middle Manager.
Source: Survey results.

studies have reported that foreign multinational firms, on average, pay a higher salary than local firms.

In terms of educational level, majority of the operators in the firms surveyed are, on average, high school and vocational school graduates (Table 8). About 60% of operators in electronics firms and 55% of operators in textile firms are high school graduates. Meanwhile, about 50% of operators in the garment firms are vocational school graduates. Majority of the vacancies in managerial and engineer positions are filled by university graduates. Interestingly, quite a significant proportion of engineer positions in garment firms are filled by high school (about 25%) and vocational school (33%) graduates.

3.3. Key Issues

The survey team also asked about the major issues faced by the firms in relation to their business operation. Several key issues revealed by the associations and confirmed by the firms during the interview are as follows.

3.3.1. Limited bank financing

Most domestic-owned firms revealed the difficulty in obtaining credit from banks. During the golden era of the manufacturing industry in the late 1980s, about 40% of banks' credit was allocated to the manufacturing industry. The firms interviewed say that the situation is very much different today. Only less than 15% of banks' credit is lent to the sector. High commercial interest rates are a serious obstacle for the manufacturing industry. At the time of the interview, commercial interest rates in Indonesia were at 14%, while interest rates in China were only about 6%. There is widespread public perception that banks are reluctant to provide financing to the so-called "sunset industries," which include the textiles, garments, and footwear industries. These sectors are considered by most banks to be unprofitable and thus do not get easy access to credit lines. The difficulty in obtaining bank credit has contributed to the firms' low investment in new machinery and equipment. In contrast to the plight of domestic-owned firms, financing does not seem to be an issue or cause for concern for foreign-owned firms. Foreign-affiliated companies usually have stronger capital and technological support from their principals. In addition, they also have better international networks.

3.3.2. Energy supply bottleneck

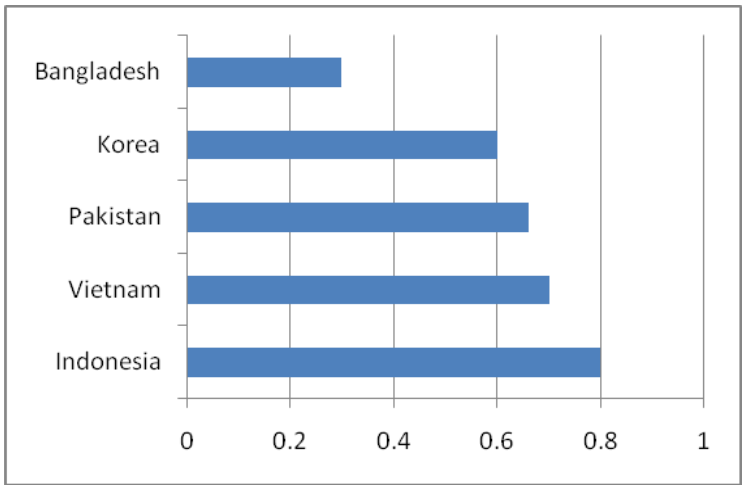
Local firms criticized the management of the energy sector, electricity in particular. Firms found it ironic that even though Indonesia is rich in energy resources, it faces a serious energy crisis. They believe that the energy crisis is caused by improper management, not the lack of energy resources. The state-owned electricity company (PLN) has an exclusive mandate to manage the supply and distribution of electricity for the whole country. However, it failed to provide sufficient investment and maintenance for worn-out transformers, which caused frequent power outages, especially during the last quarter of 2009.[17] This electricity shortage is very detrimental to the manufacturing industry, especially the textile and garment industries, which are mostly located outside the industrial zone. While these industries expect a continuous supply of electricity from PLN, API revealed that the supply of electricity is limited to only 300 days per year. For the remaining 60 days, firms have to procure their electricity from other sources, including investing in their own generators.

According to API,[18] the price of electricity in Indonesia is relatively more expensive compared with other countries that are not rich in energy resources (Figure 15). This shows that the monopoly of PLN over the electricity supply has cost the country dearly in terms of high economic costs. The association suggested that the government should dismantle PLN's monopoly and encourage the private sector to invest in the energy sector to help the country avoid future electricity crises.

[17] The interview was conducted in the days following a fire in an electricity substation in Cililitan, East Jakarta. This fire later caused blackouts in a wide swath of Jakarta during the period October-December 2009.

[18] Based on an interview with Mr. Ade Sudrajat, vice chairman of the Indonesian Textile Association (API), 22 January 2010.

Figure 15: Comparison of Electricity Base Tariff in Several Countries (USD/kwh)



Source: API 2009.

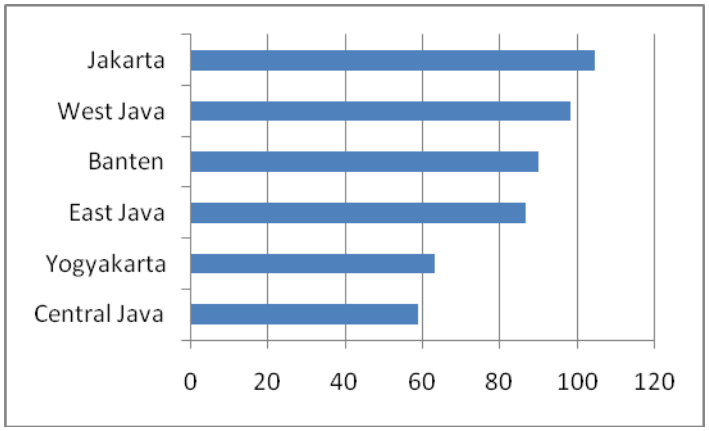
3.3.3. Labor market inefficiency

The interviewees stressed that firms have felt pressured by Indonesia's regulated labor market to scale down their operations, especially in the face of the global market downturn. Many perceive the policy governing the Indonesian labor market in the post-crisis era as too rigid. In particular, many employers regard Labor Law No. 13/2003 as a block to the expansion of labor-intensive industries in Indonesia. Said law and its implementing regulations have made it more expensive to fire workers, thereby creating uncertainty for business operations (Manning and Roesad 2007; OECD 2008). The latter is a result of the high severance pay firms are required pay fired workers. In the meantime, firms have responded by hiring more contract workers. In the long run, this may discourage firms from training workers.

Another problem with the labor law is the lack of clarity on how the minimum wage should be determined. According to API, the minimum wage is determined based

on the minimum living needs in the districts. The national statistical agency (BPS) conducts market surveys thrice yearly. The survey provides data on variations in the cost of living in different regions across the country. In 2008, the minimum wage in Jakarta and West Java were US$104.6 and US$98.1, respectively. Meanwhile, the minimum wage in Yogyakarta and Central Java were US$63 and US$58.81, respectively (see Figure 16). The relatively high wage in West Java has resulted in several factory relocations to Central Java, as in the case of garment firms. Another reason why firms move to Central Java is that workers in this area are perceived by employers as being more loyal than workers in West Java, which has a high turnover ratio. The union is also perceived to be not as strong in Central Java compared with the one in West Java. For some industries, the high wage variation could become a problem due to the high cost involved in setting up a new factory in another region at a time when the demand situation is unfavorable. Consequently, the relocated plant may lose

Figure 16: Minimum Wage Differential Across Major Industrial Areas (USD/month)



Source: BKPM, Nov 2008.

its competitiveness because of required adjustments in the new location.

One major concern of the industry in relation to the determination of the minimum wage is that aspects of labor productivity have not been seriously considered in the wage formula. Firms have to pay the minimum wage even though the productivity level of workers is below the required standard. API cited a report from the International Labor Organization (ILO), which noted that Indonesia's labor productivity is ranked 59th, far below the labor productivity of its competitors. In comparison, Thailand's labor productivity is ranked 27th; Korea, 29th; and China, 31st. Given this condition, it is likely that Indonesia's labor-intensive industries will lose to China's in the wake of the ASEAN-China Free Trade Agreement (AC-FTA).

Firms also raised their concern on the shortage of skilled and trained manpower. With respect to the skills needed, skills training and productivity development are mostly conducted by companies. Skills training would not be a problem for big companies, which usually have skills development programs. However, small and medium-sized companies may find it difficult to obtain skilled, highly productive workers. Firms suggested that the government and universities should play a bigger role as supplier of skilled labor to the industry.

3.3.4. Poor logistic infrastructure

Some firms raised concerns on the quality of logistic infrastructure, traffic jams, and delay in customs clearance. Indonesia needs to improve its logistics system in order to make its products more competitive against foreign imports. Compared with other ASEAN countries, the cost for terminal handling in Indonesia is very expensive (Table 9). According to a World Bank (2008) report, the cost to send a forty-foot container

Table 9: Terminal Handling Charge (THC)

(US$)

Country	20 feet (USD)	40 feet (USD)	Shipment per hour (unit)
Indonesia	95	145	35
Malaysia	88	133	50
Vietnam	50	80	NA
Thailand	78	126	75

Source: NYK Line, Apindo, and USAID-Senada.

from Padang to Jakarta is roughly US$400. However, it would cost only US$175 to send the same forty-foot container to Singapore. Firms see the high cost and inefficiency in the domestic distribution channels as the major constraint preventing Indonesia from being more integrated with international production networks of higher value-added products. In addition, licensing and government-regulated pricing provide disincentives to invest in better services and restrict competition between domestic sea and land freight companies. The restrictions on foreign investment in the logistics sector only worsen the situation by restricting access to new technology.

Logistic service in Indonesia is, in fact, not only relatively more expensive but also less efficient (slower) compared to other ASEAN countries. Even worse, importers need to pay an extra cost of about US$70 per twenty-foot equivalent unit (TEU) for transferring goods from ports in Malaysia or Singapore to ports in Indonesia. This is why Indonesia ranks poorly in the World Bank's global logistic performance index (Table 10). The index shows that Indonesia is behind the Philippines and Vietnam in terms of logistic infrastructure. It is only ranked better than CLM countries.

Obviously, the high cost of port in Indonesia is a serious constraint for the competitiveness of its manufacturing exports. In addition to more expensive cost of

Table 10: International Logistic Performance Index

International LPI Rank Out of 150 countries	Country	LPI	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
27	China	3.49	3.16	3.54	3.31	3.49	3.55	3.91
29	Malaysia	3.44	3.11	3.5	3.5	3.34	3.32	3.86
35	Thailand	3.29	3.02	3.16	3.27	3.16	3.41	3.73
44	Philippines	3.14	2.67	2.57	3.4	2.95	3.29	3.83
53	Vietnam	2.96	2.68	2.56	3.04	2.89	3.1	3.44
75	**Indonesia**	**2.76**	**2.43**	**2.54**	**2.82**	**2.47**	**2.77**	**3.46**
118	Lao PDR	2.46	2.17	1.95	2.7	2.14	2.45	3.23
129	Cambodia	2.37	2.28	2.12	2.19	2.29	2.5	2.84
133	Myanmar	2.33	1.94	1.92	2.37	2.01	2.36	3.29

Source: Logistic Performance Index 2010, World Bank.

handling containers (THC), Indonesia's exporters also face a more burdensome transaction process. Transactions in ports across Indonesia are conducted using US dollars, while in other countries the same transactions can be done using the local currency.

3.3.5. Rampant smuggling

API estimated the domestic textile market to be worth IDR 70 trillion (approximately US$7.42 billion) in 2009. However, API reported that the share of local textile producers in the national market has declined from 65% in 2008 to 50% in 2009. About 30% to 40% of textile products in the domestic market is believed to be illegally imported. The influx of illegal imported textile products mainly from China is blamed

for the decline in the market share of domestic firms.[19]

It is worth noting that both the textile and electronics industries are plagued by the problem of illegal imports. Local production controls only about 30% to 35% of the domestic electronics market. An estimated 35% of electronic products in the domestic market are smuggled goods. The remaining share, about 30%, consists of legal imports.[20]

Low, or even zero, import duties imposed on Chinese, Japanese, and Korean products are believed to have encouraged the influx of textile imports and reduced the size of smuggled products. From the previous 5%, import duties on Chinese textiles have been abolished since the implementation of the AC-FTA in January 2009. In the case of Japan, almost all of the Indonesian textile tariff lines, particularly the sophisticated ones, already have zero import duties because of the Indonesia-Japan Economic Partnership Agreement (IJ-EPA).

3.3.6. Weak supporting industry

The respondent firms revealed that their high dependency on imported intermediate inputs is due mainly to the lack of supporting industries in the country. Local supporting industries are not well developed. Therefore, both the electronics and textile industries depend on external sources for their parts, components, and main raw materials. In the electronics industry, local content of raw materials and components is estimated to be about 30%. However, main components are still imported. According to the Association

[19] According to Indotextile, a textile research center sponsored by SENADA and USAID, textile imports were valued at US$1.05 billion in the first quarter of 2009, slightly down compared with US$1.22 billion in the same period of 2008 and US$1.23 billion in the last quarter of 2008.

[20] Interview with GABEL, October 2009

of Electronics Firms (GABEL), currently more than 70% of the components needed by the industry have to be imported.

3.4. Fragmentation to CLMV Countries and Challenges for CLMV Countries

There are several reasons why firms decide to relocate to other countries. One critical reason is profit. If a firm can make a profit in a certain country, including the CLMV countries, then the firm will consider moving. An owner of a domestic electronics firm mentioned that his firm would be willing to move if there is a high probability of making higher profits in the CLMV countries. Higher profit could be achieved either through a bigger market, less costs, or a combination of those.

Another reason for relocation is to sustain their business. One domestic textile firm owner said that his business, like many other textile and garment companies, is currently suffering from serious electricity shortage since PLN cannot guarantee continuity of supply for the whole year. The electricity supply is rationed to cover only 300 days per year due to poor distribution. This means his business, and many others as well, need to find an alternative electricity supply, which is often more expensive. According to the textile association, some firms have relocated to China.[21] Some are still considering moving in order to sustain or expand their production.

Regarding firms' preferred destination for relocation, it is important to note that firms perceive Vietnam as being in a different league compared with CLM countries. Firms distinguish the former as being slightly more attractive than CLM countries as an

[21] Some firms have moved back to Indonesia because the Chinese government attempted to relocate their companies from the coastal area to the inland part of China. The firms argued that the location disadvantage (far from the ports) would make it unprofitable for them to do business in that area. Another reason why the firms moved away from China is due to the rapid increase in wages, especially in China's coastal areas.

investment destination. Therefore, if they were to relocate, they regard Vietnam as a potential destination. Other attractive countries for fragmentation and relocation are China and India. Many of the respondent firms perceived these two countries as offering a bigger market, a better investment climate, and better infrastructure.

Despite various issues mentioned by the firms about the poor investment climate in Indonesia, the study found that most firms operating in Indonesia, which were interviewed in 2009, are not considering relocation to CLM countries due to several considerations.[22]

3.4.1. Macroeconomic stability

Interviews with a representative of a Taiwanese business office (TETO) in Indonesia revealed that majority of Taiwanese firms in Indonesia consider Indonesia as being quite successful in maintaining its macroeconomic stability. The country's GDP growth is relatively strong in the region; the economy grew by 4.5% in 2009. Inflation rate was less than 5% in 2009. The exchange rate is relatively stable against other major currencies. Therefore, business people are confident that Indonesia's economy will grow even stronger in the future. This makes Indonesia's market very promising, with an expected increase in its per capita GDP. Meanwhile, Vietnam has difficulty controlling its inflation rate. A high inflation rate is very detrimental to business and makes a country an investment risk. Other CLM countries are considered much smaller than Vietnam in term of per capita GDP. Therefore, for most market-seeking

[22] It is important to note that due to small sampling, the results of the survey should be taken cautiously.

companies, CLM countries are not quite attractive as fragmentation or relocation destinations.

3.4.2. Political stability

Most firms interviewed said that Indonesia currently has a solid political platform after the Democrat Party's and SBY's landslide victory in the 2009 parliamentary and presidential elections. The cabinet ministries were perceived to have a good balance between politicians and professionals. In addition, the democratic government is perceived to be more open to business interests. In contrast, countries like Cambodia and Myanmar are considered to be highly politically unstable. In particular, Myanmar's military regime is perceived to be too risky to do business with. This causes investors to stay away from the country.

3.4.3. Infrastructure, natural resources, and manpower

Despite much evidence of infrastructure bottlenecks faced by the firms operating in Indonesia, most firms perceive the quality of infrastructure in CLM countries to be inferior to Indonesia's. Countries like Laos are considered to be too isolated and too far from the ports. This location disadvantage will create additional costs for firms that export their products.

Most firms interviewed considered Indonesia as a resource-rich country, which makes it relatively easy to look for raw materials. But they also raised concerns that Indonesia tends to export most of the raw materials needed by the domestic industry in order to get quick revenue. Nevertheless, firms considered CLMV countries as having less natural resources compared with Indonesia.

In terms of manpower, Indonesia is perceived as having the largest pool of manpower, larger even than CLMV countries. It is relatively easy for firms to obtain additional workers. The only concern is that firms cannot easily fire workers due to the costly severance pay mandated by the labor regulation. However, firms can hire more contract workers and limit the hiring of full-time workers. In addition, some firms encourage their workers to handle several tasks in order to increase productivity. For instance, in the textile industry, one worker is assigned to operate 3 to 10 machines.

3.4.5. Openness of the economy

Firms mentioned that the openness of the economy is one of the advantages of investing in Indonesia. With basically no significant tariff and nontariff barriers, it is easy for firms to procure parts, components, and raw materials. Firms mentioned that the AC-FTA provides an opportunity for firms to import raw materials from China at even lower cost. This makes them optimistic that they will be able to further reduce production cost. Meanwhile, firms regarded CLMV economies as being relatively less open compared with Indonesia.

3.4.6. Principal global strategy

Foreign firms operating in Indonesia said that the decision to relocate some parts or all parts of the production process is the principal's strategic decision. Most foreign firms are export oriented, fully benefiting from the global supply chain. Therefore, the decision for a firm's fragmentation will be dependent on the principal's global strategy.

The survey on the respondent firms' perception revealed that wage is still the main determinant for fragmentation or relocation for both electronics and textile firms (Table

11 and Table 12). For electronics firms, port and market is the second most important determinant for relocation, while population and income level is the third. Meanwhile, textile firms perceived land price and energy price as the second and third most

Table 11: Electronics Firms' Perception of Determinants to Fragmentation

	Score	Rank
Wage of Workers	2.63	1
Access to Port and Market	2.75	2
Population & Income Level	3.00	3
Land Price	4.50	4
Electricity or Energy Price	5.13	5
Education Level of Workers	7.00	6
Incentives like Tax Holidays	7.38	7
Water Price for Industrial Use	7.88	8

Note: The score is the averaged value of the ranks, and the rank was given in accordance with the value of scores.

Source: Survey results.

Table 12: Textile Firms' Perception of Determinants to Fragmentation

	Score	Rank
Wage of Workers	1.86	1
Land Price	2.86	2
Electricity or Energy Price	3.43	3
Incentives like Tax Holidays	5.29	4
Education Level of Workers	5.71	5
Access to Port and Market	5.86	6
Water Price for Industrial Use	6.43	7
Population & Income Level	7.43	8

Note: The score is the averaged value of the ranks, and the rank was given in accordance with the value of scores.

Source: Survey results.

important determinants for relocation, respectively.

Overall, on average, firms ranked wage level, land price, and access to port and market as the top three most important factors for fragmentation or relocation to other countries (Table 13). In terms of CLMV countries, only Vietnam was regarded as a

Table 13: Summary of Respondent Firms' Perception of Determinants to Fragmentation

	Score	Rank
Wage of Workers	2.27	1
Land Price	3.73	2
Access to Port and Market	4.20	3
Electricity or Energy Price	4.33	4
Population & Income Level	5.07	5
Education Level of Workers	6.40	6
Incentives like Tax Holidays	6.40	7
Water Price for Industrial Use	7.20	8

Note: The score is the averaged value of the ranks, and the rank was given in accordance with the value of scores.
Source: Survey results.

potential destination for fragmentation or relocation. Firms perceived Vietnam's investment climate as relatively better than other CLM countries. The Vietnamese government has provided strong tax incentives to investors. In addition, Vietnam has invested more on infrastructure and has a bigger market size compared with CLM countries.

Particularly, in the case of CLM countries, firms perceived that the wage level and the land price in those countries are not significantly lower than that in Indonesia. More important, firms also perceived infrastructure quality in CLM countries to be not much better than (or even worse than) that in Indonesia. Given these perceptions, it would be

difficult to attract Indonesia's firms to relocate to CLM countries without further incentives.

Aside from Vietnam, firms also mentioned China, India, and Bangladesh as their favorite place for business expansion. They consider China and India's markets as significant and their supporting industries quite strong. Meanwhile, Bangladesh has preferential access to the U.S. textile market.

In view of the possibility of developing an industrial corridor involving Indonesia and CLMV countries, at least one of the preconditions has actually been there, i.e., the existence of the logistic backbone. For instance, the shipping lines connecting Tanjung Priok and Sihanouk Ville; Tanjung Priok and Ho Chi Minh; and Tanjung Priok and Yangon have been operated by several shipping companies (Table 14). However, in order to develop a truly active cross-border fragmentation (taking advantage of geographical diversity and the countries' development stages), several other factors need to exist. For instance, the service link cost for connecting fragmented production blocks should be low enough to overcome the geographical distance. Currently, the service link cost remains high (Table 14). In addition, its reliability and frequency still need to be improved. From the supply side, this can be done by improving logistic infrastructure, providing tax incentives, improving customs procedures, encouraging foreign capital participation in logistic services, and so on. Meanwhile, the demand side is also important. CLMV countries have preferential access to the U.S. and the EU markets which could be an important pull factor for Indonesia's investment, e.g., in the textile and garment sectors. In this case, a potential industrial corridor consisting of Indonesia, Cambodia, and Vietnam could possibly be formed depending on the fulfillment of certain minimum requirements mentioned above. Finally, both Indonesia

and CLMV countries also need to improve their marketing strategy on location advantages by developing, for instance, special economic zones that are supported by a favorable investment climate.

Table 14: Distance, Time, and Cost of Shipping Line

Route	Shipping Line	Average Cost US$/km by Container's Size		Distance (km)	Days
		20	40		
Jakarta - Sihanouk	Jakarta – Tj. Pelepas	315	484	920	1
	Tj. Pelepas – Kuantan	91	139	265	8
	Kuantan – Sihanouk	245	376	715	1
	TOTAL	**650**	**1,000**	**1,900**	**10**
Jakarta – Ho Chi Minh	Jakarta – Ho Chi Minh	400	600	1,900	4
	TOTAL	**400**	**600**	**1,900**	**4**
Jakarta – Yangon	Jakarta – Singapore	225	482	900	1
	Singapore – Yangon	475	1,018	1,900	10
	TOTAL	**700**	**1,500**	**2,800**	**11**

Source: Survey results.

4. CONCLUSION

According to the firms' perception, the decision to conduct fragmentation or relocation to CLMV countries is dependent on the profitability of such a strategy. All respondent firms considered Vietnam as not being in the same league as CLM countries. They perceive Vietnam as a potential target destination for fragmentation or relocation. Vietnam is also considered to have a better investment climate, offer more attractive incentives, provide better infrastructure, and have a bigger market than CLM countries. The respondent firms currently believe that that it remains too risky to invest in CLM countries due mainly to their less favorable business climate.

The primary concerns of the respondent firms in assessing potential locations for fragmentation or relocation are macroeconomic stability, political stability, infrastructure, openness to trade, and the firm's own global strategy. In view of this, CLM countries need to offer more than just lower wages in order to attract FDI from other countries, including Indonesia. They need to build investors' confidence to take a risk in investing in their countries by providing better infrastructure, strong incentives, and a favorable business climate that will enable firms to operate efficiently. CLM countries need to implement trade and investment reforms to provide better flow of goods and services. Policy measures are needed to effectively remove various constraints for the development of international production networks. All of these are the necessary conditions for promoting inward FDIs which are crucial for upgrading the industries in CLMV countries.

Finally, these findings are based on a small-scale survey of firms' perceptions. This type of survey is always prone to the problem of firms' limited knowledge on CLMV countries. It is important to interpret the results cautiously. Further examination involving larger samples is recommended to fully understand firms' behavior and perception in order to offer more substantial and essential policies for CLM countries.

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ANNEX 1: LIST OF FIRMS

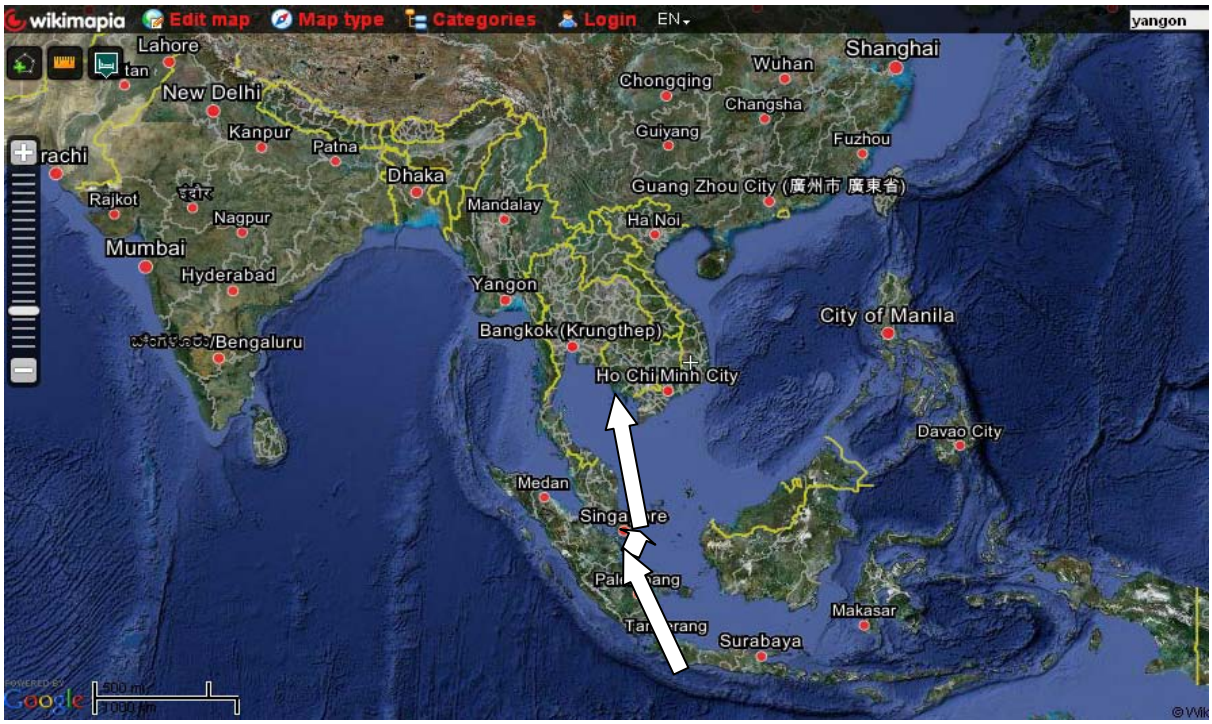
No	Firm	Year of establish-ment	Ownership	Main Product	Location	No of Employees	Total Sales	Export as proportion of total production
				ELECTRONICS				
1	**HI**	1982	100% Domestic	Electric Motor (E-moto), Audio (Pioneer)	Bekasi (Industrial Zone)	600	USD 23.7 mill	50%
2	**LPD**	1996	100% Foreign (Korea)	TV color picture Tube	Bekasi (Industrial Zone)	638	USD 175 mill	60%
3	**PEC**	1970	100% Domestic	Color TV, Audio cassette tape, TV stand, Plastic injection, and CD replication.	Jakarta (office) Surabaya (Factory)	1134	IDR 400 bill	52%
4	**SEI**	1991	100% Foreign (Korea)	TV, camera, Camcorder, Monitor, home appliances	Bekasi (Industrial Zone)	900	USD 174.2 mill	60%
5	**LGEI**	1990	100% Foreign (Korea)	TV, Audio, Video, home appliances	Bekasi (Industrial Zone)	1050	USD 195.7 mill	70%
6	**SEI**	1989	100% Foreign (Japan)	TV, camera, home appliances, water pump	Bekasi (Industrial Zone)	789	USD 182 mill	75%
7	**DMI**	1990	100% Domestic	TV, washing machine, home appliances	Bekasi (Industrial Zone)	1100	USD 41.17 mill	70%
8	**PEI**	1994	Joint Venture (Singapore 51%)	Printer Component	Bekasi (Industrial Zone)	973	USD 38.7 Mill	10%
				TEXTILE				
1	**AP**	1977	100% Domestic	Manufacturing product textile	Tangerang, outside SEZ and Bekasi in Industrial Area M2000	4,887	IDR 846.3 bill	80%
2	**PI**	1974	100% Domestic	Spinning, Knitting, Twisting	Bandung, Underdeveloped Industrial Area	2,038	IDR 769.76 bill	34%
3	**UNI**	1971	100% Foreign (Japan)	Manufacturing product textile from spinning, weaving, dyeing, finishing	Bogor	760	IDR 49.12 bill	24%
4	**AL**	1980	100% Domestic	Polyester filament woven fabric	Cibinong	786	IDR 46.48 bill	4%
5	**HA**	1973	100% domestic	Spinning, finishing and printing	Bandung	594	IDR 11.4 bill	90%

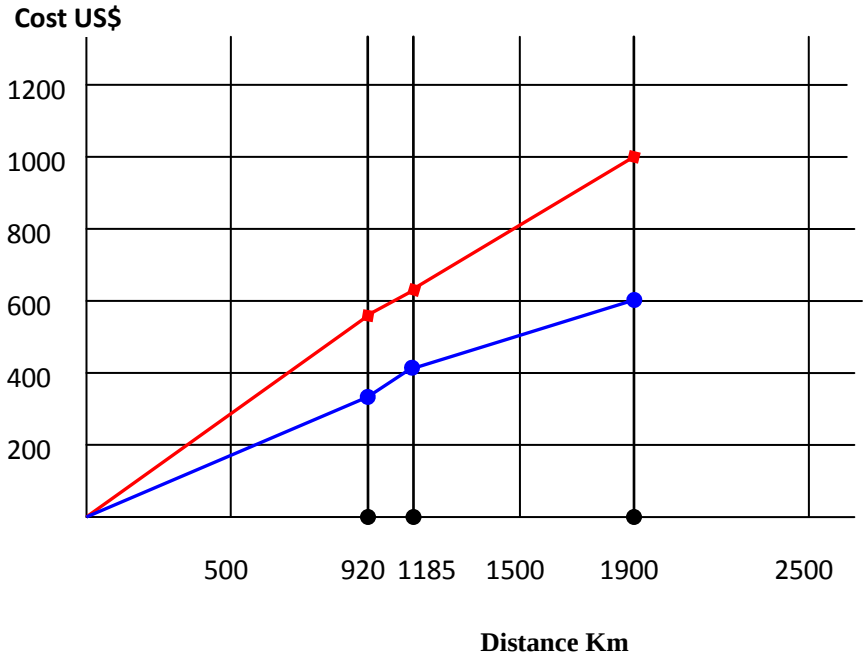
6	**PF**	1987	100% Domestic	Weaving and knitting, including finishing and printing	Bandung, Underdeveloped Industrial Area	3,525	IDR 355.16 bill	87%
GARMENT								
1	**EST**	1974	Domestic dominant and joint venture with Taiwan company (PT. KAHATEX)	Texturized yarn, twisted yarn, nylon filament yarn, woven and knitted fabric in nylon, polyester and garment	Bogor, Jakarta, Tangerang. Non industrial area	1,200	IDR 137 bill	52.20%
2	**PBT**	1980	100% Domestic	Garment, jacket and T-shirt	Tangerang, Underdeveloped Industrial Area	5,926	IDR 240.98 bill	32.58%
3	**PPEB**	1989	100% Domestic	Garment, Jacket	Tangerang, Underdeveloped Industrial Area	4,039	IDR 244.76 bill	88.97%

Source: Survey results

ANNEX 2: ROUTING TO CLMV (LOGISTIC SURVEY RESULTS)

Jakarta – Tanjung Pelepas – Kuantan – Sihanouk





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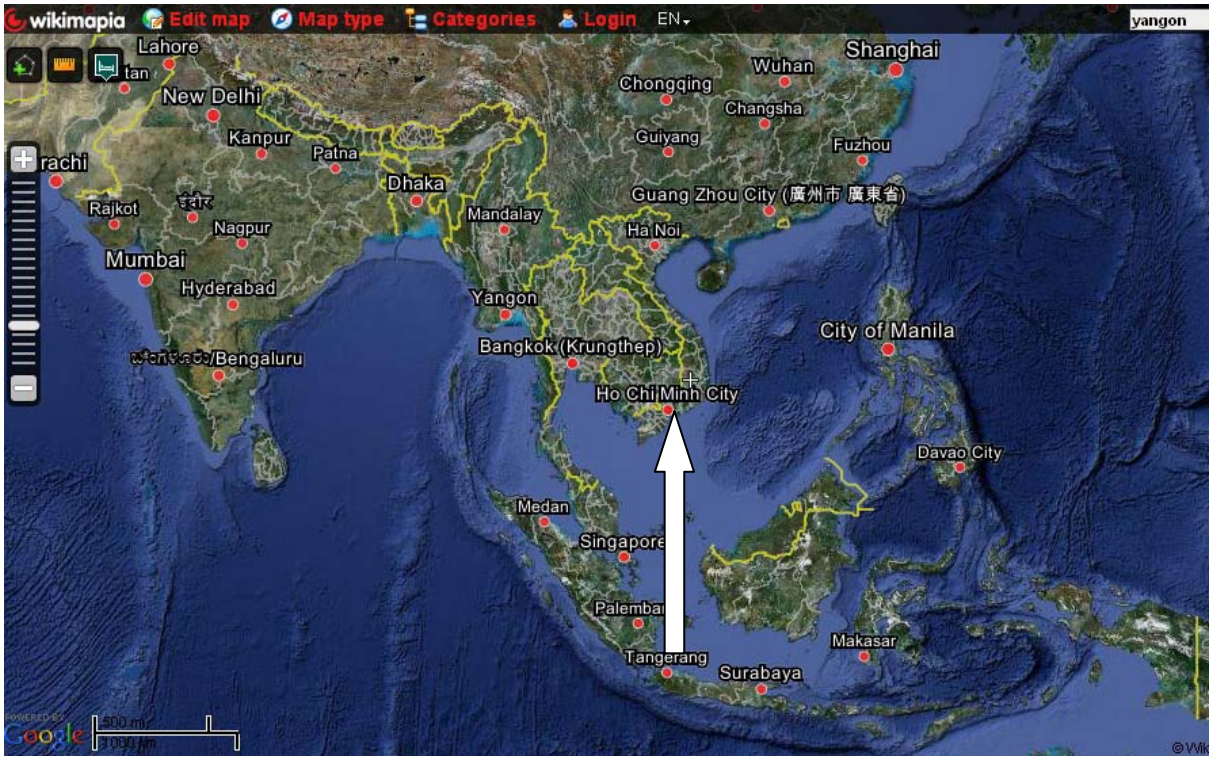
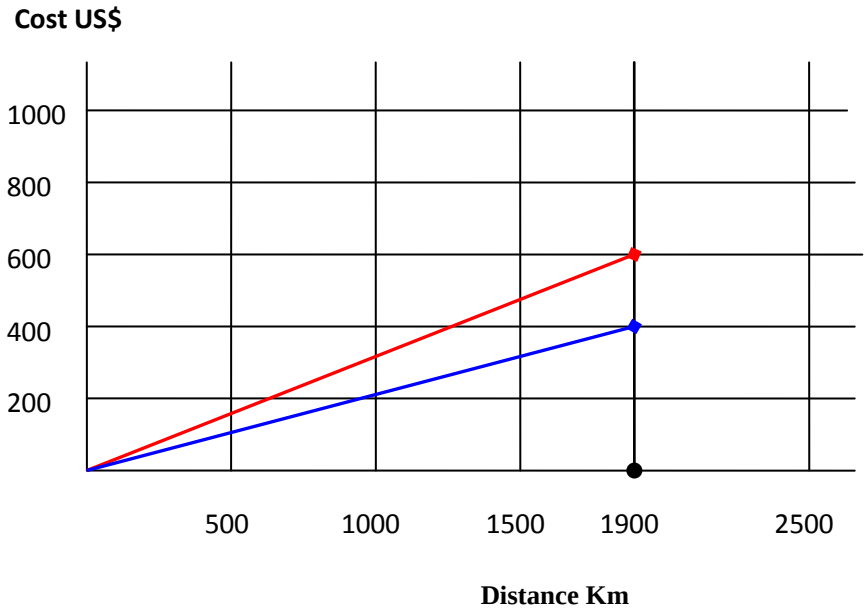
Jakarta – Ho Chi Minh





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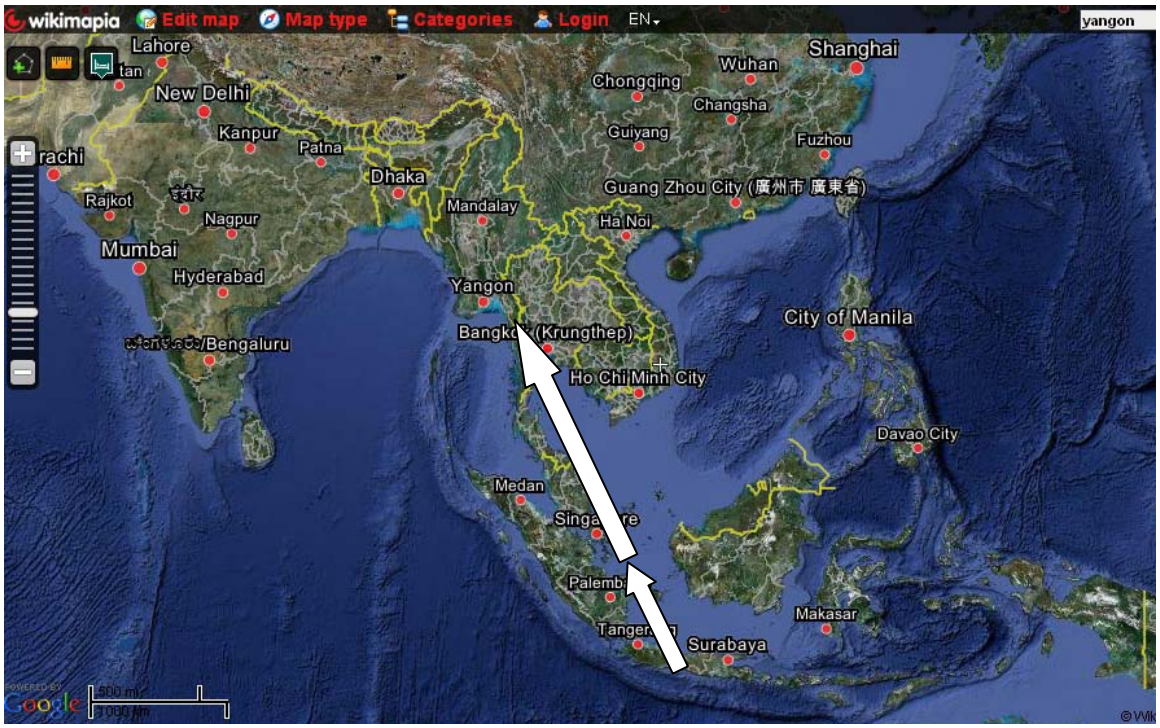

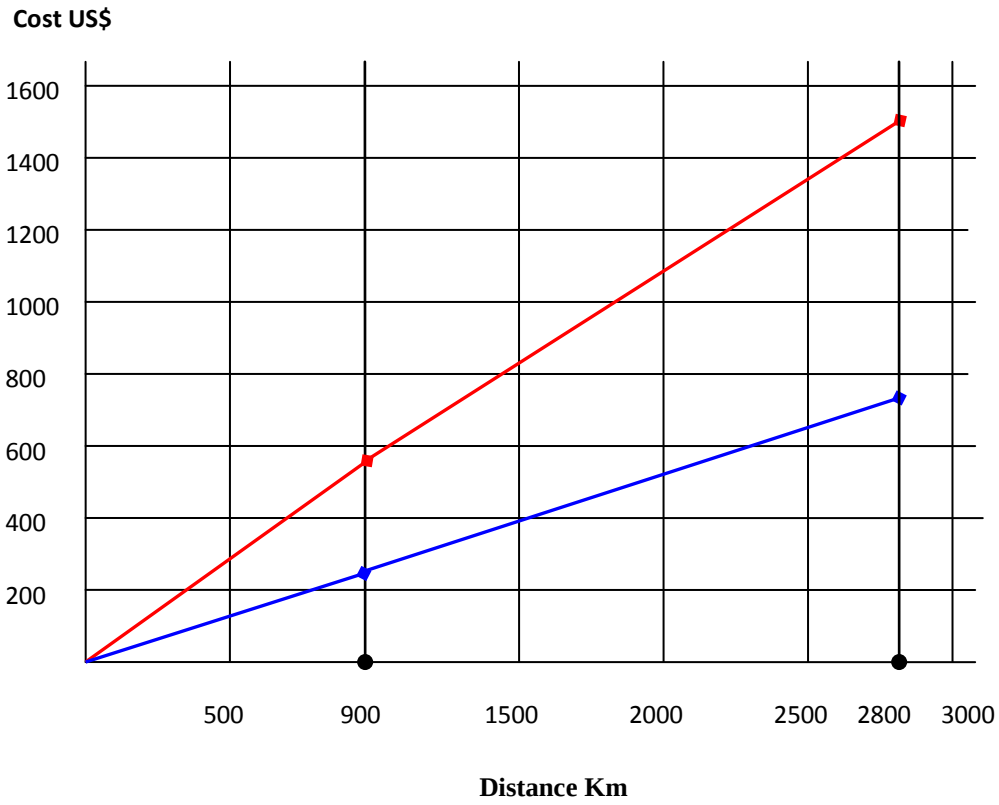

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CHAPTER 6

INFRASTRUCTURE NEEDS IN CLMV COUNTRIES FOR PRIVATE AND STATE COMPANIES: THE CASE OF CAMBODIA

Socheth Hem

Abstract

This chapter aims to look into more important infrastructure requirements that would allow Cambodia to diversify and upgrade its industries. Cambodia needs to diversify those sectors that are deemed important and has the potential for export and growth. To achieve this, good government policies alongside soft and hard infrastructure are a must because industries need roads and ports to transport goods, energy to power the manufacturing operations, efficient labor force to work, and good environment for investment. Although the needs for infrastructure in Cambodia are enormous and urgent, the actual investment in this sector is still limited and slow due to budgetary constraints. Cambodia's outstanding industry is the garments and textile industry, which takes 30 percent to 40 percent[1] of GDP, employs around 35,000 workers and constitutes around 70 percent to 80 percent of total export values[2]. However, in the face of the current global economic downturn and increasing international competition, Cambodia cannot afford to rely solely on this industry. That is, it has to identify other potential

[1] National Institute of Statistics.
[2] Ministry of Commerce.

sectors that can strengthen its economic bases by moving from the low-skilled garments industry to a more developed agricultural sector[3] and to motorcycle and automobile assembly and later, to other higher-skilled manufacturing sectors such as electronics. Based on information collected from desk research and field surveys conducted by the Management Compass Associates (MCA) on 30 manufacturing firms and stakeholders, the analysis is designed to look into the current impediments to industrial growth and to shed more lights on the policies that are meant to attract investments and thus upgrade industries in Cambodia.

1. OVERVIEW OF CAMBODIAN ECONOMY BY SECTOR AND TRADE

For almost three decades of civil war, especially during the period between 1975 and 1979, Cambodia had its national infrastructure damaged and more than two millions lives sacrificed, among whom were the intellectual and highly educated people. Right after the collapse of the Khmer Rouge regime in 1979, Cambodia was isolated from the outside world, especially those in the capitalist bloc, because it chose to stay with the communist bloc backed by the then Union of Soviet Socialist Republic (USSR) and Vietnam. Although there was humanitarian assistance from these two countries, Cambodia experienced difficulty trying to restart its economy after suffering from serious economic sanctions from the West during the Cold War. It was only in 1993 that the country began to see some semblance of peace. Cambodians turned a new page in history by going to the polls to select their leaders via a democratic process. Since then,

[3] Agricultural sector shall also include agro-industry products such as processed woods, rubber, cassava and the like.

all its political parties became one in rebuilding the war-torn nation, with support from the United Nations and other countries. The full-fledged peace was achieved only in 1998, when the Khmer Rouge organization was dismantled and its last remnants integrated into the government.

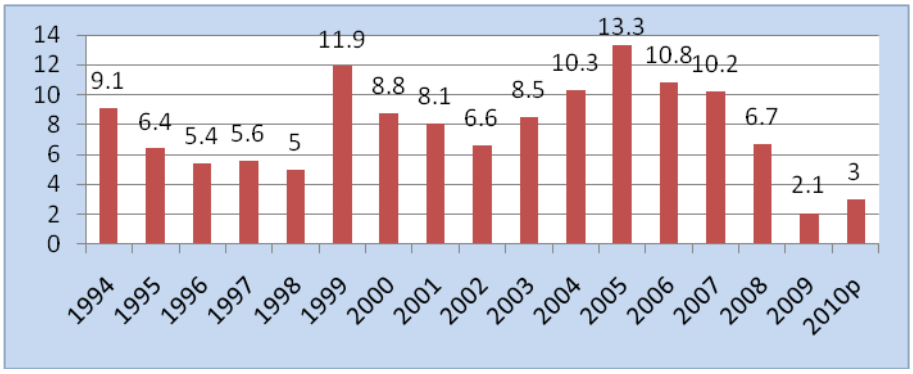
Cambodia is said to have a young population, with 55 percent of its population of over 13 million in 2008[4] being under 20 years of age and 53 percent being economically active. Around 80.5 percent live in rural areas and up to 72.5 percent work in the agricultural subsector such as farming, forestry, and fisheries. In the economic front, Cambodia showed a growth rate of 9.8 percent between 1998 and 2007, thanks to the boom in the garments industry and the emergence of the tourism and real estate and construction industry. This led the World Bank to classify Cambodia as among the fastest growing economies in Asia. Other manufacturing industries such as electronics, automotives, and agro-industries still experience very modest improvement. Cambodia has not been able to attract investments in these sectors due to the lack of key production inputs such as electricity, transportation infrastructure, and human resource. Roads, bridges, and ports are the main instruments for industrial development but Cambodia has not been able to improve all of these as quickly as it should. On the other hand, the cost of electricity and water supplies remains high compared to those in neighboring countries such Vietnam, Laos, and Thailand. In addition, the labor force in Cambodia is short of technical skills due to the lack of vocational training schools and a dearth in people interested in engineering and mechanics. All these combined have considerably deterred foreign direct investment (FDI) and led to regional and global competitive disadvantages, thus slowing the speed of economic growth.

[4] National Institute of Statistics.

In terms of the industrial structure, when Cambodia started to shift from planned to market economy in the early 1990s, the government adopted a privatization policy to allow for private ownership and to improve efficiencies of its industries[5]. The establishment of the Council for Development of Cambodia (CDC) as well as the ratification of Cambodian Investment Law in August 1994 further helped accelerate the speed of economic transformation.

Cambodia's economy has grown at an extraordinary speed with an average growth of more than 9 percent in the last decade. In the last five years, the growth rate was over 10 percent (Figure 1). In 2005, the economy grew at an astonishing 13.3 percent owing to strong growth in the garments, tourism, and construction sectors coupled with favorable weather conditions that allowed farmers to produce good crops. The economy continued to grow at 10.2 percent in 2007 even in the face of difficulties in the world economy.

Figure 1: Economic Growth 1994-2010 (in Percentage)



Note: Data in 2010 are projected.
Source: Ministry of Economy and Finance.

[5] See state-owned enterprises in Table A1 of Appendix.

However, the International Monetary Fund (IMF) forecasted that growth would be about 6.7 percent in 2008 due to inflationary pressure from high oil and commodity prices, and the figure would further decline to 2.1 percent in 2009 as a result of worldwide slowdown in demand for garment products, particularly those from the US and EU markets; and the drop in number of tourist arrival and domestic demand, all due to global financial and economic crises. The IMF expects Cambodia's economy to growth at 4.25 percent in 2010 while the Ministry of Economy and Finance projects the growth to be only 3 percent for the same period.

Table 1 shows that the share of the agriculture sector has decreased from nearly

Table 1: Gross Domestic Product (GDP) by Sector

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007p**	**2008p**
AGRICULTURE, FISHERIES & FORESTRY	**35.92**	**34.43**	**31.47**	**32.05**	**28.79**	**29.42**	**28.02**	**26.7**	**26.45**
- Crops	16.07	14.97	13.36	15.01	13.29	14.97	14.23	13.97	13.95
- Livestock & Poultry	5.58	5.72	5.3	5.17	4.86	4.54	4.43	4.17	4.056
- Fisheries	10.76	10.55	9.95	9.32	8.31	7.75	7.26	6.64	6.628
- Forestry & Logging	3.5	3.19	2.86	2.56	2.34	2.17	2.09	1.92	1.81
INDUSTRY	**21.86**	**22.5**	**24.68**	**25.49**	**26.94**	**26.81**	**28.62**	**28.15**	**27.45**
- Mining	0.24	0.25	0.29	0.31	0.35	0.4	0.41	0.4	0.43
- Manufacturing	16.01	17.07	18.31	18.95	20.21	19.58	20.75	20.5	19.81
Food, Beverages & Tobacco	3.19	3.03	2.77	2.67	2.29	2.21	2.06	1.93	1.91
Textile, Apparel & Footwear	9.21	10.95	12.45	13.4	15.16	14.62	15.89	15.86	15.18
Wood, Paper & Publishing	0.94	0.62	0.58	0.46	0.43	0.42	0.41	0.39	0.38
Rubber Manufacturing	0.49	0.46	0.43	0.35	0.29	0.24	0.22	0.22	0.22
Other Manufacturing	2.18	2.02	2.08	2.07	2.03	2.1	2.18	2.11	2.11
- Electricity, Gas & Water	0.41	0.46	0.46	0.47	0.47	0.47	0.56	0.56	0.58
- Construction	5.2	4.72	5.62	5.76	5.91	6.37	6.9	6.68	6.62
SERVICES	**37.14**	**38.1**	**38.56**	**37.63**	**38.6**	**38.55**	**38.32**	**38.29**	**39.13**
Gross Domestic Product	100	100	100	100	100	100	100	100	100

Source: National Institute of Statistics (NIS).

36 percent in 2000 to 26.45 percent in 2008 as contributions from all subsectors such as crops, livestock, fisheries, forestry and loggings declined since 2000. The share of industry shows a slightly different trend, going up from nearly 22 percent to 27.45 percent in the same period, thanks to the increase in mining, and textile, apparel and footwear subsectors. Likewise, although the rate of change is modest, the service sector has steadily improved since 2000, reaching nearly 40 percent in 2008. As already mentioned, the drop in demand for garments, textile, and footwear can be attributed to the continued economic recession in the United States and the European nations---both destinations of more than 90 percent of Cambodia's apparel products.

Cambodia is still a predominantly agrarian country where around 70 percent of the population live in rural areas and perform agriculture-related jobs. According to the National Institute of Statistics (NIS), 70.2 percent were employed in the agriculture sector in 2002, and the number kept spiraling downward to just 56 percent in 2007 (Table 2). The steady drop in the employment in this sector was caused by the boom in the garments and footwear industry in the early 1990s. Industry sector absorbed around 10.2 percent of total workforce in 2002 and further to 15.4 percent in 2007.

During the same period, the country experienced a surge of foreign tourists coming in at an impressive 20 percent per year, culminating in more than 2 million tourists coming to visit the famous Ankor Wat temple complex, the capital city of Phnom Penh, coastal cities of Sihanoukville and Kampot province and other ecotourism areas in Ratanakiri and Mondulkiri provinces. Therefore, the employment rate of the services sector rose from a measly 19.5 percent of the total work force in 2002 to 28.7 percent in 2007 due to improved national security, macroeconomic stability, and presence of physical infrastructure.

Table 2: Employment and Share by Sector

By Sector	2002	2003	2004	2005	2006	2007
In thousand						
Total employment	6,571	6,965	7,496	7,878	8,053	8,354
Agriculture, forestry, and fisheries (AFF)	4,426	4,471	4,520	4,655	4,619	4,670
Agriculture	4,080	4,091	4,103	4,197	4,183	4,224
Forestry	56	56	57	58	60	61
Fisheries	291	323	360	400	376	385
Industry	741	835	947	1,059	1,169	1,286
Mining and quarrying	15	16	17	19	20	22
Manufacturing	601	656	720	789	870	944
Utilities	6	10	16	17	19	21
Construction	120	153	195	234	260	299
Services	1,404	1,659	2,028	2,163	2,265	2,399
In percent of total						
Agriculture, forestry, and fisheries (AFF)	70.2	67.4	64.2	60.3	59.1	55.9
Agriculture	65.2	62.1	58.7	54.7	53.3	50.6
Forestry	0.9	0.8	0.8	0.8	0.7	0.7
Fisheries	4.2	4.4	4.6	4.8	5.1	4.6
Industry	10.2	11.3	12	12.6	13.4	15.4
Mining and quarrying	0.1	0.2	0.2	0.2	0.2	0.3
Manufacturing	8.8	9.1	9.4	10	10.8	11.3
Utilities	0.1	0.1	0.1	0.2	0.2	0.2
Construction	1.3	1.8	2.2	2.6	3	3.6
Services	19.5	21.4	23.8	27.1	27.5	28.7

Source: Ministry of Planning, NIS.

Trade volume totaled US$3,665 million in 2001 and kept on rising in consecutive years, reaching US$11,242 million in 2008[6]. However, Cambodia's trade deficit also increased significantly from US$523 million to as much as US$1,826 million in the same period due to the faster increase in imports brought by the higher demand in local consumption and production.

[6] Naron, 2009.

2. INVESTMENT AND KEY SECTOR PERFORMANCE IN CAMBODIA

2.1. Aggregate FDI and Industry Investment

The inflow of FDI has played an important role in promoting trade and economic growth in Cambodia since 1994. This FDI inflow, however, has tended to be concentrated in a few sectors only, mainly the garment sector, which is dominated by Chinese firms.

Foreign direct investments brought into the country 154 projects in 1998 but declined for the next three consecutive years. In 2002, the number dropped to 26 projects before it started to rise to 103 in 2007, and then dropped to 77 in 2008 (Table 3). In terms of fixed assets, the value of FDI in 1998 was US$555 million and plunged consistently to its lowest level of US$65 million in 2003 before reaching the peak at

Table 3: Total Fixed Asset Approvals

Year	Total Projects	Total Fixed Asset (US$
1998	154	555
1999	87	196
2000	58	160
2001	27	140
2002	26	144
2003	30	65
2004	54	155
2005	85	682
2006	82	2,334
2007	103	1,345
2008	77	7,621
1998-2008	783	13,397

Source: The Council Development of Cambodia (CDC).

US$2,334 million in 2006.

In 2007, the fixed asset figure went down to US$1,345 million. Later, the number climbed again to US$7,621 million, owing to the significant contribution of the Koh Kong seacoast development project, which was approval and funded by a Chinese firm in 2008. This project was approved for US$3,805 million—the country's largest foreign investment project. However, it should be noted that approved FDI is higher than actual FDI and the total value of Cambodian inward FDI is still low compared with that of other ASEAN countries, and the quality and local linkages often remain limited. The FDI is expected to weaken further in 2009 due to the recent world economic downturn.

According to CDC, fixed assets approval for the period 1998-2008 went to tourism (US$6,161 million), services (US$1,150 million), construction (US$1,038 million), garments (US$801 million), and other sectors (US$4,247 million). Amongst the top five investors, China was ranked the first (US$6,048 million), followed by South Korea (US$2,565 million), the United States (US$1,451 million), Malaysia (US$527 million) and Russia (US$434 million).

2.2. Industrial Development

Enhancing the industrial sector is one of the government's development priorities in which investment promotion, tax incentives, and private sector promotion are the major tools. Cambodia's industry has received US$89 million worth of investment, around 34.27 percent of which went to the manufacturing sector, 15.6 percent to electricity and gas, and up to 49.55 percent to construction. Since then, the investment in manufacturing sectors kept increasing every year and reached 46.25 percent in 2008,

Table 4: Investment in Cambodian Industry 2003-2008

	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
	In US$Million (Actual Figure)						Percentage					
Mining	0.6	0.2	15.9	14.3	25.4	23.2	0.67	0.21	9.34	6.87	8.08	7.14
Manufacturing	30.5	36.4	84.5	97.8	156.1	150.3	34.27	37.37	49.65	46.95	49.68	46.25
-Food, beverage, tobacco	7	4.8	5.5	9.2	12.9	13.1	7.87	4.93	3.23	4.42	4.11	4.03
-Textile, Garment and Footwear	16.6	23.9	28.1	41	62.5	61.8	18.65	0.00	16.51	19.68	19.89	19.02
-Wood, paper, publishing	1.9	1.7	1.8	2.4	3.1	3.4	2.13	1.91	1.06	1.15	0.99	1.05
-Rubber manufacturing	0.8	1.9	3.3	3.6	5.7	5.4	0.90	1.95	1.94	1.73	1.81	1.66
-Other manufacturing	**4.2**	**4.1**	**45.8**	**41.7**	**71.8**	**66.7**	**4.72**	**4.21**	**26.91**	**20.02**	**22.85**	**20.52**
Electricity, gas, water	13.9	17.7	21.7	26.9	37.7	42.5	15.62	18.17	12.75	12.91	12.00	13.08
Construction	44.1	43.1	48.2	69.4	95.1	108.7	49.55	44.25	28.32	33.32	30.27	33.45
Overall Industry	**89**	**97.4**	**170.2**	**208.3**	**314.2**	**325**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Ministry of Economy and Finance.

owing to a drastic jump in the "other manufacturing" sub-sectors from 2005 although this slightly drop to 20.52 percent in 2008 from 22.85 percent in 2007 (Table 4).

2.2.1. Existing and Potential Sectors

According to the Diagnostic Trade Integration Strategy (DTIS 2007) of the United Nations Development Program (UNDP), Cambodia has 19 products with export potentials, four of which are in the services sector. Current, those exported include beer, cassava, cashew nuts, corn, fishery, footwear, garments, livestock, rice (including organic rice), rubber, silk (including silk handicraft), and soya beans. The non-exported products are fruits and vegetables, and wood products light manufacturing assembly. Below are select sectors that Cambodia currently depends on and attempts to improve to broaden its growth base.

2.2.2. Garment

The textile and clothing industry is a major contributor to industrial development in Cambodia. It is often seen as the first step in the industrialization ladder, as it helps build the groundwork for the industrial base, communication and transport infrastructure as well as the gradual accumulation of manufacturing skills by the workforce.

Since 2005, the garment and textile industry has had to rely on its competitiveness[7] to maintain exports. Cambodia faces new challenges in 2009. These include (1) the removal of safeguards from Chinese exports of textiles and clothing, as part of China's accession to the World Trade Organization (WTO); and (2) the potential effects of the global financial crisis[8]. Most commentators posit that it is not enough for Cambodia to simply rely on its reputation for compliance to labor standards to sustain growth of the industry. This was one of the important factors to attract orders from the buyers.

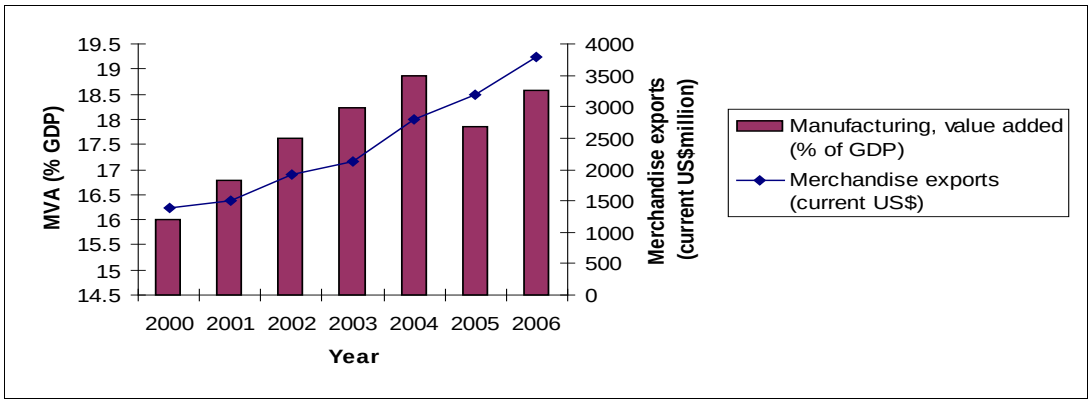
Cambodia's garment industry is heavily concentrated in the"cut-make-trim" part of the textile and clothing value chain and basic assembly of goods. For various reasons, Cambodia has not been able to diversify into textiles production although this has in the past been recommended as a means to value -add the industry.[9] The inability to do this does not necessarily place Cambodia at a competitive disadvantage within the region, as long as other factors beyond textile production make it more attractive for the cut-make-

[7] Main competitive factors in this sector include cheap labor, preferential market access, labor law compliance.

[8] The US also lifted safeguards on exports from Vietnam in 2007 after the signing of a new bilateral trade agreement.

[9] World Bank value chain and textiles and clothing studies.

Figure 2: Value-Added of Manufacturing and Merchandise Export 2000-2006



Source: World Development Indicators.

trim component of the value chain, and such activities increase Cambodia's potential to move into other types of final or intermediate goods assembly.

The Greater Mekong subregion is increasingly becoming inter-linked, thanks to improved transport and connectivity. Because of this, Cambodia is well placed to benefit from growth within the region as other countries within such region move up the value chain and increasingly look to offshore (or outsource) parts of their value chain. While in the past Cambodia had succeeded to develop a niche through adherence to labor standards so as to access other markets, the country also needs to develop a quality niche in other aspects of the assembly process so as to tap into other types of global production networks within the region.

As shown by Figure 2, garment exports accounted for 72 percent of total merchandise exports in 2007[10]. As merchandise exports have been increasing, so too

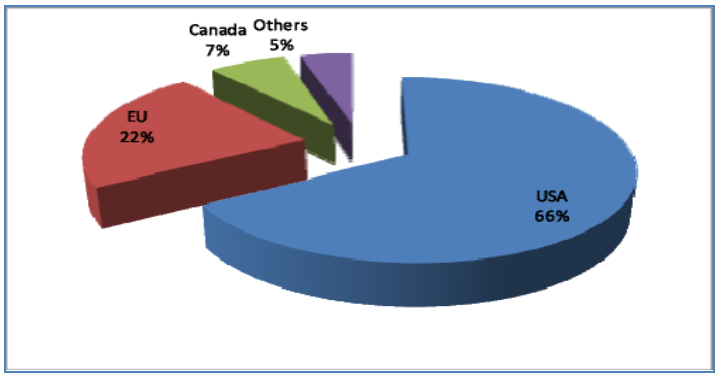
[10] World Development Indicators.

has manufacturing value added (MVA) as a share of GDP although the MVA decreased in 2005 and 2006 compared to the 2004 figure. Textiles and clothing are the dominant source of exports and foreign exchange in several developing countries, some of which are in direct competition with Cambodia. Given the relative share of the garment industry in Cambodia, the industry contributed almost US$500,000 to total customs revenue in 2007.[11]

According to the Ministry of Finance, Cambodia's growth slowed down in 2007 compared to 2006, due to a slowdown in the garments sector that resulted from Vietnam's accession to the WTO and removal of quotas on garments.[12]

In terms of market share, Cambodia exports 66 percent of its garment products to the US market, 22 percent to the European Union, 7 percent to Canada and 5 percent to the rest of the world (Figure 3). Therefore, Cambodia's garment industry is deemed a "footloose" industry---i.e., so vulnerable to the external shock it is currently facing.

Figure 3: Markets of Cambodia's Textile and Apparel Products



Source: Ministry of Commerce.

11 Assuming the industry contributed around 70 percent, given its total share in manufactured exports and total customs revenue of around $575,000 in 2007.

12 Source: Ministry of Finance (website).

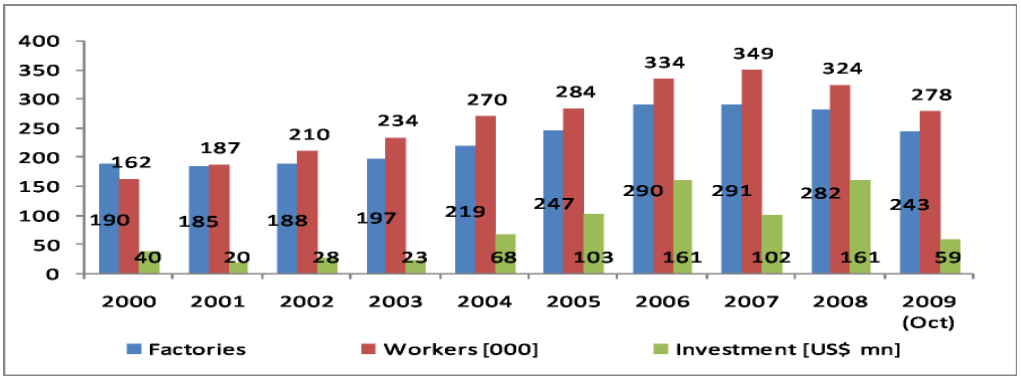
Employment in the garment industry has obvious multiplier effects. For instance, employment in textile and clothing production for less developed and low-income countries as a share of total employment in manufacturing ranges from 35 percent in selected low-income countries, 75 percent in Bangladesh and 90 percent in other selected less developed countries including Lesotho and Cambodia. In Cambodia, the garment industry directly employs around 300,000 workers but the indirect employment effects of the industry are also significant. Thousands more jobs have been created in allied areas such as food sales, other services, packaging (Economic Institute of Cambodia 2007).

The Economic Institute of Cambodia in 2007 estimated that an increase of US$100 in garment exports could result in an additional demand of US$205 in the whole economy. However, note that multiplier effects could be greater if backward linkages were improved: Cambodia has no real textile industry that intensively uses agricultural products (such as cotton) as inputs.

Although total employment in the garment industry has increased since 2000, and even after 2005[13], growth in employment seems to have remained stable in 2006 and into 2007 (Figure 4). Latest figures suggest that almost 278,000 workers are currently employed by garments factories. As of October 2009, there were 243 garment factories in operation in Cambodia, a decrease from 291 factories in 2007 and 282 factories in 2008. Between 2008 and 2009, up to 39 factories have closed down, resulting in the loss of around 46,000 job losses and more than US$2 million in wages paid per month. Moreover, the value of investment in this sector shrank sharply from US$161 million in 2008 to US$59 million in 2009.

[13] Multi Fibre Arrangement (MFA) was removed in 2005.

Figure 4: Trends of Textile and Apparel Industry



Source: Ministry of Commerce, 2009.

Based on the production line data for September 2008, the wages paid to workers within the garments industry (including those based in special economic zones) are projected to inject just over US$28 million into the local economy per month (or US$336 million per annum). Meanwhile, the National Institute of Statistics reports that the total workforce of Cambodia was around 8 million in 2006, of which around 870,000 were employed in manufacturing (10%) and just over 330,000 in the garments industry – around 4 percent of the total workforce and 39 percent of the total employment in manufacturing. Although the total employment of the garment sector is relatively low compared to other sectors of the economy, the wages paid to workers in the industry are relatively high.

2.2.3. Agro-industry

Agro-industry is one of the key industries on which the economy is based since most Cambodians are working in this sector in rural areas. However, most of Cambodia's

agricultural production is rain-fed, with annual yields significantly dependent on seasonal rains. There is a high risk of both flood and drought; for example, in the flood of 2000, over 400,000 ha. of rice crop was lost[14]. Also, the Food and Agriculture Organization (FAO) estimates that 40,000 ha. have been affected by drought in 2009.[15] The Royal Government of Cambodia's (RGC) SAW[16] 2006-2010 identifies water management as "currently the most critical element in on-farm production in Cambodia." The Ministry of Water Resources and Meteorology (MOWRAM) estimates that 730,000 ha. of land has access to irrigation in the wet season, and 280,000 ha. in the dry season. Local reports suggest that the actual area irrigated may be significantly less although no official statistics is published regarding the area irrigated.[17]

Much of the existing infrastructure is poorly designed, and operation and maintenance are often inadequate, having been largely devolved to farmer water user groups that have inadequate technical and agronomic expertise and limited government support. As a result, majority of the irrigation schemes are used only for supplementary irrigation of wet season rice production. Dry season rice accounts for only 13 percent (360,000 ha.) of the total rice area (a lot of which is partially irrigated recession rice) and a total of 66,000 ha. of subsidiary and industrial crops was cultivated in the dry season in 2008.[18] Provision of irrigation to farmers is a high priority of the government. Planning calls for irrigating an additional 20,000 ha. of land per year so as to attain 25

[14] 2008 MAFF Statistics

[15] http://english.people.com.cn/90001/90777/90851/6741683.html

[16] Strategy for Agriculture and Water Resource

[17] Information received from officials and field personnel. An inventory of irrigation infrastructure in 1993 reported by FAP found that of 841 full/partial control irrigation schemes, only 176 were fully operational (http://www.fao.org/nr/water/aquastat/countries/cambodia/index.stm). An update by MRC in 2001 reported 802 schemes, of which 125 were not operational.

[18] 2008 MAFF statistics

percent of the total crop land (around 650,000 ha.) with irrigation systems by 2010.[19] Considerable investments by the Asian Development Bank (ADB), Japan International Cooperation Agency (JICA) and Agence Française de Dévelopement (AFD) aim to rehabilitate the existing infrastructure, while Chinese, Kuwaiti and Korean private investment funds are planned to be the source for new infrastructure projects. However, unless systemic problems with farmers' understanding and uptake of dry season cropping, and operation and maintenance of communal systems are addressed, the expected gains in production from irrigation may not be realized.

Granting economic land concessions is considered among the most serious threats to forests, biodiversity, community displacements and civil unrest. Clear-felling of large swathes of forests is occurring, and there are also regular cases of illegal logging. Commercial agricultural concessions are classified under the 2001 Land Law as "land concessions for economic purposes" and are granted on up to 10,000-ha. blocks for up to 99 years in exchange for royalties. In early 2009, the Ministry of Agriculture, Fishery and Forestry (MAFF) reported that 65 economic land concessions totaling about 1.0 million ha. were granted for agro-industrial development and permanent tree mono-cropping of rubber plantations.[20]

Cambodia has two main agricultural products that can be exported to foreign markets: rice and rubber. These two products have a potential for higher value added if processing can be done locally before they are exported. Table 5 shows that out of the total volume of agriculture, fisheries and forestry exports, rubber garnered around 43.67 percent in 2000, which then rose to 72 percent in 2003 and 80.40 percent in 2008

[19] RGC Strategy for Agriculture and Water .
[20] www.twgaw.org.

(although there were a few years in between where the figure slightly dipped). Likewise,

Table 5: Exports of Key Agricultural Products

Value in US$ Million	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*
Agriculture, Fisheries and Forestry	**67.76**	**56.21**	**54.77**	**48.75**	**62.28**	**61.16**	**59.65**	**55.64**	**44.50**	**22.49**
Wood	32.56	22.31	15.96	10.15	11.08	10.26	8.60	8.71	3.38	0.86
Fish	5.35	6.00	4.31	2.84	10.57	9.96	5.06	3.20	2.29	1.33
Rubber	29.59	25.88	29.72	35.11	38.25	36.66	41.79	41.01	35.78	16.28
Rice	0.22	2.03	4.78	0.64	1.81	2.59	2.50	1.52	2.60	2.20
Other Agricultural Product	0.05	0.00	0.00	0.00	0.58	1.69	1.71	1.20	0.46	1.81
	48.05	39.69	29.13	20.83	17.78	16.77	14.42	15.65	7.59	3.84
Percentage										
Wood										
Fish	7.90	10.67	7.87	5.83	16.97	16.28	8.48	5.75	5.14	5.93
Rubber	43.67	46.03	54.27	72.02	61.42	59.95	70.05	73.72	80.40	72.41
Rice	0.32	3.60	8.72	1.32	2.90	4.24	4.18	2.73	5.84	9.77
Other Agricultural Product	0.07	0.00	0.00	0.00	0.93	2.76	2.87	2.16	1.03	8.05

Note: * Data in until May, 2009.

Source: General Department of Customs and Excise.

rice export has experienced an astonishing growth: From just 0.32 percent in 2000, it rose to nearly 10 percent in just the second quarter of 2009. The promotion of organic rice and development of irrigation systems alongside the government's agricultural policy played pivotal roles in the rapid increase. There were also more export-oriented rice milling investments in Cambodia that both the Cambodian government and international organizations had extended to rice millers.

2.2.4. Motorcycle

In 2008, Cambodia received a Japanese investment in the motorcycle business when the Yamaha Motor Co. was set up in Phnom Penh Capital. Here, Yamaha Motor Co. owns 70 percent of the share of the total investment; Toyota Tsusho Corp has 20 percent; and

a local trading company owns the remaining 10 percent. The manufacturing site covers more than 90,000 sq m of land and incurred about ¥1 billion to construct a new factory by July 2009. It is also expected to assemble 30,000 motorcycles in 2010. Yamaha projected that the size of Cambodia's motorcycles is around 130,000 units in 2007 and is expected to increase to 500,000 units by 2015[21] . The plant uses parts produced in Thailand.

In 2004, Cambodia imported around 144,000 motorcycles. Such number increased steadily to 561,600 in 2008 (Table 6) owing to a growing population and a remarkable economic development in the country. Since 1997, according to the CDC investment list, there are three Chinese-owned companies investing on the motorcycle assembly business but there has been no record of their production activities so far. Therefore, although this is considered a potential sector, the dearth of data makes it difficult to evaluate how the motorcycle business in Cambodia is performing in terms of the number of imports and domestic production.

Although the assembly process is labor intensive, it requires well trained people to perform the job. Cambodia lacks such vocational training centers that can provide skills and know-how to those who cannot attend higher education. In addition, the production operation demands stable electricity and good roads to transport raw materials and final products to and from the factory. There is therefore a need for such infrastructure if Cambodia is to promote the motorcycle industry.

Table 6: Units of Imported Motorcycles and Electronics into Cambodia

[21] September 1, 2008, Yamaha Motor Co., Ltd., Toyota Tsusho Corporation, Website: http://www.toyota-tsusho.com/data/current/detailobj-589-datafile.pdf.

Import (000 units)	2002	2003	2004	2005	2006	2007	2008
Motorcycle	144	144	192	247.92	378.72	408	561.6
Electronics	672	408	432	481.92	410.88	480	408

Source: General Department of Customs and Excise, 2009.

2.2.5. Electronics

Only few companies have so far invested in the electronics business in Cambodia. The companies KTC Cable (South Korea) and Cambodia Fiber Optic Communication Networks (China) both produce wires and cables for the Cambodian market. Table 6 shows that the nation has exported a large quantity of electronic equipment but the number has been dropping from 672,000 units in 2002 to 408,000 units in 2008, possibly because domestically produced electronics are substituting for the imports. However, no data on the local electronics assembly is published. Unlike motorcycles, it is hard to describe the electronics by units instead of by value in US dollars. Since the information on this sector is scarce, it is impossible to determine how many percent of electronics are imported and how many are produced locally.

This sector also has some potential but demands even higher-skilled workers, depending on the kind of products made. Very similar to other manufacturing sectors, the electronics sector needs to be very competitive and cost effective. Cambodia's currently high electricity and transportation costs will not make this industry successful; the products from China or Vietnam are cheaper because their efficiency is higher and other costs, including electricity, are lower than in Cambodia.

2.2.6. Industrial Corridor Development

The Royal Government of Cambodia plans to promote the development of three poles: Phnom Penh, Siem Reap, and Sihanoukville by launching "growth corridors" that are

designed to link different parts of the country to the industrial, investment, and agricultural development zones (Naron 2009). Growth-corridor plans have the development priority when it comes to receiving physical infrastructure such as

Table 7: Matrix of Economic Development Directions

Sub-Area	(2002 status) Short-term	(Up to 2008) Med to Long Term	(Up to 2015)
Greater Capital Area	-Garment and footwear (Labor intensive industries); -Supply of agriculture products to urban consumption.	-Development of agro-processing industry; -Airport based industry (high value added, labour intensive industry), electric appliance/transportation machinery assembly.	-Enlargement of agro-processing industry; -Development of import substitution industries; -Electric appliance/transportation machinery assembly and production; -Development of IT industry; -Logistics center.
Shihanouk-ville Area	-Garment and footwear (labour intensive industries); -Beverage production; -Marine products processing; -Improvement of port facility; -Beach resort for domestic visitors.	-Development of agro-fishery processing industry; -Port based industry (Garment; light manufacturing); -Enlargement of beverage; -Port-oriented industry (ship repair; boat building); -Coastal tourism for domestic visitors.	-Development of agro-fishery processing industry; - Development of import substitution industries; -Electric furnace semi-assembly/production -Enlargement of used machinery reuse and recycling; -Export of beverage Products; -Coastal tourism for local and international visitors.
Other Areas	-Cottage and handicraft industry; -Vegetable and fruit production; -Cattle farming; -Fishery.	-Enlargement of suburban agriculture for import substitution; -Modernization of cottage Industry; -Promotion of village tourism; -Agro-fishery processing.	-Further improvement of agro-fishery processing for export.

Source: JICA.

telecommunication, water supply, and electricity alongside social and legal infrastructure. As shown in Table 7, growth corridors present the present and future scenarios of economic development.

In terms of regional integration, Cambodia has joined five other countries[22] within the Greater Mekong region to create three economic corridors: the Southern, East-West and North-South Corridors. A southern corridor links Cambodia to Laos, Thailand, and Vietnam. According to Commerce Minister Cham Prasidh during forum in September 2009, Cambodia had gained little so far from the southern corridor. When compared with other nations with corridors, Cambodia is relatively slow in carrying out its plans. With financial and technical assistance from the ADB, the six Mekong countries have agreed to cooperate with each other in turning the three corridors into economic hubs as well as in improving transportation facilities, tourism, hydropower, and disease control until 2020. Arjun Goswami, former head of the ADB's regional cooperation and integration group, said that (1) the corridor development would benefit around 330 million people through job creation, commercial activities, investment and development; and (2) a more rapid improvement of the southern corridor would attract investment and increase exports from Cambodia.

Between 1992 and 2008, the ADB provided more than US$11 billion in loans to the six Mekong countries, with US$243 million going to Cambodia to improve the infrastructure in the southern corridor by connecting 21 provinces to six provinces each in Laos and Thailand, and four provinces in Vietnam. Bilateral trade has significantly increased between Cambodia and Vietnam, the ADB said, reflecting the fact that only the border area of Bavet has seen an increase in commerce and tourism. Meanwhile, the East-West and North-South Corridors have seen significant improvement in trade and investment, benefitting China, Laos, Thailand, and Vietnam more.

[22] The other five countries include Laos PDR, Thailand, Vietnam, Myanmar, and China.

Ros Silva, deputy secretary-general of the Ministry of Economy and Finance, said Cambodia faces challenges on how to reap benefits from the southern corridor, as this corridor is a newly-developed area with weak infrastructure in place. In the same vein, Paul Apthorp (TNT Express Worldwide) said that aside from weak infrastructure development, the southern corridor has the most number of disadvantages among the Mekong corridors, due in part to the unnecessary documentations required by customs and other government agencies. Nonetheless, he remained optimistic about the more efficient linkage between Cambodia and other countries in the region.

JETRO Director Mr. Masaaki Toma reports that one JETRO survey aimed to grasp the business needs and strategies of Japanese and non-Japanese companies in the Mekong subregion and to identify issues on investment and industrial development. As part of the plan to promote the subregion as a textile-and-garments industries corridor, there will be an appropriate division of labor among Thailand, Cambodia, and Vietnam. The survey found some benefits in turning to the cheaper and more convenient transport by sea rather than by roads from Thailand to Vietnam.

3. INFRASTRUCTURE DEVELOPMENT AND POLICY IN CAMBODIA

Compared to 134 countries in the world, Cambodia ranks poor in all indexes (Table 8). When compared to the ASEAN countries in the Institution index, Cambodia is ranked 103rd while Thailand and Vietnam are ranked 34th and 70th, respectively. In infrastructure, Cambodia takes the 97th spot while Thailand and Vietnam are in 29th and 93rd places, respectively. Cambodia is in the lowest rank (105) among the ASEAN

countries in terms of macroeconomic stability. However, labor market efficiency is better than Vietnam, Indonesia, and the Philippines. In terms of financial market sophistication and technological readiness, Cambodia is ranked 130th and 123rd, respectively.

Table 8: WEF Competitiveness Indicators, Country Rankings in ASEAN

	Brunei	Cambodia	Indonesia	Malaysia	Phil	Sing	Thailand	Vietnam
GCI 2008-2009	39	109	55	21	71	5	34	70
Institutions	41	103	68	30	105	1	57	71
Infrastructure	**39**	**97**	**86**	**23**	**92**	**4**	**29**	**93**
Macroeconomic stability	2	105	72	38	53	21	41	70
Health and primary education	47	111	87	23	90	16	58	84
Higher education and training	69	127	7 1	3 5	60	8	51	98
Goods market efficiency	91	88	37	23	81	1	46	70
Labor market efficiency	16	33	43	19	101	2	13	47
Financial market sophistication	75	130	57	16	78	2	49	80
Technological readiness	54	123	88	34	70	7	66	79
Market size	116	95	17	28	34	41	21	40
Business sophistication	89	110	39	22	57	14	46	84
Innovation	91	112	47	22	76	11	54	57

Note: Data for Lao PDR and Myanmar are not available and a total number of 134 were included.
Source: WEF Global Competitiveness Report 2008-2009.

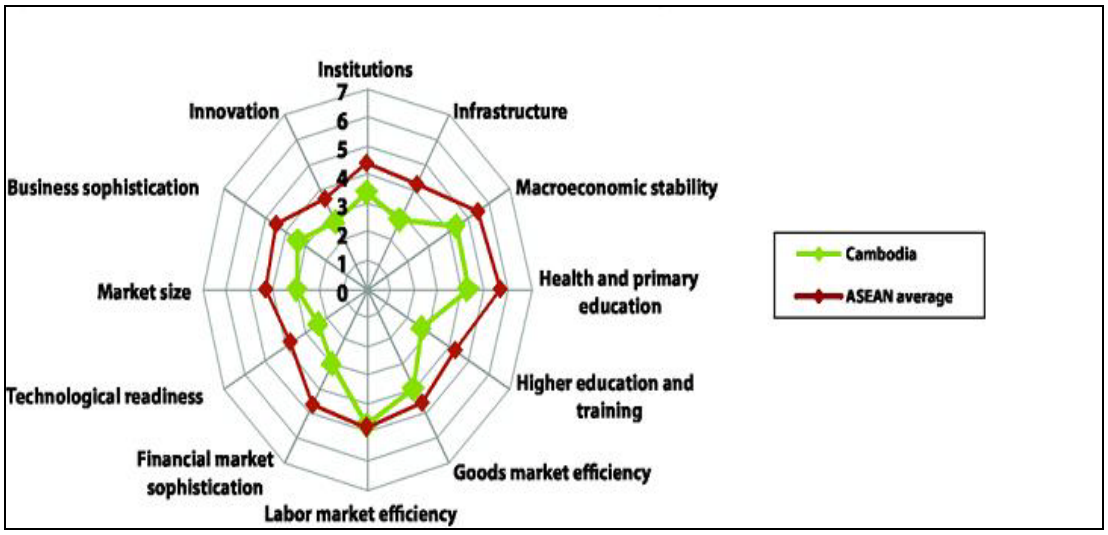
Compared with the ASEAN average (Figure 5), Cambodia has the lowest score *inter alia* in infrastructure, which means that it is still facing a great deal of infrastructure problems that may be deterring foreign investments and increasing cost of

products. Cambodia remains below the ASEAN average, making the country less attractive in the region.

3.1. Road Networks

Cambodia's one-digit and two-digit national roads (NRs) make up of just 5.3 percent and 7.9 percent, respectively, of the total lengths of roads, including a total of 1,217

Figure 5: WEF Competitiveness Scores, ASEAN Average and Cambodia



Source: WEF Global Competitiveness Report 2008-2009.

Table 9: Road and Bridge Network in Cambodia as of 2009

Road classification	Roads		Bridges		Management authority
	Length (km)	Percentage	Number	Meter	
1-digit national roads	2,117	5.30	589	17,643	
2-digit national roads	3,145.6	7.9	698	15,710	MPWT
Provincial roads	6,441	16.2	904	16,309	
Rural roads	28,000	70.5	n.a.	n.a.	MRD

Total length	39,703.60	100	2,121	51,917

Source: Ministry of Public Works and Transportation (MPWT) and Ministry of Rural Development (MRD).

bridges, 589 of which belong to one-digit NRs and 698 belong to two-digit NRs (Table 9). Rural roads comprise as much as 70.5 percent of the total length of roads, which means Cambodia needs to accelerate the improvement and construction of more roads and bridges to meet the increasing demand for transportation and safety.

Cambodia is also poised to get connected with its neighboring countries for cross-border trade and tourism. Although some construction undertakings are not completed yet, roads linking one province to another will facilitate both domestic and international transportations, thus lowering transport costs.

As briefly illustrated in Table 10, Cambodia has built road networks with its neighboring countries for the corridor development plan. There is now a call to invest in the rehabilitation of existing roads. For one, Cambodia has a low road density compared with its ASEAN counterparts (Figure 6)[23]. Cambodia is even ranked the lowest in terms of paved road density while both Vietnam and Thailand are in a much better position. This puts Cambodia in a competitive disadvantage in terms of business services and investment attraction.

Table 10: International Highway in Cambodia

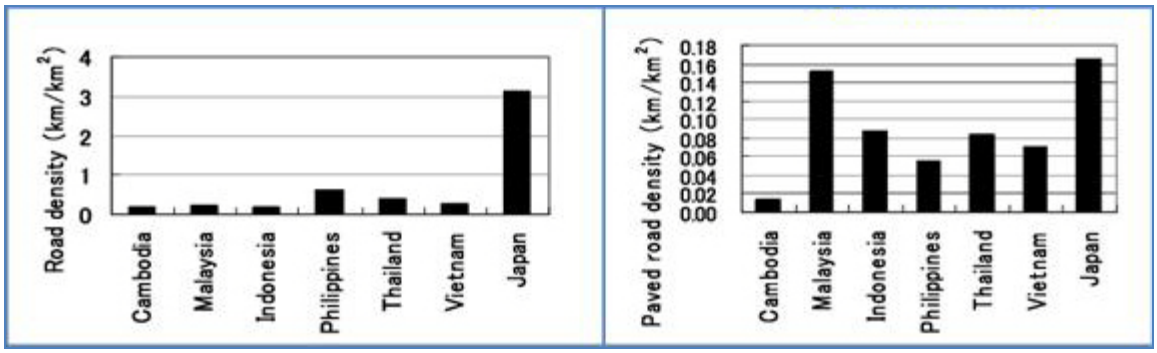
GMS Road No.	Asian Highway No.	ASEAN Highway No.	Cambodian Road No.	Route

[23] Calculation of road density index is shown in Table A3 of Appendix

R1 (Central sub-corridor)	AH1	AH1	NR1, NR5	Poipet-Sisophon-Phnom Penh - Svay Rieng-Bavet
R6 (Inter-corridor link)	AH11	AH11	NR4, NR6, NR7	Sihanoukville-Phnom Penh - Kampong Cham-Stung Treng - Trapengkreal
R10 (Southern coastal sub-corridor)	na	AH123	NR48, NR3, NR33	Cam Yeam-Koh Kong-Viel Rinh - Sre Ambel-Kampot-Lork
R9 (Northern sub-corridor)	na	na	PR2624, RB2661, NR78	Siem Reap-Preah Vihear-Stung Treng-Rattanakiri-O Yadav Border

Source: Ministry of Public Works and Transportation (MPWT).

Figure 6: International Comparison of Road Density and Paved road Density



Source: JICA.

At present, Cambodia's railway system and facilities are very obsolete and to a large extent, not utilized, making it unsafe and efficient to carry passengers and cargos by train. Table 11 shows that only a few lines and stations are being used. The Northern Line was constructed in 1929-1942 and the Southern Line in 1960-1979, but were destroyed in the civil war, making them less important and unsafe. Petroleum tanks are even transported by train but accidents happen quite often because of the railways' poor condition and the unreliable safety control system. Only seven out of the 49 stations in the Northern Line and just five out of 27 stations in the Southern Line are operating.

Table 11: Situation of Railway Facilities

	Northern Line (NL)	Southern Line (SL)
Length (km)	385 (including 48 km missing link)	264 km
Section	Phnom Penh – Pursat – Battambong – Mongkol Borey – Poipet	Phnom Pen h – Takeo – Kampot – Sihanoukville
Station (number)	49 (current operation 7)	27 (current operation 5)
Construction year	1929-1942	1960 – 1969

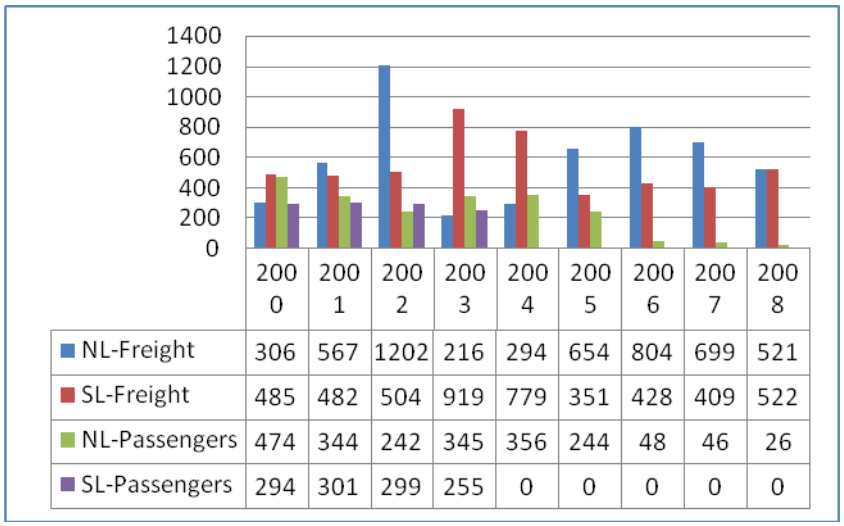
Source: Ministry of Public Works and Transportation (MPWT).

Figure 7 shows that while the number of the NL freight increased from 306 in 2000 to 1,202 in 2002, it drastically decline to 521 in 2008. The number of trains transporting passengers also dropped very significantly from 474 in 2000 to just 26 in 2008. It is therefore important for the government to consider directing investments into the railway business so as to reduce the transportation cost because cargos transported by train cost lesser than those by trucks. However, Cambodia's railway network is very old and unsafe.

3.2. Maritime and Ports

Among the ports in Cambodia, only Sihanoukville Port and Phnom Penh Port handle international containers. Although the two are administratively controlled by the central government, they are financially independent, autonomously-managed ports (Table 12). Sihanoukville Port was constructed in 1961 with French assistance and later aided by

Figure 7: Number of Trains Operated Per Year



	2000	2001	2002	2003	2004	2005	2006	2007	2008
NL-Freight	306	567	1202	216	294	654	804	699	521
SL-Freight	485	482	504	919	779	351	428	409	522
NL-Passengers	474	344	242	345	356	244	48	46	26
SL-Passengers	294	301	299	255	0	0	0	0	0

Source: Royal Railway of Cambodia.

Table 12: Status of Facilities at Sihanoukvilles Port and Phnom Penh Port

Port name	Channel	Berth					Other facilities & Remarks
	South Channel	Name	Structure	length	Depth	Year	
	Length 5.5 km	No. 1-2	Jetty	290m	9m	1960	**Warehouses**
	Length 5.5 km Depth: 8.4 m	No. 3-4	Jetty	290m	9m	1960	5 buildings, 36,600m^2
	Width: 80-100 m	No. 5-7	-	350m	9m	2007	Container yard
Sihanoukville port		No. 8-9	-	400m	10m	2007	3 yeards, 110,000m2
	North Channel		Private facilities				-
	Length 1km Depth: 10m	Sokimex	Jetty	200m	9.2m	-	
	Width: 150-200m	-	Pontoon	110m	6.5m	-	
		-	Stone Wharf	53m	4.2m	-	
	Maintenance dredging (at Chaktomok)	Port No. 1					**Container yard**
		No. 1	Jetty, apron width 20m	Total 300m		-	2 yards for laden containers,
	Depth: 7m	No. 2				-	1 yard for empty containers
	Width: 60m	No. 3				-	
	Length: 1,290m Volume: 159,648m3		Port No. 2 (for passengers)				1 km downstream from Port No. 1
Phnom Penh port		No. 5b	Pontoon	-		-	
		No. 5c	Pontoon	-		-	
			Private facilities				Between 4 and 13 km upstream from Phnom Penh
		-	8 facilities for oil bergs	Ship size from 600-1,000DWT		-	

Source: JICA, 2007 and PAS.

the Japanese government to complete the development of a 400m-long and 10m-deep container terminal along the quay.

The Phnom Penh Port, which has a 300m-long pier, is also capable of handling containers. There are other small ports such as Sre Ambel Port and Kampot Port, too and the privately-owned Keo Phos Port and petroleum jetty in Sihanoukville.

In terms of the use of ports, Sihanoukville Port has handled approximately 1.6 million tons of cargos while Phnom Penh Port has handled 740,000 tons of cargos. Both have improved their capacity to handle containers: Around 700 vessels were accommodated by Sihanoukville Port in 2005 and 1,070 vessels (mostly small barges) by Phnom Penh Port. In 2008, 377,000 tons of cargos for export and 1,680,000 tons of cargos for import were handled by Sihanoukville Port, while 86,000 tons of cargos for export and 1,154,000 tons for import were accommodated by Phnom Penh Port.

3.3. Airports

Although there are 11 air terminals in Cambodia, only two--- Phnom Penh International Airport and Siem Reap International Airport---regularly operate. The Societe Concessionaire de l' Aeroport (SCA) began to carry out the operational management of Phnom Penh, Siem Reap and Sihanoukvile Airports in 1995, 2001, and 2006, respectively, on a build-operate-transfer (BOT) scheme between the company and the Royal Government of Cambodia (Table 13). In addition, other domestic airports, except the Kampong Chhnang Airport, are managed by the State Secretariat of Civil Aviation (SSCA). At the Phnom Penh International Airport, the number of both national and international airplane passengers increased as the number of tourists reached 1.7

million, of which 1.53 million are international flight passengers. At the Siem Reap International Airport, on the other hand, the number totaled around 1.5 million in 2008 (a drop from 1.7 million in 2007).

3.4. Telephone and Internet

The Cambodian Communications Authority (CCA), which will act as a national regulator, is to be formed to regulate the communications services, and construction and operation of communication networks (Naron, 2009). Cambodia's telecommunication

Table 13: Present Status of Airports in Cambodia

Airport	Runway (m) Surface/Ref. Code	ILS	Area (ha.)	Owner/Operator	Status
International Airport					
Phnom Penh	3,000x45/Asphalt/4D	*	387	RGC/SCA	Open
Siem Reap	2,550x45/Asphalt/4C	*	197	RGC/SCA	Open
Domestic Airport					
Sihanoukville	2,500x34/Asphalt/4C		123.84	RGC/SCA	Open
Kampong Chhnang	2,400x45/Concrete/4C		2011	RGC/Air Forces	Close
Battambong	1,600x34/Bitumen/3C		128.68	RGC/SSCA	Open
Stung Treng	1,300x20/Bitumen/3C		112.5	RGC/SSCA	Open
Rattanakiri	1,300x30/Laterite/3C		48.09	RGC/SSCA	Open
Koh Kong	1,300x30/Laterite/3C		125.66	RGC/SSCA	Open
Mondulkiri	1,500x30/Laterite/3C		36	RGC/SSCA	Close
Preah Vihear	1,400x30/Laterite/3C		150.98	RGC	Close
Kratie	1,180x30/Laterite/3C		112.5	RGC	Close

Note: RGC = Royal Government of Cambodia, SCA: Societe Concessionaire de l'Aeroport, SSCA: State Secretariat of Civil Aviation.

Source: State Secretariat of Civil Aviation.

sector is composed of three main operators (fixed phone, mobile phone and internet), all of which have seen remarkable development so far. Table 14 indicates that among the three fixed line operators, Telecom Cambodia is 100 percent owned by the government.

The number of landline telephone is still on the rise but at the slow rate. Figure 8 shows the increasing competition from the mobile telephony has pushed the landline telephone service to a competitive disadvantage, slowing to 15 percent in 2000. Between 2000 and 2007, the growth averaged at only 7.6 percent because in 2007 it plummeted to just 1 percent---a dramatic decline due to the development of VOIP telephony. In 2008, landline telephony in Cambodia accounted for 35,415 landline telephones or 2.4 landline phones per 100 inhabitants. In contrast, the number in

Table 14: Cambodian Telecom Service Operators as of May 2008

Category	Operators	Name of Operators	officially Started	Ownership
		Telecom Cambodia	2006*	100% state-owned
Fixed lines	3	Camintel	1993	MPTC (51%) & 49% A-Z company (Cambodia)
		Camshin	1993	100% Shin Corporation (Thailand)
		CamGSM (Mobitel)[24]	April 1996	38.5% Cambodia & 61.5% Sweden
		Casacom (Hello)	1992	100% Telekom Malaysia
Mobile service	8	Camshin (M-Fone)	1998	100% Shin Corporation (Thailand)
		Applifone (Starcell)	October 2007	Teamed up with Ericsson for solar powered-base station in Cambodia
		CADCOMMS (qb)	2007	
		GT-Tell-Cambodia (Excell)		
		Letelz (Smart Mobile)		100% owned by Timeturns Holdings (Russian Parent Company)
		Viettel (Metfone)	2009	
		Camnet (TC)	May 1997	100% state-owned
		Camintel	1999	MPTC (51%) & 49% A-Z company (Cambodia)

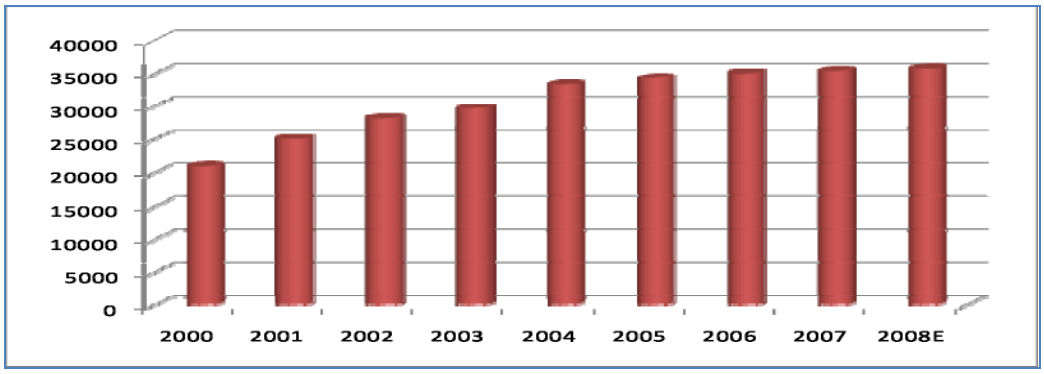
[24] CamGSM was licensed in April 1996 as a joint venture between MPTC (25 percent) and Royal Milicom (75 percent). In July 1999, MPTC shares were transferred to Royal Milicom. The current owners are Royal Group of Cambodia (38.5 percent) and Milicom Group (61.5 percent).

		Cambodia Broadband Technology		
Internet		Camshin	2002	100% Shin Corporation (Thailand)
	12	City link		
		Angkor Net	2005	MediaRing (Singapore) & Anana Computer (Cambodia)
		Online (Cogetel)	June 1997	
		Telesurf (CamGSM)	2001	38.5% Cambodia & 61.5% Sweden
		Wicam	2005	
		Wireless IP	2006	
		Genusys Cambodia		
		PPCTV	2005	

Note: *Under MPTC supervision during 1993–2005, became a public enterprise as Telecom Cambodia in 2006.

Source: MPTC 2008.

Figure 8: Number of Subscriptions in Fixed Telephony Service



Source: Telecom Cambodia, 2009.

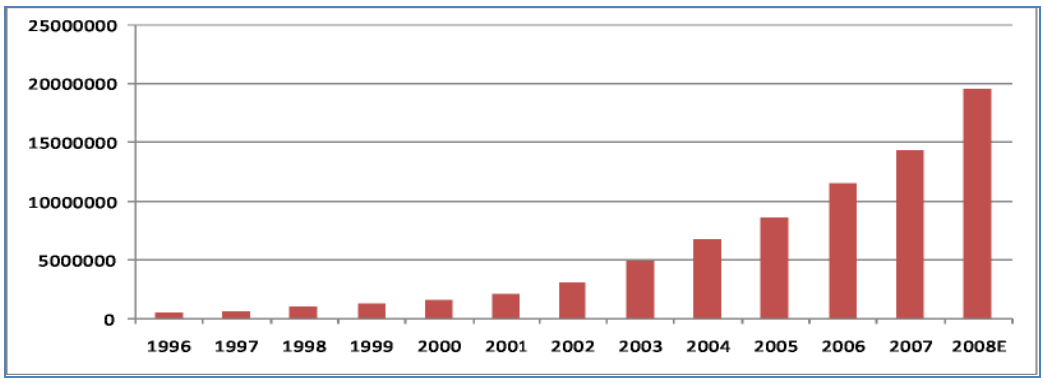
Thailand reached up to nearly 13 landlines per 100 inhabitants.

According to the Ministry of Post and Telecommunication, there are eight mobile phone operators, of which CamGSM (Mobitel) dominates with 59 percent of the market share, followed by Camshin (24%) and Telekom Malaysia (15%). Viettel[25] (Metphone)

[25] Viettel is owned by the Vietnamese Ministry of Defense.

started its presence in Cambodia in 2008 and attracted a significant number of subscribers (around 500,000 in 2009) due to its broad service coverage and competitive call rate.

Figure 9: Mobile Phone Uses in Cambodia



Source: MPTC, 2009.

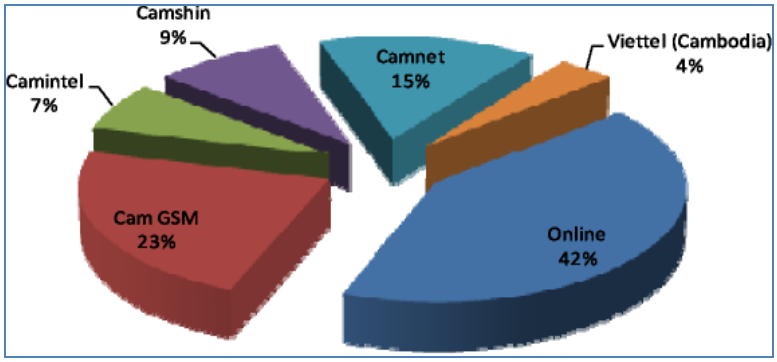
The rapid surge in mobile telephone consumption in Cambodia has been significant (Figure 9), surpassing 1 million users or 80 portable telephones per 100 persons compared to only 30.6 mobile phones per 100 persons in Thailand. The inconvenience and high call rate between different mobile phone companies prompted many Cambodian consumers to carry more than one mobile phone or using different numbers under different companies.

Internet service started in 1997 in Cambodia, with three internet pioneers: Bigpond (Online), Camnet and Telesurf at the outset. Internet charges were very high at around US$8.50 per hour in 1997, which might have been the result of insufficient and poor network infrastructure. In 1998, with grant aid from the German government, an optical fiber network was installed connecting Poipet (Thai border) in the north-west

and Bavet (Vietnamese border) in the south-east, passing through Phnom Penh and six provinces.

The MPTC funded another network connecting Siem Reap and Banteay Meanchey. At present, there are other projects under way: (1) installation of an "information superhighway" in the Greater Mekong Subregion through the support of the Japan Bank for International Cooperation (JBIC; (2) an optical fiber installation

Figure 10: Market Share of Internet Services in Cambodia



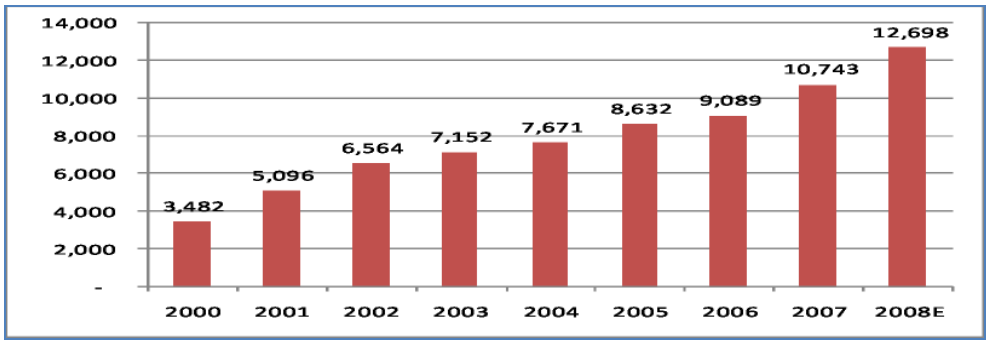
Source: Telecom Cambodia.

connecting Siem Reap to the south by Viettel; and (3) another optical fiber installation in Phnom Penh by the Chinese company CFOC (*Phnom Penh Post*, 2–16 May 2008, p. 5).

As shown in Figure 10, ONLINE maintains 42 percent of the internet service market, followed by CambGSM (23 percent), Camnet (15 percent), Camshin (9 percent), Camintel (7 percent) and Viettel (4 percent). Despite the current improvement in the network infrastructure and substantial increase in the number (12 in all) of internet service providers, internet service charges, although declining gradually during

the last decade, remain high.[26] In 2008, the total number of internet subscribers was 12,698 but increased to 15,950 in 2009, 7,500 of which were dial-up service subscribers and 8,450 were broadband subscribers. Figure 11 shows an upward trend in the number of subscribers from 2000 to 2008. Such can be attributed to the increasing number of

Figure 11: Internet Users in Cambodia



Source: Telecom Cambodia.

players that drive down the price and the changed attitude of Cambodian consumers due to globalization. Table 15 describes the features of Cambodia's telecommunication industry from 1999 to 2007.

4. COMPARATIVE ANALYSIS OF OVERALL INFRASTRUCTURE BETWEEN CAMBODIA AND ITS NEIGHBOURING COUNTRIES

[26] Currently, AT&T, a giant US telecom, offers unlimited downloads at a speed of 3 MBPS for US$30 per month, yet Wicam's plan for providing 2 MBPS in Cambodia costs US$7,000 per month. However, since 2005, 1 MBPS from Camnet has declined from US$6,000 per month to US$2,000 (*Cambodia Daily*, 21 February 2008, p. 21).

The Asian Productivity Organization (APO) collects basic labor productivity statistics for a number of Asian countries. Table 16 presents productivity indicators for Cambodia and other ASEAN countries where data are available. Unfortunately, data for Laos PDR, Myanmar, and Brunei could not be obtained. From 2001 to 2005, Cambodia experienced the slowest increase rate in labor productivity compared to all other ASEAN countries. This finding suggests that value-added per worker in Cambodia is

Table 15: Performance Indicators of Telecoms Industry during Last Decade

Service	1999	2001	2003	2004	2005	2006	2007
Wireline connections	19,918	25,784	28,310	33,095	34,754	29,146	32,104
WLL connections	7786	7710	8884	6344	6350	5618	5421
Total fixed line	27,704	33,494	37,194	39,439	41,104	34,764	37,525
Population* (million)	12.40	12.80	13.03	13.05	13.08	14.10	14.40
Fixed line penetration per 100	0.22	0.26	0.29	0.30	0.31	0.25	0.26
Public payphones	308	312	463	443	439	445	456
Cellular mobile subscribers	89,117	223,458	489,504	659,084	840,916	1,151,617	1,400,314
Total telephones	116,821	256,952	526,698	698,523	882,020	1,186,381	1,437,839
Total teledensity per 100	0.94	2.01	4.04	5.35	6.74	8.41	9.98
Internet subscribers	2258	5096	7152	7671	8632	9089	11,779
Internet penetration per 100	0.018	0.040	0.055	0.059	0.066	0.064	0.082
Investment approvals (US$million)	19.3	0	9.9	0	0	0	471.2
Total employment	731	662	593	553	541	-	-
Telephone lines per employee	27	39	48	60	64	-	-

Source: MPTC 2008, NIS 2006 and CDC 2008.

Table 16: Labor Productivity by Manufacturing Industry, Index 2000 = 1.0

Country	2001	2002	2003	2004	2005
Indonesia	0.995	1.046	1.160	1.282	1.274
Malaysia	0.927	1.009	1.063	1.229	1.316
Philippines	0.993	1.041	1.017	1.078	1.130
Singapore	0.959	1.062	1.101	1.260	1.059
Thailand	0.957	1.000	1.055	1.124	1.139
Vietnam	1.018	1.053	1.085	1.120	1.189
Cambodia	0.901	0.949	0.974	1.045	1.045

Source: Asian Productivity Organization (2008).

relatively low. Low productivity leads to low efficiency and high cost per unit that will, in turn, make Cambodia's products less competitive in the world market.

In terms of the ease of doing business, the World Bank reports that Cambodia has improved its rank by 15 places in just one year---between the 2007-2008 and 2008-2009 rankings---as a result of credit reforms that allowed it to outperform the Philippines and Lao PDR.

4.1. Electricity

Cambodia established an electricity regulator and passed the Electricity Law in 2001. However, there is still no national grid, and most towns are supplied through isolated systems. A mere 10 percent of the population, mostly in Phnom Penh, consumes 90 percent of the electricity.

Although the average tariff is around US$0.16 cents/kWh, the tariffs of rural electricity enterprises (REE) range from US$0.30/kWh and US$0.90/kWh, making electricity consumption unaffordable to a large number of the population. Only 6 percent of rural households have access to electricity, and half of those use individual power generating units. However, the Cambodian government has announced plans to increase rural electricity coverage from the current 10 percent to 70 percent by 2030 as shown in

Table A3 of Appendix. Table 17 summarizes the ranking of Cambodia's soft and hard infrastructure by comparing it with the ASEAN. Cambodia's infrastructure is ranked the lowest due to the poor railroads, electricity, and phone line infrastructure.

Table 17: Comparison of Cambodia's Infrastructure with ASEAN

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Infrastructure	39	97	86	23	92	4	29	93
Quality of overall infrastructure	39	82	96	19	94	2	35	97
Quality of roads	28	80	105	17	94	3	32	102
Quality of railroad infrastructure	na	97	58	17	85	10	48	66
Quality of port infrastructure	35	91	104	16	100	1	48	112
Quality of air transport infrastructure	38	87	75	20	89	1	28	92
Quality of electricity supply	45	117	92	31	82	13	43	104
Phone lines	61	132	100	71	105	30	86	37

Source: EDE and ODI.

4.2. Special Economic Zone (SEZ) in Cambodia and its Activities to Date

Until presently, the SEZ Committee has approved 21 investment projects for the development of SEZ, 14 projects of which are created by a sub-decree (Table 18). Some of the SEZ companies that are still under construction have already accommodated a few manufacturing firms. Others are still filling the land surface and building roads, electricity, and water systems. Although the government has encouraged investors to operate in these zones, only a small number of manufacturing companies have invested,

possibly because the rest cannot gain any advantages in doing so. However, when good infrastructure and further government support are available, there is hope that there will be more firms setting up in these investment zones.

Table 18: Approved investment projects of SEP development

No.	Name of company	Date of approval	Investors	Status
1	Stung Hav SEZ	12-Feb-05	Lim Chiv Hour	Not active
2	Phnom Penh SEZ	20-Feb-06	Lim Chiv Hour	Active
3	Doung Chiv Phnom Den SEZ	20-Feb-06	Doung Chiv	Under construction
4	Kam Pot SEZ	23-May-06	Vinh Ho	Under construction
5	Poi Pet "Oroneang" SEZ	1-Jun-06	Van Ny	Under construction
6	Manhattan SEZ (Svay Rieng Province)	29-Nov-06	Clement Yang	Active
7	Sihanoukville I SEZ	25-Oct-06	Lav Meng Khin	Active
8	Tay Seng Bavit SEZ	4-Apr-07	Lee Hong Sin	Active
9	Goldfame Pakson ESZ	4-Apr-07	Jiang Jikvong	Active
10	Sihanoukville II SEZ	27-Jun-07	Lav Meng Khin	Active
11	Thary Kampong Cham SEZ	16-Jul-07	Chhorn Thary	Active
12	Neang Kok Koh Kong SEZ	26-Oct-07	Ly Yong Phat	Under construction
13	Kirisakor Koh Kong SEZ	25-Dec-07	Ly Yong Phat	Under construction
14	Sihanoukville Port SEZ	8-Feb-08	Lou Kim Chhun	Under construction

Source: Council for the Development of Cambodia (CDC).

5. ANALYSIS OF RESULT FROM FIELD SURVEY

To further identify the factors that can attract FDI and determine how to upgrade and identity Cambodian industries, field interviews were conducted with 26 respondents, of which three are policymakers, and 14 are in the garment factories, three in footwear

factories, one in motor vehicle industry, one in plastics manufacturing, two in metal processing, one in electronics, and one in agro-industry. Majority of the ownership is from Hong Kong (10), followed by Taiwan (6), Korea (2), the United States (2) and rest of the world (1). None of the firm is located in industrial estates, special economic zones or export processing zones. Most foreign-owned firms have either headquarters, branches, parent companies, or subsidiaries in one to five countries, mainly in Asia.

Table 19 shows that majority of the firms surveyed belonged to the garments sector, a core industry for Cambodia's manufacturing and export sector. Cambodia has a very narrow base for economic growth as investment in the manufacturing sector is still unable to attract foreign investors due to poor physical infrastructure coupled with insufficient yet costly energy as compared to that of Cambodia's neighbors. Interestingly, the maximum number of workers in the garments factory in this survey reached 6,000, which means that the garments sector absorbs a large pool of the workforce. Sales revenues of garments firms range from US$500,000 up to US$100 million, implying that the garment industry has become the backbone of Cambodia's export sector. Since there is only one firm interviewed in some sectors, the mean calculated in the above table is just equal to the corresponding indicators. As shown in Table 20, firms in garments, footwear, and automotive sectors have all products for export while firms in other sectors supply more for the domestic market. Only 20 firms

Table 19: Firm's Annual Sales, Assets and Number of Worker

No.	Sector	Sample	Annual Sales (Means)	Assets (Means)	Main Business Activities	Worker (Means)
1	Electronics	1	10,000,000	17,000,000	Assembler/Manufacturer	200.00
2	Automotive	1	n.a.	n.a.	Assembler/Manufacturer	80.00

3	Plastic processing	1	4,000,000	2,500,000	Part/Component supplier	120.00
4	Metal-processing	1	n.a.	n.a.	Assembler/Manufacturer	150.00
5	Footwear	3	4,450,000	n.a.	Assembler/Manufacturer	2,705.33
6	Agro-industry	1	500,000	n.a.	Assembler/Manufacturer	400.00
7	Garment/knitting	14	16,045,455	3,000,000	Assembler/Manufacturer	2,296.43
8	Cements	1	9,500,000	100,000,000	Assembler/Manufacturer	1,000.00
	Total	**23**	**12317647**	**18785714**		**1835.48**

Note: Mean annual sales is calculated for each sector by dividing the total number of sales of all firms in the same sector by the total number of firms in that sector.

Source: Field survey by MCA, 2009.

Table 20: Mean of Export Ratio by Sector

No.	Sector	Observation (20)	Export ratio
1	Electronics	na	na
2	Automotive	1	100
3	Plastic processing	na	na
4	Metal-processing	1	25
5	Footwear	3	100
6	Agro-industry	na	na
7	Garment and knitting	14	100
8	Cements	1	0

Source: Field survey by MCA, 2009.

reported their export ratio. For the agro-industry sector, it is estimated that many agro-business-related firms engage in exports, particularly of primary products such as timber, rubber, and cassava.

Unfortunately, many of the sampled firms could not complete the cost structure part of the survey because some were unaware of the cost breakdown while others found it difficult to calculate such. This leads to a discrepancy among observations in all indicators as shown in Table 21. It is important to note that companies in different industries have different cost structures: Some may be more labor-intensive while others may be more capital-intensive. Nonetheless, since the total sample size of 23 firms is

very small as compared to the total population in the manufacturing sector, which is mostly labor-intensive, the average cost of inputs of all firms that have responded to the survey should be used to explain the percentage share of cost accrued by each input. That is, on average, 11 firms responded that 22 percent of input cost goes to labor, nearly 48 percent goes to imported parts and raw materials (for 10 firms), 10.5 percent

Table 21: Cost Structure Mean by Number of Observation

Variable	Observation	Mean	SD*	Min	Max
Labor force	11	21.82	14.01	5	50
Imported parts, components & raw materials	10	47.95	13.39	30	70
Parts, components & raw materials procured from domestic market	6	10.5	10.46	3	30
Transportation	10	8.3	5.48	3	20
Electricity	11	9.23	5.85	1	20
Other energies	5	1.9	0.89	0.5	3
Depreciation on machinery	8	4.87	0.35	4	5
Other elements	10	8.75	6.10	2	23

Note: *SD = Standard Deviation is the squared distance (gap) of all observations from the means.
Source: Field survey by MCA, 2009.

to domestic parts and raw materials (6 firms), and 12 percent to electricity and other energy. This indicates that the high cost of electricity can push the price up, thus making products less competitive. The cost of transportation, which takes as much as 10 percent of the total costs, is also high. It actually makes sense to put the cost of customs clearance into the cost structure because many companies complain about the large amount of money shelled out to import and export goods.

Cambodia can improve the state of its energy sector by encouraging investment in energy-related industries such as hydro dam and imported power from Vietnam,

Thailand, and Laos. As mentioned in the government's Rectangular Strategy Phase I and II, the Royal Government of Cambodia has been granting licenses to foreign firms, especially Chinese state-owned firms, to invest in the hydro-energy sector in Kam Chay, Atai and in other parts of the country so that energy will be available at a cheaper rate.

Firms surveyed also talked about the distance of their factories to major ports in Cambodia, including Sihanoukville Port and Phnom Penh Port (Table 22). Since firms are locating in Phnom, Kandal, and Sihanoukville, the average distance to Sihanoukville and Phnom Penh ports are between 10 km to 260 km (an average of 193 km) and 15 km to 240 km (an average of 84 km), respectively. The average time needed to reach Sihanoukville and Phnom Penh ports are 4.26 hours and 2.38 hours, respectively. However, due to limited infrastructure such as roads, bridges, water, and electricity networks, most companies in Cambodia have to locate in Phnom Penh, where they find it more convenient to operate their business. Additionally, the average lead time for firms to deliver their goods to customers is around 48 days, while it takes around 32 days for firms to receive deliveries for imported materials. In terms of the frequency of delivery, 84.21 percent of the firms said that they deliver goods once a week via Sihanoukville Port. For firms that use Phnom Penh Port, around 75 percent said that goods are delivered once every two or three weeks. This further confirms that Sihanoukville Port is being used to import raw materials and ship final goods, especially

Table 22: Distance and Time to Major Ports and Lead Time for Delivery

	To Sihanoukville Port		To Phnom Penh Port		Lead time for delivering goods	Lead time for receiving goods
Observation	18	18	8	8	20	20

	Distance (km)	hours	Distance (km)	hours	days	days
Mean	193.33	4.26	84.38	2.38	48.15	31.975
SD	85.75	1.80	97.56	1.98	32.09	9.95
Min	10.00	0.50	15.00	1.00	1	7
Max	260.00	6.00	240.00	6.00	117.5	60

Source: Field survey by MCA, 2009.

garments and footwear products to foreign markets such as the United States, the European nations, and Japan.

Table 23 reveals that firms need to take around five days and a half to pass one container through export customs clearance and shell out an average of nearly US$440 per container. Similarly, with regard to the import customs clearance process, it takes nearly seven days and costs around nearly US$500 on average per container. The time and cost combined put Cambodia into a competitive disadvantage, which might send negative signals to potential investors. On top of that, the bureaucratic red tape plays a key role in delaying import and export processes because Cambodia is still allowing various government institutions' functions to overlap. For example, to import a container of merchandise, inspections must be jointly done by the customs office (MEF), CAMCONTROL (MOC), and other government agencies, thus adding more costs to transactions and making the process time longer than necessary. It is reported that inspections are done frequently and firms are required to pay quite a sum of money to inspecting officials. Therefore, a single-window policy is very much needed if Cambodia is to facilitate business and trade transactions.

In the energy sector, 14 out of 17 firms interviewed said that power failure

Table 23: Time and Cost for Import and Export Customs Clearance

	Observation	**Mean**	**SD**	**Min**	**Max**

Export	Time (hours)	17	5.47	2.48	1	8
	Payment (US$)	15	437.33	205.44	180	700
Import	Time (hours)	18	6.89	4.00	1	16
	Payment (US$)	17	487.94	251.96	180	900

Source: Field survey by MCA, 2009.

Table 24: Black-Out Frequency and Length of Power Cut

Black-out Frequency	Frequency	Percent
Several times in a day	1	5.88
Once or a few times in a week	na	na
Once or a few times in a month	14	82.35
Once or a few times in six months	1	5.88
Have not experienced in a year	na	na
Own generator	1	5.88
Total observation	17	100

Length of period in case of the longest	Frequency	Percent
Less than a few seconds	na	na
A few seconds – one minute	na	na
One minute – five minutes	3	17.65
Five minutes – thirty minutes	3	17.65
Longer than thirty minutes	11	64.71
Total observation	17	100

Source: Field survey by MCA, 2009.

happens once or a few times in a month, while 11 firms stated that the power cuts take longer than thirty minutes (Table 24). Indeed, most of manufacturing firms had to install their own power generators so as to avoid delays in production and delivery.

A worker receives an average salary of around US$73 per month while middle-managers and engineers can get on average around US$265 and US$762 per month,

respectively. Ergo, the least educated workers performing unskilled jobs get a very low pay as compared to those performing skilled and managerial jobs.

The average turnover rate in 2008 was 13.67 percent with one firm reporting up to 50 percent of job leavers. This was a common phenomenon in late 2008, when the global financial crisis led to a lower demand for garment products. This spiral effect has

Table 25: Average Wage of Employees by Group

Wage	Observation	Mean	SD	Min	Max
Worker	23	73.37	29.94	45	180
Middle manager	22	265.23	155.19	70	700
Engineer	15	762.00	562.54	100	2000
Turnover rate	17	13.67	13.47	2	50

Source: Field survey by MCA, 2009.

so far resulted in 30,000 to 40,000 job losses in Cambodia's garments industry and increased the burden on rural households that were dependent on remittances from members working in the garments industry. Table 26 shows that only 2 percent of workers have a college or university education while up to 56.58 percent finished only

Table 26: Education of Employees by Group

Worker	Observation	Mean	SD	Min	Max
a	13	14.62	17.38	5	70
b	19	56.58	23.46	10	80
c	21	29.24	21.10	5	84
d	15	11.73	16.17	1	60
e	3	53.33	32.15	30	90
f	2	30.00	28.28	10	50

Middle manager					
c	7	25	29.86	5	90
d	19	36.31	27.73	10	90
f	18	66.83	30.15	10	100
Engineer					
e	17	96.47	14.55	40	100
f	2	80	28.28	60	100

Note: a. No formal schooling, b. Elementary school, c. Middle high school, d. High school, e. Vocational school, f. College/university, g. Graduate school

Source: Field survey by MCA, 2009

their elementary education. In some cases, as much as 70 percent of workers have no formal schooling and 80 percent only have elementary schooling. Children in rural villages generally cannot pursue their schooling because their families are too poor to afford the tuition fees. Such children even have to drop out of school to help their parents work in the agricultural sector.

In contrast, around 67 percent of middle managers have a college or university education while 96.5 percent of engineers have completed their degree and 80 percent have proceeded to graduate school. The level of education therefore correlates with the level of salary earned by each group of employees.

5.1. Needs and Demand for Improvements of Soft and Hard Infrastructure in Cambodia

Companies in the sample were asked to enumerate their understanding of what are needed so as to improve the country's soft and hard infrastructure by ranking these requirements in order of importance (ranking of 1 to 5). Table 27 shows that among the 23 firms, more than 69 percent listed investment climate (B) as the factor of primary importance (column 1), while 26 percent chose labor improvement as their top answer.

For the second need (column 2), more than 56 percent would want labor issues

improved, followed by investment climate (21.74 percent). In column 3, which indicates the third most important need, 50 percent of the respondents demanded that transport and logistics be improved, followed by electricity (nearly 32%). This demand reappears in column 4, where up to 45 percent of interviewees suggested that the transport and logistics be developed, followed by demand for improving electricity (35 percent). For the last important demand (column 5), around 73 percent of firms feel that

Table 27: List of Demand to Improve Soft and Hard Infrastructure in Cambodia

	1		**2**		**3**		**4**		**5**	
Needs	Fr	%	Fr	%	Fr	%	Fr	%	Fr	**%**
A	6	26.09	13	56.52	2	9.09	1	5	na	na
B	16	69.57	5	21.74	na	na	1	5	na	na
C	na	na	na	na	11	50	9	45	1	6.67
D	na	na	1	4.35	2	9.09	2	10	11	73.33
E	1	4.35	4	17.39	7	31.82	7	35	3	20
Total	**23**	**100**	**23**	**100**	**22**	**100**	**20**	**100**	**15**	**100**

Note: A: Labor Issue; B: Investment Climate; C: Transport and logistics; D: Telecommunication; E: Electricity; Fr: Frequency and order of importance ranges from 1 to 5.

Source: Field survey by MCA, 2009,

Table 28: Needs and Demands to Improve Soft and Hard Infrastructures

Labor issue
1. Although employee-employer relation is good, law enforcement against illegal strikes is needed
2. Create more vocational training schools due to lack of skilled workers
Investment climate
1.More attractive business climate
2. Facilitate more in terms of documentation process
3. More favorable law and continued public-private forum initiative
4. Provide incentive such as tax holiday and other government support
5. Improve SEZ to promote export
6. Reduce corruption by customs officers at port and harbor for import-export process
8. Keep current social stability and improve macro-economic stability
Transport and logistics

1. Decrease cost of logistics
2. Improve infrastructure condition
3.Take shorter time for document process
4. Improve road infrastructure
Telecommunication
1. Further improve speed of internet connection
2. Cheaper and more reliable
Electricity
1. More available (less frequent black-out) and stable
2. Cheaper and more accessible

Source: Field survey by MCA, 2009.

telecommunication improvement is important, followed by electricity (20 percent).

To further elaborate on each of these requirements, Table 28 summarizes some key suggestions from the companies. Although there are some limitations in this research, the results are very indicative and consistent with the current situation in Cambodia: These shed more light on the existing factors that impede the flow of investment.

5.2. Consultation with the Government Ministries as Policy Makers

This study's research team met with the senior and technical government officials from the Ministry of Commerce, Ministry of Economy and Finance, and the Council for the Development of Cambodia, the interview results of which are reported in Table 29 below.

Government officials did raise very compelling points concerning the strategies to attract investment and the factors that hinder more diversified industries in CLMV countries.

The research team conducted a routing survey in terms of cost, time, mode, and distance required from Phnom Penh, Cambodia, to destinations in other parts of the ASEAN region. Table 30 summarizes the results of the interviews with seven freight

forwarders, including Hecny Transportation (Cambodia) Limited, RCL (Regional Container Lines), Unique Logistics Int'l (Cambodia) Co., Ltd., Macoline-ITI (Cambodia) Ltd, Expeditors Cambodia Ltd., TNT Express Worldwide (Cambodia) Ltd, and DHL Express Cambodia Ltd.

Table 29: Views of Three Policy Makers Concerning the Improvement of Business Atmosphere and Infrastructure in Cambodia

	To attract more FDI into the country	The reason why CLMV countries, especially Cambodia have not been able to diversify its existing industrial structure is because:	Conclusion
Ministry of Commerce **Interviewee:** **Mr. Noun Sophal**	1.The government should improve existing Investment Law, favorable taxation law compared with neighboring countries. 2.Law implementation bodies should act free from corruption 3. Infrastructure such as phone, electricity, and water should be improved.	1. Cambodia still has limited skilled labor, thus need to improve HR. 2. Lack of international awareness toward Cambodia's business environment and policies.	He ranks: 1. Investment Climate, saying that it is still difficult for investors to gather information, which is the major factor based on which the decision is made. 2. Labor issue is another important criterion. 3. Frequent black-out and high prices sometimes have scared investors away. He however is optimistic about investment trend in Cambodia, saying that by 2011-2012, the world economic turmoil should be over and Cambodia should be able to attract more investors.
Ministry of Economy and Finance **Interviewee: Mr. Sophal**	1.Cambodia should raise awareness to investors about favorable business climate including ASEAN and WTO membership and LDC status for preferential access to US and EU market. 2. Cambodia should conduct resource mapping study. 3.Cambodia should strengthen its investment law	1. Limited size and potential of market 2. Awareness of favorable investment climate to the whole world 3. Limited skills of human resources 4. Lack of infrastructure	However, Cambodia does have its strengths, Government and Private Sector Forum. Mr. Sophal optimistically said that in the next few years FDI in Cambodia could worth up to US$20 Billion.

The Council for the Development of Cambodia **Interviewee: H.E. Dr Hang Chhun Naron**	1.Tax incentives alone are not enough, the government should take steps to improve the overall environment in terms of political stability, physical security, social order, legal and institutional framework, infrastructure, HR and external markets. 2. The government should take revenue enhancing measures by tightening and rationalizing incentives in order to generate additional resources to strengthen the government institutions, increase investment in infrastructure, human resources, security, social order and marketing research.	1. No any attraction to investors apart from tax incentives. 2. The general environment, such as political stability, physical security, social order, legal and institutional framework, infrastructure (water, electricity, and road), human resources and external markets is less favorable compared to neighboring countries.	Mr. Naron concludes with the positive trend of FDI inflows into Cambodia, thanks to the arrival of Law on Investment. He reveals that the Royal Government of Cambodia has reviewed the incentive system (Sub-decree No 53 dated 11 June 1999). The next step is to amend the Law on Investment of the Kingdom of Cambodia. The Council for the Development of Cambodia (CDC) is working closely with the Foreign Investment Advisory Services (FIAS)/International Finance Corporation (IFC) of the World Bank Group to draft the amendment to the Law on Investment.

Source: Field survey by MCA, 2009.

Table 30: Routing Research on Mode, Distance, Time and Cost of Transportation (Continues)

	Origin - Destination	**Leg**	**Mode** (Road/ Sea/ Air)	**Distance** (Km)	**Cum. Dis** (Km)	**Cost** (US$/Ton)	**Cumu. Cost** (US$/Ton)	**Transit Time** (hours)	**Cumu. Time** (Hours)
Cambodia & Lao PDR	**Phnom Penh - Vientiane**	**Phnom Penh** - PP Airport	Road	7	7	80	80	0.5	0.5
		PP Airport	-	-	7	110	190	3.5	4
		PP Airport - **Vientian**	Air	n.a.	7	700	890	18	22
	Total Phnom Penh - Vientiane			7		890		22	
	Vientiane - Phnom Penh	**Vientian** - PP Airport	Air	n.a.	n.a.	1000	1000	18	18
		PP Airport	-	-	n.a.	110	1110	3.5	21.5
		PP Airport - **Phnom Penh**	Road	7	7	80	1190	0.5	22
	Total Vientiane - Phnom Penh			7		1190		22	
Cambodia &Myanmar	**Phnom Penh - Yangon**	**Phnom Penh** - PP Airport	Road	7	7	80	80	0.5	0.5
		PP Airport	-	-	7	110	190	3.5	4
		PP Airport - **Bangkok**	Air	n.a.	7	1000	1190	1.5	5.5
		Bangkok - **Yangon**	Air	n.a.	7	1000	2190	24	29.5
	Total Phnom Penh – Yangon			7		2190		29.5	
	Yangon - Phnom Penh	**Yangon - Bangkok**	Air	n.a.	n.a.	1500	1500	24	24
		Bangkok - PP Airport	Air	n.a.	n.a.	1500	3000	1.5	25.5
		PP Airport	-	-	n.a.	110	3110	3.5	29
		PP Airport - **Phnom Penh**	Road	7	7	80	3190	0.5	29.5
	Total Yangon - Phnom Penh			7		3190		29.5	
Cambodia & Vietnam	**Phnom Penh-Ho Chi Minh**	**Phnom Penh** - Bavet	Road	170	170	100	100	5	5
		Crossing Border	-	-	170	250	350	4	9
		Bavet - **Ho Chi Minh**	Road	60	230	350	700	3	12
	Total Phnom Penh - Ho Chi Minh			230		700		12	
	Ho Chi Minh - Phnom Penh	**Ho Chi Minh** - Bavet	Road	60	60	450	450	3	3
		Crossing Border	-	-	60	250	700	3.5	6.5
		Bavet - **Phnom Penh**	Road	170	230	100	800	5	11.5

Total Ho Chi Minh - Phnom Penh		230		800		11.5	
Phnom Penh - Danang	**Phnom Penh** - Bavet	Road	170	170	100	100	5	5
	Crossing Border	-	-	170	250	350	4	9
	Bavet - **Ho Chi Minh**	Road	60	230	350	700	3	12
	Ho Chi Minh - **Danang**	Road	n.a.	230	200	900	24	36
Total Phnom Penh – Danang		230		900		36	
Danang - Phnom Penh	**Danang - Ho Chi Minh**	Road	n.a.	n.a.	200	200	24	24
	Ho Chi Minh - PP Port	River	n.a.	n.a.	330	530	12	36
	PP Port	-	-	n.a.	270	800	4	40
	PP Port - **Phnom Penh**	Road	8	8	120	920	0.5	40.5
Total Danang - Phnom Penh		8		920		40.5	
Phnom Penh – Hanoi	**Phnom Penh** - Bavet	Road	170	170	100	100	5	5
	Crossing Border	-	-	170	250	350	4	9
	Bavet - **Ho Chi Minh**	Road	60	230	350	700	3	12
	Ho Chi Minh - **Danang**	Road	n.a.	230	200	900	24	36
	Danang – **Hanoi**	Road	n.a.	230	750	1650	48	84
Total Phnom Penh – Hanoi		230		1650		84	

Table 30: Routing Research on Mode, Distance, Time and Cost of Transportation (Continued)

Origin - Destination	Leg	Mode (Road/ Sea/ Air)	Distance (Km)	Cum. Dis (Km)	Cost (US$/Ton)	Cumu. Cost (US$/Ton)	Transit Time (hours)	Cumu. Time (Hours)
Hanoi - Phnom Penh	**Hanoi – Danang**	Road	n.a.	n.a.	750	750	48	48
	Danang - **Ho Chi Minh**	Road	n.a.	n.a.	200	950	24	72
	Ho Chi Minh - PP Port	River	n.a.	n.a.	330	1280	12	84
	PP Port	-	-	n.a.	270	1550	4	88
	PP Port - **Phnom Penh**	Road	8	8	120	1670	0.5	88.5
Total Hanoi - Phnom Penh		8		1670		88.5	

Source: Field survey by MCA, 2009.

CONCLUDING REMARKS AND POLICY IMPLICATION AND RECOMMENDATION

As a small and less developed nation, Cambodia still faces challenges ranging from maintaining macro-economy, preserving environment, diversifying key sectors to promote growth, and building soft and hard infrastructure to attract investment. The cost and quality as well as the availability of electricity, roads, bridges, and ports are ranked poorly as compared to those of other ASEAN nations. It is difficult to promote

investment as the cost and time of doing business are so high and protracted. The Rectangular Strategies Phase I and II clearly articulate persistent and dynamic actions in all aspects, including agriculture, private sector, energy, and administrative reforms as well as anti-corruption mechanism. However, the implementation of these strategies requires consultations between government and private sectors, takes time and implies cost. Although there are a number of ongoing infrastructure and energy-related projects such as the construction of national highways and hydropower dams, importation of electricity from neighboring countries and use of generators to supply the growing demand for power, Cambodia is still slow in developing this sector due to lack of resources. In addition, labor issues seem to bring problems to Cambodia's business environment (example, lack of education or skills, and capacity as well as commitments of workers). Illegal strikes staged by a few union members result in a big loss to any company because of the production delays incurred and bribe money given to union leaders to mitigate the frequency of strikes. All these have, in turn, deterred potential investments and in some way retarded the business development. Therefore, reducing bureaucratic red tape and unofficial payment to government officials are two of the prioritized action points intended to ease business and investment procedures.

Firms interviewed have common concerns over labor-related issues such as education, illegal strikes, and interpersonal relations between employees and employers as well as vocational trainings for workers. After all, the improvement of the investment climate depends on the facilitation of investment and business transactions, tax incentives, promotion of public and private fora, special economic zones, reduction of corruption, and maintenance of social and macro-economic stability.

In terms of the logistics system, there is a need to lower the logistics cost, improve

infrastructure conditions, reduce the time for document processing and upgrade road infrastructure. The costs of telephone, internet, and electricity should be lowered and access should be reliable to keep the business operations working smoothly. The promotion of special economic zones is crucial for export-oriented industries. The government should facilitate the flow of investments in special economic zones by attracting more investors into Cambodia. If all of these are improved, Cambodia will for sure attract more multinational companies in agro-industry, and light manufacturing such as motorcycle assembly and electronics and make Cambodia-made products more competitive in the world market.

It is therefore an urgent call to step up efforts and improve both soft and hard infrastructure if Cambodia wants to bring in foreign direct investment and create jobs that will allow skill and technology transfers. It can join other ASEAN members in the production of some parts and components of products that require lower skills. Cambodia needs to break all barriers that harm the investment and business climate. Otherwise, it could lose investors to other countries, especially Vietnam and Thailand. In other words, to catch up with other ASEAN members, the Royal Government of Cambodia should create an investment environment that is attractive and safe for investors by reducing the cost of doing business.

If Cambodia can achieve all these, it will be able to improve all sectors of the economy and diversify its growth base. As the economy grows, Cambodia will certainly be able to eradicate poverty as set forth in its National Poverty Reduction Strategy and Millennium Development Goals (CMDGs).

APPENDIX

Table A1: State-Owned Enterprises in 2008 (in US$ Million)

No.	Name of enterprise	Assets	Own capital	Total staff	Financial year 2006		
					Total revenue	Total expenditure	Profit
1	Agricultural Input Company	5.226	5.066	0.012	0.673	0.660	0.013
2	Sihanoukville Autonomous Port	112.664	111.213	0.246	23.099	20.757	2.341
3	Phnom Penh Autonomous Port	25.827	25.004	0.111	4.397	3.041	1.356
4	Kampuchea Shipping Agency & Brokers	5.806	5.375	0.035	2.164	1.102	1.062
5	Green Trade Company	10.779	9.964	0.046	1.703	1.710	-0.008
6	Cambodian National Insurance Company	7.603	7.017	0.014	1.083	0.963	0.120
7	Printery	6.992	6.941	0.035	2.630	2.412	0.218
8	Telecom Cambodia	54.436	44.271	0.147	19.520	13.321	6.199
9	Royal Cambodian Railways Company	940.793	940.038	0.383	1.864	2.213	-0.349
10	Engineering and Public Works Lab	0.409	0.305	0.006	0.100	0.120	-0.019
11	Phnom Penh Water Supply Authority	132.195	103.478	0.135	18.693	13.964	4.729
12	Electricity of Cambodia	140.334	82.928	0.519	146.095	143.157	2.938
13	Rural Development Bank	15.490	7.242	0.012	0.963	0.645	0.318
	Grand Total	1579.897	1463.100	4.559	269.031	240.182	28.849

Source: Ministry of Economy and Finance.

Table A2: Summary of Proposed Roads to be improved

Target of Road Network Development	Proposed Roads to be improved						
Support for Strategy 1: Enhancement of Multi Growth Pole Development							
(1) Widening and Upgrading of 1-Digit National Roads	NR1	NR2	NR3	NR4	NR5	NR6	NR7
	NR8	2nd Mekong Br					
(2) Construction of Bypasses around Main Cities	Siem Reap, Battambang and Kampong Chhnang Bypass						
(3) Reinforcement of the Road Network around PP by Ring Road	PP Ring Rd. including Takhmau Br crossing Bassac River and Ouster Ring Road						
Support for strategy4: National Integration							
(1) Improvement of Accessibility to Provincial Capitals	NR11	NR31	NR33	NR48	NR56	NR57	NR62
	NR68	NR76	NR78	NR55			
(2) Reinforcement of Main Routes	NR11	NR13	NR22	NR33	NR51	NR61	NR71
	PR147	PR126	PR1578	OR159E	PR159D	PR159	PR266B
	NR66	NR64	NR2714	PR371	PR263B		
(3) For Access Road to Provincial Capitals	NR56	NR64	NR2714	NR76	PR1488	NR11	NR31
	NR57	NR55	NR78				
Support for Strategy 5: Development of International Corridor							
(1) International Highway (GMS	NR1	NR3	NR4	NR5	NR7	NR33	NR48
	NR66	NR78	NR73	NR8	NR6		
(2) Access to the Border	NR2	NR21	NR33	NR48	NR57	NR62	NR64
	NR68	R72	NR74	NR78	No7	NR8	PR3762
(3) Improvement of Access to the Railway and Inland Waterways							
- Linkage to Railway Facilities	NR31	NR33	NR42	NR51	NR53	NR55	NR53a
- Linkage to Inland Waterway Facilities	NR52	NR54	NR63	NR70			
- Linkage to Seaport Facilities	NR4	NR45	NR33	PR1481			
Support formStrategy3 : Promotion of Tourism Development							
(1) Tourism Development							
- Eco-Tourism Area (Northeast Region)	NR7	NR76	NR78	PR3785	PR3RT1	PR378	
- Siem Reap and Wider Tourism Area (North Region)	NR6	NR62	NR63	NR64	NR65	PR266	PR2626
	PR2663	PR2624	PR2686	Siem Reap Bypass			PR2625
- PP Gate Town and Sihajoik ville and Coastal Area	PP Ring Rd.		NR4	NR43	NR41	NR51	
Support for Strategy 2 : Strengthening of Economic Growth Corridor Development							
(1) Economic Development							
- Special Economic Zone near Vietnamese	NR1	2nd Mekong Br					
- Sihanouk ville- PP Growth corridor	NR4	NR48	NR51	NR43	NR41		
Support for Strategy 6: Enhancement of Rural Economic Development							
(1) Agriculture Development							
- Northeast Region	NR78	PR3RT1	PR378				
- North Region	NR64	NR68	NR66	PR2686	PR2648		
- Middle East Region	NR70	NR73	PR2714	PR371	NR7	NR8	
- West Region	NR57	NR59	NR5				
- South Region	NR44	NR48					
(2) Regional Development of Poverty reduction							
- Rural area	NR76	NR78	PR3785	PR378	PR3RT1	NR7	
- Rural area	3- Digit roads and rural roads						

Note: New Road number system is used.
Source: Ministry of Public Works and Transportation.

Table A3: Population by Road Density in Cambodia

Road					
1-digit NR		2,097.28	km		
2-digit NR		2,704.37	km		
Prov. Road		6,692.44	km		
	Rural Road (L1)	28,000.00	km		
	NR and PR (L2)	11,494.09	km		
	Total length (L3)	39,494.09	km		
Land areas (A)		181,035	sqkm		
Population, P (x1000)		(in 2005)		PxA	(PxA)^0.5
Total population		13,800.00	mill.	2498283000	49982.83
Rural		11,592.00	mill.		
Urban		2,208.00	mill.		
Road density and Road density index					
Road density, RD=L/A (km/sqkm)		0.218		(all roads)	
		0.063		(National & Provincial roads)	
		0.155		(Rural roads)	
Road density Index, RDI		0.790		(all roads)	
RDI=L/(PxA)^0.5		0.230		(National & Provincial roads)	
		0.560		(Rural roads)	
Total population/Total road length		350.00	Person/km		
Rural population/Rural road length		414.00	Person/km		

Source: World Bank.

Table A4: Finalized and Under Construction Energy Project (Continues)

Project 1: Upgrading capacity of 115 kV system in Phnom Penh
Scheduled Year of operation: 2009 Scope: 1) Add 2 circuit of 115 kV line from WPP substation to existing 115 kV system of Phnom Penh, 2) Add second circuit to the existing 115 kV line connecting sub-stations in Phnom Penh, 3) Deviate 115 kV line from Kirirom Hydro Power Plant to WPP substation, 4) Modification of substation GS1 and connection of 10 MVAr reactive compensation on 22 kV side 5) Add one transformer 115/22kV 30/50 MVA at GS2 substation and connection of 15 MVAr reactive compensation on 22 kV side 6) Add one transformer 115/22 kV 30/50 MVA at GS3 substation and connection of 15 MVAr reactive compensation on 22 kV side. All these works are being done to upgrade transmission and distribution capacity of Phnom Penh power supply system and to receive electricity from Vietnam and new power plants. Implementer: EDC under WB loan, Work in progress
Project 2: Construction of 230 kV transmission line connecting Phnom Penh, Takeo and Vietnam including substations at WPP and Takeo
Scheduled Year of operation: 2009 Scope: Build substations at West Phnom Penh (WPP) and Takeo and 230 kV transmission line connecting Phnom Penh to Takeo and to Vietnam in order to purchase electricity from Vietnam. Implementer: EDC under ADB loan. Work in progress
Project 3: Construction of 22 kV sub-transmission lines in the provinces of Takeo, Phnom Penh, Kampong Speu, Kampot, Sihanouk ville and Battambang
Scheduled Year of operation: 2009, 2010, 2011 Scope: Construction of 22 kV sub-transmission lines in the provinces of Takeo, Phnom Penh, Kampong Speu, Kampot, Sihanouk ville and Battambang to take the grid supply to areas around the grid substations Implementer: EDC under WB, ADB and other loans. Work in progress.
Project 4: Build National Dispatching Center
Scheduled Operation year: 2011 Scope: Build National Dispatching Center in Phnom Penh in order to manage all connected power supply systems in the country. Implementer: EDC under WB loan. Bidding in progress
Project 5: Build 230 kV line connecting Takeo to Kampot and substation in Kampot provincial town
Scheduled Operation year: 2011 Scope: Build 230 kV transmission line connecting Takeo and Kampot, and build 230 kV substation at Kampot provincial town in order to purchase electricity from Kamchay Hydro Power Plant. Implementer: EDC, KFW give grant to RGC and RGC give this grant to EDC as loan to implement the project. Bidding in progress
Project 6: Build 230 kV line connecting Kampot to Sihanoukville and substation in Sihanoukville
Scheduled Operation year: 2011 Scope: Build 230 kV transmission line connecting Kampot and Sihanoukville, and build 230 kV substation at Sihanoukville in order to purchase electricity from Coal Fired Power Plant. Implementer: This project is under joint loan of ADB and JBIC and EDC is implementer of the project. Bidding in progress.
Project 7: Build 193 MW Kamchay Hydro Power Plant and transmission line connecting KHPP to Kampot substation
Scheduled Operation year: 2011 Scope: Build 193 MW Kamchay Hydro Power Plant and transmission line connecting this power plant to substation in Kampot provincial town in order to sell electricity to EDC. Implementer: The investment for this project is by SINOHYDRO from People's Republic of China, who received special investment concession from RGC. Work in progress

Table A4: Finalized and Under Construction Energy Project (Continued)

Project 8: Build 18 MW Kirirom III Hydro Power Plant and transmission line connecting Kirirom III plant to Kirirom I substation
Scheduled Operation year: 2012 Scope: Build 18 MW Kirirom III Hydro Power Plant and transmission line connecting Kirirom III plant to Kirirom I substation in order to sell electricity to EDC. Implementer: This project is the second phase of investment of Chinese company CETIC from People's Republic of China, who built Kirirom I Hydro Power Plant in the first phase. This project is in the same concession package with Kirirom I Hydro Power Plant. Work in progress
Project 9: Development of Stung Atay Hydro Power Plant, Common switching substation at Ou Saom and 230 kV transmission line connecting switching substation and Pursat substation.
Scheduled Operation year: 2012 Scope: Build 120 MW Stung Atay Hydro Power Plant, common switching substation, transmission line connecting this plant to common switching substation and 230 kV line connecting common switching substation to substation at Pursat provincial town. Implementer: This project is under private investment and RGC gave concession to Yunnan Southeastasia Economy and Technology Investment Industrial Co Ltd from PRC in the project package Stung Atay Hydro Power Plant. Work in progress
Project 10: Build 230 kV transmission line connecting Phnom Penh, Kampong Chhnang, Pursat and Battambang with substations at Kampong Chhnang, Pursat and Battambang
Scheduled Operation year: 2012 Scope: Build 230 kV transmission line connecting Phnom Penh, Kampong Chhnang, Pursat and Battambang and build substations near Kampong Chhanang, Pursat and Battambang in order to connect southern zone system with western zone system to become one system. Implementer: This project is under private investment and RGC gave concession to Yunnan Southeastasia Economy and Technology Investment Industrial Co Ltd from PRC in the project package Stung Atay Hydro Power Plant. Present Position: The Transmission agreement and IA have been signed. Preparation to start the work in progress
Project 11: Build 200 MW Coal Fired Power Plant in Sihanoukville and transmission line connecting this plant to Sihanoukville substation
Scheduled Operation year: 2012 Scope: Build 200 MW Coal Fired Power Plant (operated on imported coal) and transmission line connecting this plant to Sihanoukville substation. Implementer: The investment for this project will be by a private company on the BOO basis. Present Position: The PPA and IA have been signed.
Project 12: Build Stung Tatay Hydro Power Plant and transmission line to common switching substation.
Scheduled Operation year: 2013 Scope: Build 246 MW Stung Tatay Hydro Power Plant and transmission line connecting this plant to common switching substation. Implementer: The Company China National Heavy Machinery Corporation from PRC will implement the project. Present Position: The PPA and IA have been signed. Preparation to start the work in progress
Project 13: Build Lower Stung Russey Chrum Hydro Power Plant and transmission line to common switching substation.
Scheduled Operation year: 2014 Scope: Build 338 MW Lower Stung Russey Chrum Hydro Power Plant and transmission line connecting this plant to common switching substation. Implementer: The Company Michelle Corporation from PRC will implement the project. Present Position: The PPA and IA have been signed. Preparation to start the work in progress

Table A4: Finalized and Under Construction Energy Project (Continued)

Projects planned and under different stages of implementation
The following power supply development projects are planned and, at the end of 2008, are at different stages of planning:
Project 14: Build 115 kV line connecting Kampong Cham to Suong and Kraek towns and to Vietnam power system
Scheduled Operation year: 2011 Scope: Build 115 kV line connecting Kampong Cham, Suong, Kraek and Taininh in Vietnam and build 115 kV substations at 3 places, 1) in Kampong Cham provincial town, 2) in Suong town and 3) in Kraek town in order to import electricity from Vietnam to supply all above areas. Implementer: This project is being undertaken in private sector.
Project 15: Build 115 kV line connecting Steung Treng to Laos's power system
Scheduled Operation year: 2011 Scope: Build 115 kV line connecting Steung Treng, Suong, to Lao power system and build 115 kV substation at Steung Treng provincial town in order to import electricity from Laos to supply Steung Treng province. Implementer: This project is under grant of WB to RGC, and RGC is providing a loan to EDC to implement the project.
Project 16: Build 230 kV transmission line connecting Phnom Penh to Kampong Cham and new grid substation in Kampong Cham provincial town
Scheduled Operation year: 2012 Scope: Build NPP substation in Phnom Penh, and 230 kV transmission line connecting NPP to Kampong Cham provincial town and build substation in Kampong Cham provincial town in order to connect southern zone system with power supply system in Kampong Cham area together into one system. Implementer: This project is being undertaken in private sector.
Project 17: Strengthen Phnom Penh System.
Scheduled Operation year: 2012 Scope: Build 115 kV substations in eastern area of Phnom Penh (EPP). Build 115 kV transmission line connecting GS1 to NPP and NPP to EPP to meet the load of new growing areas of Phnom Penh. Study: This project is included in 2006 Master Plan but neither detail technical study nor the feasibility study has yet been done. Implementer: EDC shall seek fund to implement this project.
Project 18: Upgrade capacity of Phnom Penh power supply system.
Scheduled Operation year: 2015 Scope: Build 230 kV part of EPP substation in Phnom Penh, upgrade transformer capacity in WPP substation, build new substation GS4 and 230 kV transmission line connecting WPP to GS4 and 230 kV transmission line connecting GS4 to EPP. Study: This project is included in 2006 Master Plan but neither detail technical study nor the feasibility study has yet been done. Implementer: EDC shall seek fund to implement this project.
Project 19: Build 230 kV transmission line connecting Phnom Penh to Sihanoukville substation
Scheduled Operation year: 2015 Scope: Build 230 kV transmission line connecting EPP substation in Phnom Penh to Sihanoukville in order to transport electricity from 400 MW Coal Fire Power Plant, which should be built in Sihanoukville. Study: This project is included in 2006 Master Plan but neither detail technical study nor the feasibility study has yet been done. Implementer: EDC shall seek fund to implement this project.

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CHAPTER 7

UPGRADING AND DIVERSIFICATION OF INDUSTRIAL STRUCTURE IN LAO PDR: PROSPECT AND CHALLENGES

Leuam Ngongvongsithi and Souknilanh Keola

Abstract

This chapter examines the prospects and challenges in upgrading and diversifying the industrial, manufacturing in particular, structure in Lao PDR. We first identified major potential industries in Lao PDR and examined their historical developments up to the present. We then tried to find out the bottlenecks or requirements for diversifying as well as upgrading the existing industry, based on findings in investment climate surveys specifically conducted for this study.

INTRODUCTION

Lao PDR is the only landlocked country in mainland Southeast Asia, bordering Vietnam to the east, Thailand to the west, Cambodia to the south, China to the north and Myanmar to the northeast. Laos occupies a total land area of 236,800 square kilometers, about two-thirds the size of Vietnam. However, with a population of about 6.2 million in 2008, its average population density was just about 26 persons per square kilometers, by far the lowest in the region (National Statistical Center [2008]). As majority of population live along borders with neighboring countries, it is obvious that

foreign demands and investments could play a deterministic role in the country's pursuit of industrialization and economic growth[1].

Although Lao PDR is surrounded by many relative large economies, access to all directions, on one hand, has always been difficult due to natural and political obstacles such as high mountain ranges, non-navigable river ways and political confrontations. Laos has initiated actions needed to unblocking itself to its neighbors starting with the New Economic Mechanism policy in 1986. It reopened itself to foreign investors and tourists, while also actively participated in the GSM development program initiated by the Asian Development Bank (ADB) in the early 1990s. Becoming a full member of the Association of Southeast Asian Nations (ASEAN) in 1997 was a clear message of the new regime that it will try to achieve economic developments through cross-border cooperation in all directions. Foreign, including joint-venture business operations in the country, increased from virtually none in the late 1980s to 2,470 in 2006 (The Steering Committee on Economic Census [2007]).

1. SOCIOECONOMIC DEVELOPMENT STRATEGY

Within the context of regional economic integration, Lao PDR has been facing numerous difficulties and challenges as it has to integrate itself to the regional and global economy while at the same time struggle to graduate from the least developed countries' (LDCs) club. The government has called for a long-term socioeconomic development strategy and set the ultimate mid-term goal as graduation from the status of LDC by the year 2020. The government has put great efforts in building a comprehensive development strategy framework, which includes the Industrialization and Modernization Strategy, the Six National Development Plan (2006-2010), the National Growth and Poverty Eradication Strategy (NGPES) and sectoral long-term development strategies to achieve this target.

It considers the following factors essential to achieve its 2020 goal: (1) economic infrastructure development with focus on the transformation from a landlocked to a

[1] According to Keola [2008], 100% of Lao population live in provinces (1st administrative level) with international border/borders, while about 52% live in districts (2nd administrative level) with international border.

landlinked country by making full use of the various economic corridors passing through the country; (2) development and strengthening of the private sector by promoting small and medium enterprises (SME), financial, labor and real estate markets; (3) development of natural resource-based industries; (4) promotion of processing industries for domestic consumption and export; and (5) strengthening of human resource development with focus on vocational and technical training to improve the skills level of the local labor force.

1.1 Trade Policy

With rapid development and increasing openness of the economy, Lao trade volume has grown at a very rapid rate in recent years. However, the value of import often exceeds the value of exports by about 50-60 percent. In 2009, the value of exports and imports amounted to US$1200 million and US$1600 million, respectively. Recently the main driver of export growth has been the mining sector, mainly copper, which in 2009 contributed to more than 40 percent of export value. Other main export items are garments, wood and wood products, electricity and agricultural products such as coffee, sesame, corn and vegetables. The main imports are processed foods, fabrics, garments, equipments and machinery for construction and agriculture, electric and electronic appliances, medicines and fuels.

The trade regime in Lao PDR has been relatively open following the policy reform that started in 1986. Lao international economic relations have expanded greatly. These relations are not limited to regional economies but also extend to distant developed economies such as USA and the European Union. Currently, Lao PDR has trade relations with more than 60 countries. Lao PDR is now in the process of negotiation with more countries for close bilateral trade relations. Among the main trading partners for Lao PDR at present are the ASEAN nations, China, Japan, EU and USA. Economic and trade relations between Lao PDR and other countries have tremendously improved since Lao PDR became an ASEAN member in 1997. The government also applied for membership to the World Trade Organization in the same year. Lao PDR has so far advanced to the 5^{th} working party meetings, although negotiations are still ongoing. In addition, Lao PDR has also gained Normal Trade Relation (NTR) status with USA in 2005.

As a least developed country, Lao PDR has been granted GSP status by 36 countries including Australia, Canada, China, Japan, South Korea, New Zealand and Switzerland. These GSPs have provided Lao PDR not only the opportunity to expand its production for export but also helped create jobs and contributed to poverty reduction.

1.2 Industrial Policy

The ultimate objective of the Lao government economic development policy is to industrialize and modernize the country (Industrialization and modernization Strategy). To attain this objective, the industrial policy has been adjusted accordingly and in a timely manner. Since mid-1980s, Lao PDR has been undergoing economic transition, including from centrally planned to market-oriented economy, from subsistence to marketized economy and from inward-looking to outward-looking economy. Moreover, Lao PDR adopted trade and investment liberalization policies comparable to those in some advanced Southeast Asian countries to promote trade and investment through the provision of various incentives such as tax holidays and duty drawbacks and the development of export processing or special economic zones.

The focal point of Lao government's industrial development strategies and policies is to promote several kinds of industries that would help achieve the objectives of the country's industrialization and modernization strategies. In brief, these strategies are the following. First, develop small and medium enterprises (SME), which presently account for 97 percent of manufacturing activities. While SME has significantly contributed to job creation, this sector is generally still composed of unorganized businesses, whose competitiveness is rather low and needed to be upgraded. Second, promote and develop import substitution production of selected goods to reduce overdependence on import goods. This should, however, be carried out with clear exclusion of export-oriented industries such as electrical and electronic, garments, etc. Third, promote and develop export-oriented industry, focusing on high value-added products. FDI and the country's ability to attract foreign investors would play a deterministic role in achieving these objectives.

2. STRUCTURE OF LAO PDR'S ECONOMY

Lao PDR's economy had long been characterized as agricultural and subsistence in nature (Luther [1983:10]). However, these have changed drastically in recent years. According to ADB's key indicators, agricultural share in GDP shrank from about 81 percent in 1981 to 30 percent in 2008. External and internal trade share in GDP, a proxy for marketization, sharply increased from 0.07 percent to almost 20 percent between 1990 and 2008.

Mining emerged as a major contributor to GDP; it sharply expanded from less than 0.2 percent to nearly 10 percent in 3 years from 2004 to 2007.Manufacturing sector share in GDP, the focal point of this paper, has, however, gone up and down. Manufacturing shares increased from about 10 percent to 17 percent in the 1990s, before beginning to decline to 9 percent in 2008. Manufacturing sector itself has, however, expanded more from about 85 to 464 million USD during the same period. The sharp decrease of manufacturing in GDP was largely the result of emerging sectors such as mining. Mining is, however, well known as an unsustainable sector because of the inevitable depletion of resources. Whether Lao PDR succeeds in expanding its manufacturing sector or not may largely influence the sustainability of its economic growth.

Table 1: Share of Major Sectors in GDP

	Agriculture	Trade	Mining	Manufacturing	Tariff	others
1990	0.61	0.07	0.00	0.10	0.01	0.22
1991	0.57	0.07	0.00	0.12	0.01	0.22
1992	0.58	0.07	0.00	0.13	0.01	0.20
1993	0.57	0.08	0.00	0.13	0.02	0.21
1994	0.56	0.08	0.00	0.13	0.02	0.21
1995	0.54	0.08	0.00	0.14	0.02	0.22
1996	0.52	0.09	0.00	0.15	0.02	0.22
1997	0.52	0.09	0.00	0.16	0.02	0.21
1998	0.53	0.10	0.00	0.17	0.01	0.19
1999	0.53	0.10	0.01	0.17	0.01	0.19
2000	0.46	0.14	0.00	0.08	0.06	0.26

2001	0.43	0.16	0.00	0.09	0.06	0.26
2002	0.40	0.18	0.00	0.08	0.06	0.28
2003	0.39	0.17	0.03	0.08	0.06	0.28
2004	0.37	0.20	0.02	0.08	0.06	0.26
2005	0.34	0.19	0.06	0.08	0.06	0.26
2006	0.30	0.18	0.13	0.08	0.06	0.25
2007	0.31	0.19	0.10	0.08	0.07	0.25
2008	0.30	0.19	0.10	0.09	0.07	0.26

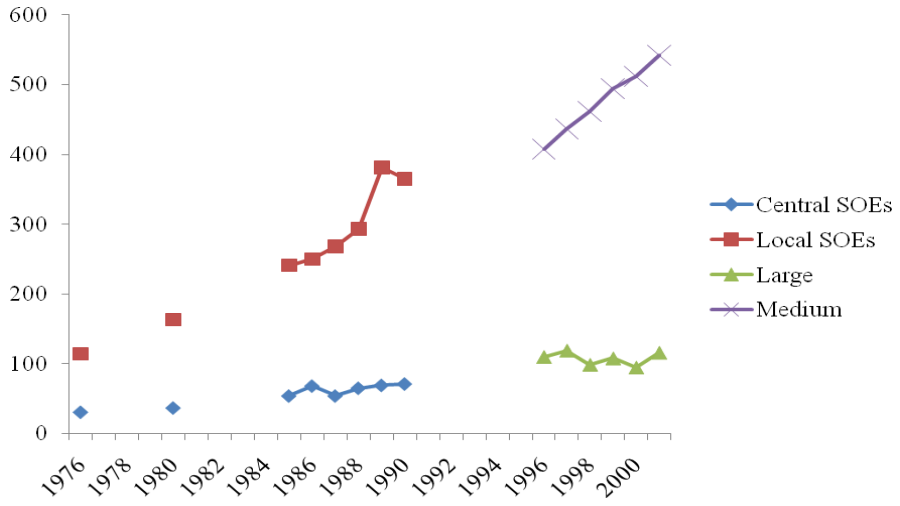
Source: Key Indicators, Asian Development Bank (2009).

2.1 Manufacturing Sector in Lao PDR

2.1.1 Centrally Planned Period

The industrial development history of Lao PDR can be largely divided into two periods. The period from 1975 to 1986 was characterized as centrally planned economic development period, or the so-called socialist-oriented period with a high degree of centralization of economic decision-making. The period from 1986 onwards is characterized by the transition from a centrally planned to a market-oriented economy.

Figure 1: Number of Industrial Establishments by Types from 1976-2000

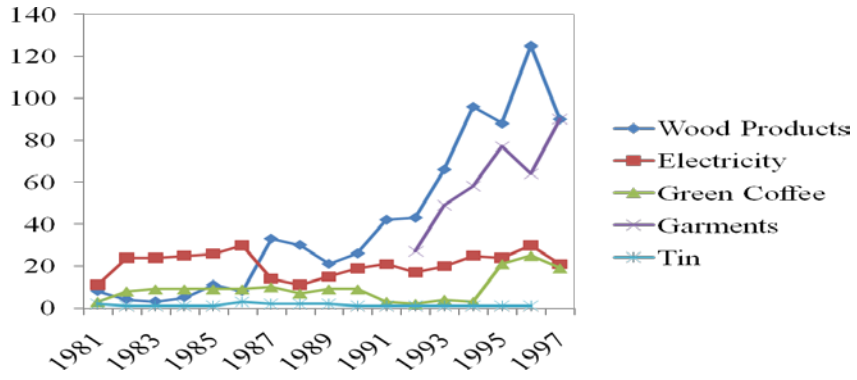


Source: National Statistical Center (1990) (2000) (2001).

During the period 1975-1986, agriculture was the backbone of Lao economy, and accounted for from about 81 to 63 percent of total GDP. While Lao economy heavily depended on imports for virtually all kind of manufactured goods, cross-border trade faced occasional difficulties due to border closure especially to the west, as a result of political confrontations (Bedlington [1981:103]). The manufacturing industry grew slowly and was not able to fulfill local demands. Though the government policy's objective during this period was the promotion of import substitution, there were only a handful of factories operating mostly in Vientiane Capital, where the degree of concentration of demand as well as resources, was by far larger than the rest of the country. Only few state-owned factories managed to grow during this period. Figure 1 depicts the change in number of industrial establishment by level of management from 1976 to 1990, and by size from 1996 to 2001. The number of state-owned industrial establishments was 145, of which 31 belong to ministries and 78 to Vientiane Capital in 1976. The number of central and local managed industrial establishments increased onwards but still did not exceed 500 in 1990.

Wood industries expanded the most during the centrally-planed and towards the end of 1990s. Export of timber accounted for 80.5 percent in 1976 and was number one export item by value between 1987 and 1990 (Luther [1983:21]) (Figure 2). There were around 50 sawmills nationwide, especially in the southern part where large forest reserves were concentrated. At least one large saw mills existed in every province. These saw mills employed thousands of people to produce very simple wood products for the domestic market or for export as raw materials. They generally utilized outdated or backward technology.

Figure 2: Export Structure of Lao PDR between 1981 and 1997



Source: ADB Key Indicators (1999).

In the food and agro-processing sector, Lao state-owned beer brewery and soft drink plants were outstanding in terms of size, technology and employment among then factories in Lao PDR. According to administrative statistics of Ministry of Industry and Commerce, there was also one large tobacco plant, one animal feed factory with production capacity of 5000 tons in Vientiane. In addition, there were around 200 family-based rice mills around the country as well as many cottage food processing activities to produce flour, noodles, bakery salt and others.

2.1.2 Transition Period 1986-Present

The year 1986 can be regarded as the start of industrialization in Lao PDR. It was the year when the government adopted a new economic development policy called New Economic Mechanism (NEM). Practical transition to market oriented economy in manufacturing sectors did not happen until related decrees, laws and regulations were mostly put in place, mostly since early 1990s (Keola [2010]). Decree for the promotion of domestic and foreign investments was enacted in 1988 to stimulate incentives to potential domestic and foreign investors. Lao PDR achieved significant success in economic development and macroeconomic stability evidenced from high growth rate, price stability and considerable increase in domestic and foreign direct investment (FDI), afterwards.

Actual economic reforms began by the beginning of 1990s. Most state-owned enterprises including manufacturing were transformed by way of selling, leasing or concession. Major state-owned food and agro-processing plants such as Lao beer, Lao soft drink, animal feed factory and more than 10 sawmills were transformed into mostly foreign private ownership or joint-ventures. Though the Law on Promotion and Management of Foreign Investment was not enacted until 1994, an administrative decree for its implementation had been in place since 1988, making it possible for foreign investors to begin their operation in Lao PDR since early 1990s. Official statistics of industrial establishments did not categorize firms emphasizing any more by their level of management since latter half of 1990s, but only their size, as most of them were no longer state-owned enterprises (Figure 1). It was quite obvious from Figure 1 that many central-managed SOEs became large enterprise, while local-managed ones became medium industrial establishments after the reforms. The number of medium industrial establishments, or those that hired from 10 to 99 employees, reached 542 in 2001. There were 116 large industrial establishments that employed 100 persons or more in the same year.

Table 2: Number of Business Establishments and Labor by Sector in 2004

	Number	Labor
Mining	37	3,309
Food and agro processing	63	3,439
Garment and leather	68	32,111
Wood products	121	9,094
Paper, publishing, chemical and rubber products	67	2,979
Non-metal products	58	2,633
Metal products and machineries	63	3,373
Furniture	19	626
Electricity and water	36	7,114
Construction	396	10,017
Transport equipment repair and sales	63	2,284
Wholesales and retails	231	4,189
Land, water and air transport	91	2,800
Post and telecommunication	34	3,189
Real estates	82	3,218

Hotel, restaurant, education and health services	200	8,109
Total	1,629	98,484

Source: National Statistical Center (2006).

Table 3: Number of Establishments and Labor by Economic Activities

	Number	Labor
Agriculture, forestry and fishing	4,319	20,277
Mining and quarrying	297	7,708
Manufacturing	24,331	105,234
Electricity, gas	114	3,167
Water supply; sewerage	264	1,824
Construction	628	12,496
Wholesale and retail trade; repair	81,780	135,440
Transportation and storage	3,799	10,741
Accommodation and food services	3,439	17,779
Information and communication	872	3,688
Financial and insurance	299	4,440
Real estate activities	618	1,492
Professional, scientific and technical	359	1,389
Administrative and support services	755	6,320
Education	298	3,896
Human health and social work	375	1,043
Arts, entertainment and recreation	1,013	3,695
Other service activities	3,353	5,094
Total	126,913	345,723

Source: The Steering Committee on Economic Census (2007).

Table 2 shows the number of business establishments including manufacturing according to a survey of the National Statistical Center conducted in 2004. Though not all were covered, the survey certainly has highly likely to include all medium to large enterprises in manufacturing industry. The garment industry was by far the largest employing 32,111 workers in 2004. Export of garment began to appear in export statistics in 1992, and quickly grew to become the second largest export item in towards 1997 (Figure 2). An economic census based on a much larger coverage in 2006 revealed the growing role of manufacturing sector in Lao economy (Table 3). A total of 24,331 establishments employed 105,234 workers, second only to the wholesale and retail

sectors in 2006. While manufacturing accounted for only about 8 percent, it generated about 30.4 percent of jobs by economic establishment of the whole economy in 2007 (Table 1 and 3).

3. Existing Key Manufacturing Industries

The following industries can be regarded as prominent and key industries, based on their significant contributions to national economic development. They have contributed in terms of job and income generations, and thus the realization of poverty reduction and modernization policy of the government.

Table 4: Merchandise Exports and Imports of Lao PDR between 2002 and 2006

	2002	2003	2004	2005	2006
Merchandise exports	362.8	418	536	684	1,143.10
Gold	0.00%	14.38%	10.78%	13.26%	10.31%
Copper	0.00%	0.00%	0.00%	16.39%	35.81%
Electricity	27.87%	27.39%	21.92%	18.27%	10.73%
Timber	31.50%	30.67%	27.03%	22.84%	17.11%
Garments	31.39%	31.08%	28.86%	20.18%	11.15%
Coffee	3.00%	2.68%	2.69%	1.10%	0.86%
Other	6.26%	8.18%	8.62%	7.79%	13.11%
Merchandise imports	722.2	786.1	1,055.80	1,270.20	1,589.30
Petroleum	11.58%	11.40%	11.07%	12.56%	12.93%
Capital_goods	27.29%	32.86%	42.89%	38.48%	43.06%
Electricity	1.00%	1.07%	1.90%	2.06%	1.76%
Garments materials	11.06%	11.02%	10.94%	5.50%	6.21%
Other	49.07%	43.65%	33.20%	41.39%	36.03%

Source: IMF (2008).

Statistics of the Ministry of Industry and Commerce would be used to further break up manufacturing industries. According to summarization by Economic Research Institute for Trade, there are 31,956 registered factories employing 209,220 laborers in the whole manufacturing industry[2] (Table 5).

[2] Note that this number is larger than manufacturing in Table 4, where definition of manufacturing is obviously narrower as mining, electricity were not included.

According to Table 5, construction materials employed about 100,000 persons, by far larger than the rest in manufacturing. Food and agro-processing industry came in second place employing 35,000 persons but with much less average number of workers per establishments. There were about 10 persons, while it was only about 2 persons in average in construction materials, and food and agro-processing industry, respectively. Besides power generation, garment seem to be the most labor intensive, in average terms, by having about 300 persons in a factory. Besides already large garment, footwear, electric and electronic, automobiles and motorcycles, employing much less, obviously constitute potential targets for both upgrading and diversification.

Table 5: Outline of Manufacturing Industry in Lao PDR

	Number of Establishments	Number of Employments	Average Number of Employments
Food and Agro-processing	18,855	35,000	1.9
Garment	82	25,000	304.9
Footwear	4	300	75.0
Wood industry	2,200	25,000	11.4
Electric and Electronic	50	3,000	60.0
Plastic industries	20	1,000	50.0
Construction materials	10,300	100,720	9.8
Automobiles, Motorcycles	20	1,200	60.0
Metal Industries	25	5,000	200.0
Power Generation	10	7,000	700.0
Mining industries	30	6,000	200.0
	31,596	209,220	1,673

Source: Summarized by ERIT (????).

3.1 Food and Agro-Processing Industry

Lao PDR is an agricultural economy and agriculture plays a most prominent role in people's life. Currently, 70 percent of the population still relies on agriculture for their survival and livelihood (ERIT). Therefore, food and agro-based processing industry constitutes the most important factors in transforming agricultural products to cash crops for local and foreign markets. While traditional and family-based food processing

activities existed in the country for years, modern food and agro-processing factories were not existed before 2000 (ERIT's Survey for this Research Project, henceforth ERIT's Survey).

Some food and agro-processing factories are now producing fruit and vegetable canned products for export and sugar, soft drink, beer, fruit juice, drinking water, tobacco, cassava or manioc flour, instant coffee and cooking oil for both local and foreign markets. Many types of flour produced from different crops such as sweet potato, manioc, cassava and banana are also exported.

According to ERIT's survey for this research project, these food and agro-processing factories generate a substantial amount of employment. For instance, there are two sugar factories established recently that produce brown sugar from sugar cane for export. The smaller factory creates more than 800 direct and 13,000 indirect jobs for villagers and were said to need about 10,000 tons of raw sugar cane per day. The bigger sugar factory can produce 60,000 tons annually of brown sugar, of which 90 percent is exported and 10 percent is for the local market. Last year, its export value reached US$ 15 million. The government stimulates and promotes such kinds of food and agro-processing industries by giving incentives and creating a favorable investment climate.

Besides food, another agro-processing growing very fast is the rubber plantation. Several ten thousands hectare of land have been contracted for long term plantation, nearly 100 years in many cases, in northern and southern part of the country. It is said that from 2000 to 2008 about 400,000 hectares have been contracted to rubber plant, fast growing trees, food crops such sugarcane and cassava, nationwide. Most of these crops and trees are yet to be harvest, so they will certainly have great impacts on Lao PDR's economy in any respects.

3.2 Garment Textile and Footwear Industries

In a country with limited domestic demand as Lao PDR, structure of export can be a proper proxy of contribution of an industry. If export of natural resources such as gold, copper and timber were excluded, garment had obviously contributed the most to export. There may be an argument such that value-added created locally by these garment factories were roughly from 10 to 20 percent of its export values, but the same does also hold for the export of copper and gold [Table 4]. Garment is however undoubtedly the

first factory-based industry in Lao PDR that contributed large enough to the economy in terms of export, income and employment generations. By 1st quarter of 2006, there were 59 export-oriented garment factories and 57 sub-contractors employed about 27,500 employees (Phounmalay 2007). The aggregated export values of these garment factories reached about 238 millions USD for the first time in 2007, a sharp increase from 123 million USD in 2006 (Keola 2010).

Lao cotton factory (spinning and weaving), the first domestic textile factory, was established in 1984. This led to the first wave of establishment of garment factories in the early 1990s by domestic and foreign investors after the promulgation of investment promotion decree in 1988. Garment industry has grown to be one of the most prominent sectors in Lao manufacturing industry since then. Garment factories in Lao PDR can largely be divided into mostly foreign invested or joint-venture garment factories which are directly involved in internal trade of inputs and finished products, and locally invested factories which subcontract the former in most cases. Many of foreign affiliated garment factories are relocated from neighboring countries, especially Thailand, and concentrated in Vientiane Capital (Keola 2010).

The number of garment factories, both domestic and foreign invested, reached more than 100 in the turn of the 21st century, but fell to around 82 in 2008. The global financial crisis was perhaps the main cause why some garment factories went out of business in Laos in 2008. However, the financial crisis has also created a trend for textile and garment industry in the country to produce high-quality products for specific higher-ended markets. Besides, Thailand, China and EU, Japan had begun to emerge as major source of investment in garment and footwear industries in Laos since 2007 (Keola 2010). Export of footwear, which employ just a few hundred employees, from Lao PDR to Japan and Europe etc. was about 8 million in 2007 (Comtrade database accessed in March 2010).

In other words, footwear industry is a new though growing industry in Lao PDR. So, having more footwear factories can therefore be taken as both diversifying as well as upgrading of existing industries in Lao PDR.

3.3 Wood Industry

The number of sawmills and furniture factories grew rapidly from about 50 in 1990, to 1,500 in 2004 and 2,200 at present. The wood industry plays an important role in socioeconomic development by creating jobs and generating income. It employs more than 25,000 people to produce wood products for domestic and foreign markets, generating 25 percent of the country's export value and contributing up to 15 percent of budget (ERIT's Estimation).

However, in terms of management and technology, these wood factories are still rudimentary and backward. Most of them use backward technologies and produce very simple wood products for local and foreign markets, or merely export as raw materials to neighboring countries.

Considering its importance in the national economy, the wood industry certainly needs to be upgraded. Currently, the Lao government is implementing an upgrading policy in wood business. The most ultimate purpose of this policy is to assist the wood industry to produce high value-added wood products and, at the same time, reduce the rate of depletion of forest resources. With this upgrading policy, the number of wood factories will be reduced to less than 1,500 because those that cannot upgrade are to be shut down (ERIT). The most serious problem of wood industry in Lao PDR is they concentrate on the consumption of forest resources, without particle system to sustain the business.

Another diversification observed recently in wood industry is the investment of Japanese company that went to Lao PDR in order to secure production base for wood chips needed in its global paper production network. They have received concession from the government for about 50 thousands hectare of land to grow fast growing trees such as eucalyptus and acacia. Trees would be planted in various plots of concession areas, in time order, so raw material for chip would be available from cutting them in cycle without having to exploit natural forests. While the idea of sustainable wood industry has been around for years, this is undoubtedly the first closest to materialization. It is said that the company would begin exporting tree chips soon.

3.4 Electrical and Electronic Industry

The electrical industry in Laos produces and assembles household electrical appliances for the local market and parts and components for export. Some electrical appliance assembling plants were established in the 1990s to produce household appliances such as fans, cooking pots, air conditioners, etc. Currently, there are about 20 such factories in Lao PDR (ERIT).

For instance, one plant was established in Savannakhet province in 1993 to produce different types of fans, air conditioners, cooking pots, irons and refrigerators for export to neighboring markets. Its business grew quite fast; at one point, it employed about 300 workers, while its export value reached US$30 million annually. However, the factory is now employing only 35 workers, assembling and exporting only US$500,000 worth of 3,000 electric fans annually (ERIT).

The electronic industry in Laos began in 1997, when a foreign company constructed a factory to support its main overseas operation in Thailand (Keola 2010). Some others followed and there are currently about 10 of them in the country. They can generally be characterized as second factories to support the main ones mostly in the neighboring countries. In general, they concentrate on labor-intensive processes, which do not require state-of-the-art technology, and are highly dependent on imported materials.

These few electronic supporting factories in Lao PDR are however a clear sign that not just garment, but other types of cross-border productions are also viable. One interesting fact worth mentioned here is most of them came to Lao PDR without any GSP such in garment industry. Most of them came to enjoy low language barrier, geographical proximity and wage differences between Lao PDR and Thailand (Keola 2010). While agglomeration of degree as in present Thailand will not likely to happen, some case studies presented above is the evidence that, given some of its location advantage from proximity to Thailand, Lao PDR does posses chance to attract a portion of supporting factories to those 1st or 2nd tier multinational firms of electrical and electronic industry in Thailand.

3.5 Automotive Industry

The automotive industry in Lao PDR began with the establishment of an assembly plant of Suzuki motorcycle in 1991. New Chip Xeng, a Thai investor, followed in 1992 by opening a plant to assemble Honda motorcycle. The Suzuki motorcycle assembler concentrated on the local market while the Honda motorcycle assembler also exported to Vietnam in 1990s. After Honda's assembly plants were also setup in Vietnam, and the entering to market of much lower priced Chinese motorcycles, New Chip Xeng have shifted to becoming suppliers of motorcycle's parts processed in Lao PDR from raw material imported from Thailand, beside assemble motorcycles for local market.

From 2004, seven other assembling plants of Chinese motorcycles were established in the country. Most plants assemble motorcycles from wholly imported parts and components for the local market. There are a few plants, however, that use locally produced parts and components. In addition to assembly plants of Japanese and Chinese motorcycles, there exists one assembly plant which is Korean owned but assembles for a local motorcycle brand. Kolao group, a Korean-invested group established in 1997, began assembling the Kolao motorcycle after 2004. This motorcycle brand is becoming popular in the local market through its sophisticated marketing.

Besides motorcycle, a local investment with the full support of a Japanese wire harness assembler in Thailand, in 2002. This probably is the only factory participating in global production network of automobiles. They are therefore potential sectors for upgrading and diversification.

3.6 Others

Many other industries such as power generation (electricity), mining are also becoming very important in national economy. The modern power generation industry in Lao PDR began when the first hydroelectric power dam (150 megawatts) was put into operation in 1973, by grant from Japanese government, and began electricity generation for export and domestic. From the 1990s to the present, many hydropower dams are already in operation and are also hard currency earners through exporting to neighboring countries. Some are in the process of construction while many others are being planned.

The mineral industries started during the 1990s producing lead, lignite, gypsum, zinc, limestone and tin for local consumption and some quantities for export. Recently, two gold and copper plants were established in the northern and southern parts of the country, producing 200 tons of copper and around 20 kilos of gold per day (ERIT). Before, all products were exported, but now parts are domestically consumed by recently established factories that fabricate electric wires, tools, parts and components of electronic equipment. At the mean time, around 100 mining projects are in the process of investigation and exploration. This means more mineral production plants will began operation in the future.

As beginning of operation of one major hydro-electricity generation dam or mine translates roughly to several hundreds to billion USD of export, these two are undoubtedly important for Lao PDR's economy. They are however irrelevant to the objective of this report, in the sense that neither investment climates nor service link costs play significant role in investors' decision making in these industries. They generally go to where there are minerals or suitable for dam constructions. Moreover, contracts between the government and them have generally been signed according to case by case negotiations.

Other manufacturing industries found in Table 5, such as construction materials, metal and plastic industries are generally import-substituted industries. Two cement plants were established in Vientiane province in the late 1990s were meant to supply local construction projects cements as substitutes to those imported from Thailand. The same holds for plastic factories established in late 1990s. About 20 are operating and they are mainly situated in populated areas such as Vientiane Capital, Savannakhet and Champasak, to also substitute imports from Thailand. It is more than obvious that potential gain from participating in global production network, or export oriented manufacturing industries, outweigh import substitute ones in Lao PDR where local demands are limited. If import substitutions are to be promoted, we believe that it should rather focus on the imported intermediate inputs, as all export-oriented industry in Lao PDR still heavily depend on imported intermediate inputs.

4. COMPARISON OF COST STRUCTURES BETWEEN EXISTING AND NEW INDUSTRIES

Since the research question of our study is the prospects and challenge Lao PDR faces in upgrading and diversifying its industries, it is just logical that our arguments should have the two dimensions of upgrading and diversifying.

Lao PDR is an agricultural country, where most of the people live and rely on agriculture. As a consequence, family-based food and agro-processing activities have for a very long time existed in the country. In addition, people also produce traditional textile and garments for family use as well as for selling to nearby markets or middle trader. In addition, though still small in numbers, some export-oriented garment, food and agro-processing factories have been in operation in Laos at least since the early 1990s. These can therefore be categorized as existing industries, making our argument for the question on how Lao PDR could upgrade them.

On the other hand, manufacturing of electrical, electronic, automotive (automobiles and motorcycles) as well as their parts and components in Lao PDR could only be traced to very few assembling factories operating since the 1990s. They are still by far smaller in number when compared to establishments in the garment, food and agro-processing sectors. We will therefore regard them as both existing and new industries in the country, and focus on how to diversify and upgrade them.

It is also obvious that FDI will play deterministic roles in the upgrading and diversifying of industrial structure in Lao PDR. With limited local demands and the fact that most export-oriented enterprises in Lao are either wholly or partly foreign-owned, it is rational for one to assume that these foreign companies will also be the ones to play a larger role in upgrading or diversifying the industrial structure in Lao PDR by relocating part or their entire operation to the country.

Table 4 presents the outline of firms surveyed by ERIT for this research project. 10 garment including one footwear, 6 electronic, 6 automotive, 5 agro-processing, 5 plastic, 3 wood, and 2 steel firms. Out of which only 15 are 100 percent local investment, concentrate in import-substituted industries such as plastic and some garment firms.

Table 4: Outline of Surveyed Firms

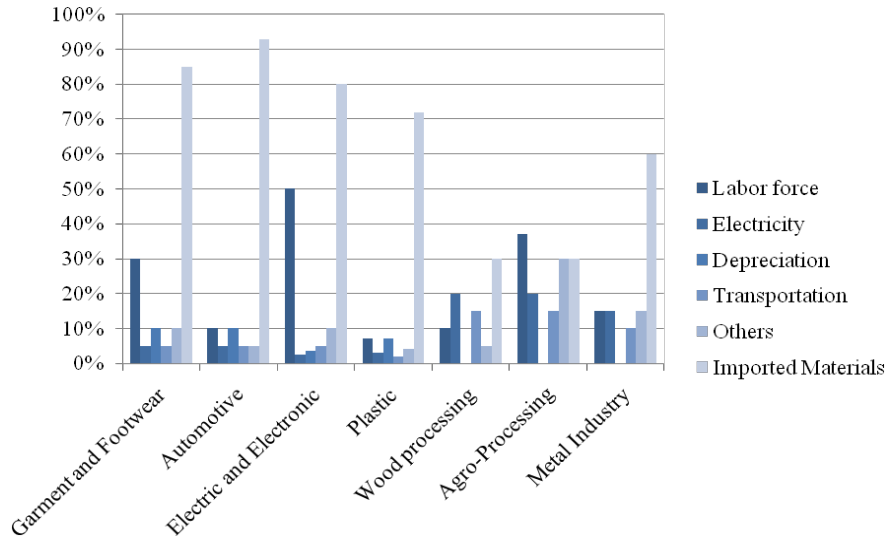
Year	Capital structure	Products	Reg. Capital ($ mil.)	Output	Sale ($ mil.)	Labor
1984	100% Local	garment	0.30	10,200 pieces	5.00	98
1989	100% Local	Plastic	0.50	900 tons	1.00	126
1989	100% Local	Plastic	0.80	2000 tons	3.00	180
1991	100% Taiwan	Wood	0.62	150,000 tons	0.40	307
1991	Japanese, Thai and Local	motorcycle	0.45	6000 motorcycles	7.20	40
1992	75% Swedish and 15% Local	furniture	1.30	Many tons	1.00	69
1992	100% Thai	motorcycle	0.50	10,000 motorcycles	9.00	180
1993	100% French	garment	0.30	300,000 pieces	1.50	160
1993	100% Local	Fans	0.40	40,000 per year	0.50	35
1993	70% Local and 30% Thai	garment	0.93	14,000,000 pieces,	6.00	762
1993	100% Taiwan	electrical	0.20	150,000 pieces.	3.50	120
1994	60% Thai and 40% Lao	agro	0.44	Thousand tons	1.50	190
1995	100% Local	water	0.45	Mineral Water 100,000 liters	2.70	250
1997	100% Korean	automotive	20.00	3224 assembled cars.	20.00	616
1997	100% Korean	motorcycle	20.00	30,000 motorcycles	15.00	616
1997	100% Japanese	electronic	1.20	40,000,000 pieces		700
1997	100% Local	telecom	0.45	300 tons	0.20	15
1998	100% Local	garment	0.75	50,000 pieces of Jackets	0.40	60
1999	100% Local	plastic	0.12	5760 tons	5.00	123
2000	100% Japan	garment	0.90	100,000 pairs of socks	3.00	250
2000	100% Local	garment	1.50	2.5 million pieces	6.30	516
2000	100% Local	wood	0.20	24 tons	3.00	70
2002	100% Japanese	electronic	0.10	10 million of pieces.	0.10	100
2003	100% Local	cassava	6.00	777 tons	0.30	125
2004	70% Local and 30% Thai	plastic	2.50	1800 tons.	2.00	47
2004	100% Chinese	motorcycle	0.92	6000 motorcycles	3.00	100
2004	100% Local	coffee	0.50	24 tons	3.00	50
2005	100% Local	steel	1.00	2000 tons of steel.	5.00	90
2005	80% Vietnamese and 20% Local	steel	2.00	2500 tons	5.00	35
2005	60% Thai and 40% Lao	motorcycle	0.60	parts of 12,000 motorcycles	0.60	24
2005	100% French	garment	0.50	5000-8000 pieces of jackets	2.00	170

2006	100% Thai	sugar	20.00	60,000 tons of brown sugar	15.00	400
2007	Thai and Japanese	garment	0.75	275,000 pieces	0.75	245
2007	100% Thai	plastic	1.50	1,250 tons	2.00	159
2007	100% Local	garment	1.40	4 million pieces	0.50	615
2007	100% Japanese	electronic	2.00	12,000,000 pieces	0.10	200
2008	100% Japanese	shoes	3.80	300,000 pairs	1.50	164

Source: Surveys between November and December 2009 by ERIT.

Whether Lao PDR will be considered as a destination of relocation or fragmentation will generally depend on what it has to offer to the multinational firms particularly in terms of cost cutting. While there may be many factors that would affect the relocation decision, as well as local investors' decisions to start up a business, we would concentrate on cost structures of surveyed firms in order to find a glimpse of answer to these questions. ERIT has conducted surveys by asking firms to evaluate what Lao PDR needs to improve its investment climates, as well cost structure of their products. While the answer to question on cost structures were that the person do not have the exact figure, we had tried to persuade them to give them according to their feelings. This is important in a way that the figures they provided were what managers, in most cases, felt about their cost structures. As some of cost structure by industry calculated by ERIT stuffs did not add up to 100 percent, we have however left the figures as they were in order to precisely reflect their evaluations, in Figure 3.

Figure 3: Cost Structure of Surveyed Firms by Industrial



4.1 Import of Parts, Components and Raw Materials

It is a well known fact that most industries in Lao PDR have a high dependence on imported parts, components and raw materials. The most striking parts of cost structures in Figure 3, was perhaps large share of imported inputs. Imported inputs accounted for from 50 percents above in cost structure of all industries except agro-processing and wood. Still the shares of imported inputs are as high as 30 percents. Imported inputs accounted for more than 80 percents in garment and footwear, more than 90 percents in automotive and about 80 percents in electrical and electronic industries.

Though with rather small samples, the figures of imported intermediate inputs shares are more or less the same with figures from other studies. More availability of local intermediate inputs would certainly reduce costs for manufacturing industries within the country, and make it or attractive destinations as location for investments.

4.2 Labor Costs

Workers in Lao PDR generally have much lower nominal wage rates in comparison with their counterparts in advanced ASEAN countries. The worker's minimum wage as stipulated in the labor law is 300,000 kip (around US$40), although in reality the

minimum wage paid is 600,000 kip (around US$70). The average wage of managers, middle managers and engineers, lies between US$200 and US$400, but it could be as high as thousands dollars in some cases.

The share of wage in production cost varies across industries. In the garment industry, wages accounted for around 30 percent in production cost. Wage share in food and agro-processing industries was also around 30 percent. In electrical and electronic industries, wage accounted for around 40 percent, while in automotive it represents less than 10 percent. In other industries such as wood and metal, the share of wage to production cost was less than 10 percent.

Food, agro-processing and electronic industries interviewed in our surveys were mostly export-oriented, while the automotive and metal industries were largely domestic oriented. One interesting trend in wage share to cost in the Lao case is that they tend to be higher in export-oriented firms and lower in domestic-oriented firms.

The shares of wage in garment and footwear, and electric and electronic is however higher than expected. Whether or not costs of imported intermediate inputs are borne by firms in Lao PDR can largely influence the shares of wage in cost structures.

4.3 Transportation

Transport and logistics remain big issues in Lao PDR. Transportation and logistics inside the country are still not well developed. In addition, the nearest sea ports are still several hundred kilometers away, and in foreign soils. As a result, transport cost accounts for a relatively large share in the cost structure in Lao PDR.

For instance, in the garment industry, transport cost accounted for around 7 percent of production cost. The automotive and electronic industries also show more or less the same level of transport cost share in the cost structure. The plastic industry has the smallest transport cost share of 3 percent in production cost. Transport cost share were the highest in wood and agro-processing industry, about 14 percents.

Though based on a small sample, 7 percent of transport cost share, in garment industry, is already very high by international standard. They can make many potential investors to think twice whether or not to invest or relocate to Lao PDR. Our survey results have nevertheless confirmed the low competitiveness of transport cost in Lao PDR.

4.4 Electricity

Lao PDR produces and sells electricity to its neighboring countries. Electricity is one of the main exports of the country. In general, there are no electricity supply problems in Lao PDR and the cost is also as low as 2 to 3 cents (USD) per kilowatt hour.

In the garment industry, electricity accounts for a small factor in the cost structure. It represents only 3 or 4 percent of the total cost of products. This is true for automobile and even lower for the electronic industry. However, electricity cost accounts for a very high percentage, between 17 percent and 18 percent, in wood, agro-processing and metal industries.

Though not serious, blackouts do cause some problems to production lines. We confirmed in our interviews in garment factories in Vientiane Capital that blackout does happen several times a year.

5. INDUSTRY-SPECIFIC LOCATION ADVANTAGES

Firms generally relocate in other areas to cut cost or maximize profit. The CLMV countries are generally known for their relatively lower wage rates. This is, however, obviously not enough to generate big flows of FDI. Being between fast growing economies such as Thailand, Vietnam, China and Cambodia have already give Lao PDR a great potential to economically grow. Connectivity is what made Lao PDR unable to materialize this great potential up to the time being.

Many economic corridors developed since 1990s began to unblock Lao PDR to its fast growing neighbors. We have witnessed great changes after many cross-border connectivity infrastructures were put in places, between Lao PDR and its neighbors. None of the following location advantages can be materialized without right hard/soft soft infrastructure to unblock Lao PDR, and in the right places.

5.1 Garment and Footwear Industry

Based on our recent survey, relatively lower wages and privilege from GSP constitute the main location advantage in garment and footwear industry in Lao PDR. Many

garment and footwear factories seeking GSP privilege relocated to Lao PDR. Many Thai investors moved to Lao PDR during the early 1990s to enjoy the GSP from EU, while many also left when EU penalized Lao PDR for not submitting the necessary application to take advantage of this privilege (Keola [2010]). Currently, a significant number of Japanese affiliated garment factories have relocated to the country obviously to enjoy its new privilege access to the Japanese market.

5.2 Food and Agro-Processing Industries

As Lao PDR is an agricultural country, the development of food and agro-processing industries has many obvious advantages. Many necessary inputs are already available locally although many are not sufficient in quantity. Given Laos' relatively large land area, the potential expansion of production of inputs for food and agro-processing is also great.

Nonetheless, constraints exist. Most raw materials for food and agro-processing industries are available seasonally. They are also not sufficient because they are done in subsistent manner and largely dispersed. If large scale farming or small scale in concentrated areas can be materialized, the location advantage of food and agro-processing industries in Lao PDR is undoubtedly great.

5.3 Electrical and Electronic Industries

Electrical and electronic products play an important role in people's lives all around the world. It is a large industry in the global market with a high degree of fragmentation. The availability of cheap labor is an advantage for Lao PDR to participate in these electrical and electronic production networks. Agglomeration of multinational producers in Thai/Lao-speaking Thailand also makes Lao PDR a potential place for relocating supporting factories.

5.4 Automotive Industry

Though very small in numbers, the automotive industry has existed in Lao PDR since the early 1990s. They were, however, assembly factories aimed entirely for the local market. Given their relatively larger sizes and weights compared to electrical and electronic products, cross-border fragmentation may not happen as easy as electronic

industries. Few have, however, begun operation in early 2000s, all of which have participated in cross-border production network of cars and motorcycles with countries in the region such as Thailand, Vietnam and Cambodia. Given Lao PDR's geographical location between growing regional production bases, there is certainly room for the automotive industry to grow to.

6. DEMANDS AND NEEDS FOR IMPROVING INVESTMENT CLIMATE

Based on our surveys, the needs of and demands from the business community are still numerous. There is therefore large room for improvement in investment climates. Better investment climate will not only attract FDI but will also foster local business and industries.

6.1 Quality of Labor Force

Though relatively abundant labor force is still available in Lao PDR, those with necessary skills are still far from sufficient. Many higher educational institutions in Lao PDR have not produced graduates with skills needed by the private sector. Professional and vocational training schools should be expanded further to train different skills according to business needs. Furthermore, many firms complain about the attitude of local workers. It may take time for the agricultural work force in Lao PDR to be ready for industrialization. Raising people's understanding of industrialization is necessary to instill correct attitudes and teach people about the value of discipline to achieve industrialization.

6.2 Licensing Procedures

Licensing procedures have been considered a problem by most firms in Lao PDR. The issue pertains not really on the fees but the time it takes to apply and the places that have to be visited.

6.3 Import and Export Processes

Import and export processes need to be further improved by reducing the number of documents required to be completed. They should not consume too much time or be a big burden to firms in terms of cost.

6.4 Transport Infrastructure and Logistics

Transport and logistics are the most important challenges for the country as it has no direct access to seaport. Within Lao PDR, the transport system and logistics are not developed. Even in Vientiane Capital, which is the most advanced and industrialized part of the country, the distance to the Thai seaport where most exports and imports to and from Lao PDR are carried out, is already 650 km.

6.5 Electricity

Electricity supply is not a problem in Lao PDR. The country produces sufficient supply of electricity for domestic industrialization and for export. The smallest problem raised in the surveys is the need to resolve the blackouts in some parts of the country. The price of electricity is very low and therefore advantageous for all kinds of industries.

6.6 Soft Infrastructure

In terms of legal framework, institutions or regulations, Lao PDR has always been modifying and adjusting its legal framework or regulations to attract more investment into the industrialization and modernization of the country. This has been reflected in the increasing investments in different economic sectors, particularly in industries. To attract more foreign investment, related laws and regulations should be improved further by giving more incentives and privileges to potential investments in the industrial sector.

6.7 Financial Investment Climate

In Lao PDR, according to recent surveys, access to credit is a critical issue. Credit is rare and interest rate is high. This is not beneficial especially for small and medium enterprises. The Lao government is trying to improve the situation by coordinating with and talking to the concerned financial institutions to resolve the problem together.

6.8 Special Economic Zones.

Based on lessons from fast-growing countries, the establishment of special economic zones (SEZs), where incentives and privileges are offered, can be an effective way to develop industrial clusters. Many types of these special zones, which can be anything from free trade zones (FTZ), export processing zones (EPZ) or even sophisticated bonded warehouses, have been widely established in economically advanced Southeast Asian countries. The need for the same facility in Lao PDR is expressed in the surveys.

7. CONCLUDING REMARKS AND SOME POLICY RECOMMENDATIONS

This chapter examined the prospects and challenges in upgrading and diversifying the industrial structure in Lao PDR. It also examined some location advantages of the country to see if more industrial blocks could potentially relocate from more advanced ASEAN countries and newly industrializing countries to Lao PDR.

Contrary to general perception that it would be difficult for agricultural based and least developed countries such as Lao PDR to attract diversified industries, the reality is that a number of industries are already present, though not many. Lao PDR is undoubtedly in the process of industrialization. The most prominent expanding industries seem to be forestry, food and agro-processing, followed by garment, construction materials, and to some extent, electrical, electronic and automotive industries.

Reducing production cost is essential for Lao PDR to move forward with industrialization in a sustainable way. The biggest problem found in our survey was imported intermediate inputs and transport costs. Being far from the seaport is something that will not change. What it can do is to make the most out of cross-border cooperation through many existing and soon-to-be-installed economic corridors.

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CHAPTER 8

UPGRADING AND DIVERSIFICATION OF INDUSTRIES IN MYANMAR: PROSPECTS AND CHALLENGES

Moe Kyaw and Toshihiro Kudo*

Abstract

This paper explores the prospects and challenges of the industries to be diversified and upgraded to attract more production blocks to Myanmar. It aims to find out how industries in Myanmar can be developed by taking into account its industrial location's advantages and disadvantages as well as structure and trends. Using the case study method, seven industries were selected to undertake the infrastructure needs survey, garment survey, and labor survey. The data gathered were able to provide evidences to judge the requirements to be fulfilled, hence, make recommendations for further improvement.

INTRODUCTION

(1) Location advantages and disadvantages of Myanmar

Myanmar is the the world's 40th largest country in terms of area and the 24th most

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populated. Among its neighbors, China and India with a combined population of more than 2.6 billion people are emerging economies that belong to the G20. Thailand is one of the Newly Industrialized Economies (NIE) in the ASEAN region.

With economic and regional development in South and Southeast Asia, the position of Myanmar is becoming increasingly strategic. Myanmar serves as a gateway to trade routes between its neighbors. As such, Myanmar holds a potential location for industrial growth and its accompanying economic advantages. With the substantial reforms implemented in Myanmar after 1988[1], promoting transformation from an agrobased industry to an industrialized one became the target objective since its independence in 1948.

Myanmar also has location advantages in the form of abundant labor and skilled manpower. The population at working age group increases by an average of about one million people annually. The literacy rate is among the highest in the region at 89 percent. Due to abundant and surplus labor, wages are low compared to other ASEAN countries[2].

Myanmar could be regarded as a country with lower labor cost. Some ASEAN countries need to shift their labor intensive industries such as garment industries in order to reduce the unit cost of production.

Location disadvantages, on the other hand, are not well materialized because of some problems in Myanmar. Such includes inadequate road infrastructure and electricity supply. A business environment and investment climate which are not supportive to manufacturing and processing industries also exist.

[1] For example, the setting up of a Foreign Direct Investment Law, the creation of 18 industrial zones, the opening of border trade through border check points and two trade zones.

[2] According to a 2008 ERIA-CLMV survey, the average monthly wage of a general worker in Yangon is US$35 while a general worker in Phnom Penh receives US$80.

In the overall, there are more location disadvantages than advantages in Myanmar. There are serious service link cost obstacles to its participation in global and regional production and distribution networks. The paper examines industrial-specific location advantages and disadvantages in Myanmar. Suggestions are made on how to attract more production blocks to diversify industries and integrate Myanmar in these networks.

(2) History of Industrial Development in Myanmar

During the colonial period emerged a monocultural economy based on the expansion of paddy production and rice export. At that time, Myanmar was the top rice-exporting country in the region. Rice mills were built throughout the country to process paddy. Teak was the second export item; numerous saw mills were built too. Industry was mostly composed of these two sectors.

After gaining independence, Myanmar opted for an interventionist economic system where planning and State-owned enterprises (SOEs) were essential but not exclusive. Industries producing consumer goods flourished while the government took responsibility for public goods and other industries that the private sector could not establish due to lack of capital investment and technology. In this context, foodstuff consumer goods manufacturing factories represented the largest portion of the industry sector.

After 1962, Myanmar adopted the so-called “Burmese Way to Socialism”. All sizeable industries were nationalized, free market practices were discarded, and foreign trade was restricted. Priority was given to agro-based industries to enhance production of the agriculture sector. On the other hand, the government built state-owned heavy

industries. An import-substitution strategy was adopted to save foreign exchange earnings and promote domestic consumer goods manufacturing and foodstuff processing industries. The private sector continued to play a role in the industry, especially in food and beverage processing. The "Burmese Way to Socialism" was abandoned in 1988 and substantial economic reforms have been enacted since then.

(3) Overall Industrial Structure of Myanmar

The industrial sector contributed only 15 percent to the total GDP in 2007-2008 (Table

Table 1: Share of Industrial Sector in GDP

(%)

No	Particular	1988-89	1991-92	1995-96	2000-2001	2001-2002	2005-2006	2006-2007	2007-2008
		(1985-86 Base Year)				(2000-2001 Base year)		(2005-2006 Base Year)	
1	**Production**	59.4	60.4	60.6	60.5	66.5	65.3	63.8	63.3
	1) Agricultures	38.5	37.5	37.1	33.6	47.4	40.2	37.1	35.6
	2) Livestock & Fishery	8	7.6	6.8	8.3	8	9.5	7.6	7.3
	3) Forestry	1.4	1.9	1.1	0.9	0.5	0.3	0.6	0.5
	4) Energy	0.3	0.3	0.2	0.5	0.2	0.2	0.2	0.2
	5) Mineral product	0.4	0.7	1.1	1.8	0.4	0.5	0.5	0.5
	6) Manufacturing	8.7	8.8	9.3	10.1	7.8	11.4	13.8	15
	7) Electrical Power	0.6	0.7	1	1.1	0.1	0.1	0.2	0.2
	8) Constructions	1.5	2.9	4	4.2	2.1	3.1	3.8	4
2	**Services**	18.2	17.4	18	18.6	9.6	11.7	14.5	15
	1) Transportation	3.5	4	4.3	4.6	6.1	7.7	10.7	11.1
	2) Communication	0.7	0.8	1.3	2.1	0.3	0.7	1.2	1.3
	3) Finance	3.4	0.6	1.5	2.1	0.1	0.2	0.1	0.1
	4) Social and Management	5.9	7.2	6.7	6	1.6	1.5	0.9	0.9
	5) Rental and Other Services	4.7	4.8	4.2	3.8	1.5	1.6	1.6	1.6
3	**Trade**	22.4	22.2	21.4	20.9	23.9	23	21.7	21.7
4	**GDP(1+2+3)**	100	100	100	100	100	100	100	100

Source: Ministry of National Planning and Economic Development (MNPED).

1). The contribution of the industrial sector ranges from 25-50 percent of the GDP in most ASEAN countries.

To encourage the development of the private industrial sector, 18 industrial zones were established across the country after 1988. There are 18,257 industries in these industrial zones, out of which 44 percent are located in Yangon, followed by Mandalay with 11 percent (Table 2). Over 322,000 workers are employed in these zones. Advanced technology and large scale industries are concentrated in Hlaing Thayar industrial zone (Yangon West). This kind of industries are the most numerous and represent 57 percent of the total number of industries in the industrial zones. Among four districts in Yangon, most of the industrial zones are located in the Yangon West District followed by North District. As Yangon West District is downtown area, it has smallscale and medium scale industries but some large factories are found in Hlaing Township and Mayangone Township. Yangon South District includes Thi La War Industrial Zone in Than Lyan Township and industries in Dala and Seik Gyi Kanaung Townships. Mandalay Industrial Zone consists of Industrial Zone (1) and (2).

The registered industries are comprised of 13 business and 26 product groups. Among the registered private industries, food-processing accounted to 64 percent. The combined number of foodstuff, clothing, consumer and household goods industries represent the largest share with 76 percent.

Myanmar has tried to follow the path taken by regional Newly Industrialized Economies (NIEs). However, the contribution of the industry sector to the GDP is still low at 15 percent and the internal structure of the processing and manufacturing sector has remained virtually undeveloped in Myanmar with the dominance of smallscale, agro-processing and foodstuff industries.

Table 2: Industrial Establishments in Industrial Zones in Yangon Area

Sr	Zone name	Number of establishments				Labor force
		Small	Medium	Large	Total	
1	**Yangon (East)**					
	South Dagon Zone(1)	95	34	2	131	14,335
	South Dagon Zone(2)	284	194	669	1,147	16,847
	South Dagon Zone(3)	6	82	45	133	826
	Dagon Seikkan	83	8	-	91	5,762
	East Dagon	35	18	27	80	1,688
	North Okkalapa	27	20	18	65	2,362
	Shwe Paukkan	32	82	8	122	3,862
	South Okkalapa	26	57	31	114	6,498
	Thaketa	24	14	10	48	2,981
2	**Yangon (West)**	148	274	612	1,034	12,079
3	**Yangon(South)**	76	150	673	899	6,582
4	**Yangon(North)**					
	Hlaing Tha Yar	344	41	3	388	37,021
	Shwe Pyi Tha	134	32	15	181	18,734
	Mingaladon	81	17	38	136	11,562
	Yangon total	**1,395**	**1,023**	**2,151**	**4,569**	**141,139**
5	Mandalay	284	194	669	1,147	12,480
6	Myingyan	37	169	133	339	1,888
7	Meikhtila	21	108	257	386	2,566
8	Muaung Mya	36	34	328	398	2,349
9	Hinthada	17	42	388	447	1,954
10	Pathein	25	78	230	333	2,555
11	Mon Ywa	85	230	588	933	4,594
12	Kale	11	34	220	265	1,253
13	Pyay	18	83	84	185	857
14	Yenaung Chaung	8	20	60	88	591
15	Pakokku	38	113	121	272	1,479
16	Mawlamyaing	41	149	19	209	1,071
17	Taunggyi (Aye Tha Yar)	40	41	669	750	4,129
18	Myeik	19	2	5	26	2,685
	Other zones total	**680**	**1,297**	**3,771**	**5,778**	**40,451**
	Total	**3,470**	**3,343**	**8,073**	**14,916**	**322,729**

Source: Directorate of Industrial Inspection and Supervision, Ministry of Industry (1).

Looking at the industrial structure, one can try to determine the contribution of industries and firms to the official economic growth of 13 percent[3] a year.

(4) Industrial Policy of Myanmar

After 1988, Myanmar adopted a market-oriented economic system and liberalized its economy by promulgating the Foreign Direct Investment Law and the Myanmar Citizenship Investment Law. Some institutional changes took place in line with the market-oriented system. Various reforms were undertaken to encourage active participation of the private sector in national economy, but the State continued to play a crucial role in industrial development in Myanmar.

The official industrial policy[4] declares a systematic development of industries, such as heavy industries, agrobased and agro-supportive industries, import substitution industries, consumer goods industries, export promotion and value-added industries not only in the State sector but also in the private and cooperative sectors. Long-term industrial development goals are set to promote the industry sector.[5] The industrial policy indicates long-term targets to be implemented by the public and private sectors[6].

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[3] Average official GDP growth rate of the country was 12.6% per year for the period 2000-2008, Myanmar Economy: A Comparative View .

[4] This policy includes 1) Long-term industrial development goals; 2) Long-term targets to be realized by State and private sectors; 3) Industrial development guidance for private and cooperative sectors; 4) Measures to be taken for industrial development.

[5] The four goals are: 1) To develop industries based on agriculture; 2) To raise the quantity and quality of industrial products; 3) To produce more new items of mechanical equipment; 4) To produce machines and equipment for industrial use.

[6] The seven targets are: 1) To produce adequately machines and equipment for agro-industrial use by expanding agrobased industries; 2) To exert further efforts to produce quality consumer goods; 3) To prioritize the expansion of import substitution industries and export promotion industries; 4) To develop the processing industries based on the raw materials of agricultural products; 5) To provide necessary contributions towards the industrial development of private sector; 6) To strive for harmonious and mutual supportive development among the public and private industries; 6)To raise the share of

Industrial development guidance for private and cooperative sector is also given[7].

The government has adopted some important measures to promote industrial development, of which the establishment of industrial zones is found to be the most important[8]. However, these diverse principles are mere slogans than a serious industrial plan. The share of the industry sector in GDP was less than 7 percent before 2000. The government tried to increase the share up to 15 percent by 2007-2008. The share contribution of the industry sector in GDP was doubled, so it can be assumed that the industrial sector has developed because of right industrial policy. The industrial policy does not support anything, however, the quantity of private factories and their production volumes increased mainly because of market expansion and advancing consumers' purchasing power. The industries in Myanmar seem fairly content relying on domestic market. It has lacked few opportunities to expand their products to export market. It needs to explore the obvious and hidden factors that push the industries to location disadvantages.

In terms of institution, the Myanmar Industrial Development Committee headed by the Prime Minister composed of cabinet ministers and deputy ministers is

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Cooperative sector in total industrial GDP; 7) To establish industrial zones by regions for industrial development in private sector as well as for regional development.

[7] The guidance is: 1) To arrange and encourage capable entrepreneurs to implement the appropriate industrial projects for industrial development in the private sector; the state will carry out the task for the development of heavy industries which is not yet the capacity of the private sector; 2) To encourage the emergence of industrial cooperative associations to join the private sector in industrial development; 3) To make the private sector establish the import-substituting industries stage by stage; 4) To focus on regional self-sufficiency while pursuing industrial development.

[8] These measures are: 1) The establishment of industrial zones. Fulfilling the requirements of industrial zones for systematic and rapid development; 2) Facilitating the private entrepreneurs to acquire new ideas and technologies for industrial development; 3) Striving for the establishment of heavy industry that produces agricultural and industrial machineries to create favourable conditions for industrialization; 4) Giving priority for the establishment of export promotion and import substitution industries in collaboration with local and foreign entrepreneurs.

responsible for coordinating, overseeing, and supervising the state sector's industrial performance as well as that of the private and cooperative sectors. The Ministry of Industry has the following roles to perform: (1) largely responsible for the production of consumer products and light industrial goods; (2) concentrates on developing heavy industry; and (3) put more emphasis on their production targets than on facilitating private industries.

In terms of legal framework, Myanmar has a few outdated industrial laws and regulations and has no Small and Medium Enterprises (SME) law or institution. In the private sector there is an association named Myanmar Industries Association (MIA) under the Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI) - to promote, represent and safeguard the interest of the Myanmar private industries. There is no federation level organization for private industries.

1. CURRENT SITUATIONS OF SELECTED INDUSTRIES

1.1. Garment Industry

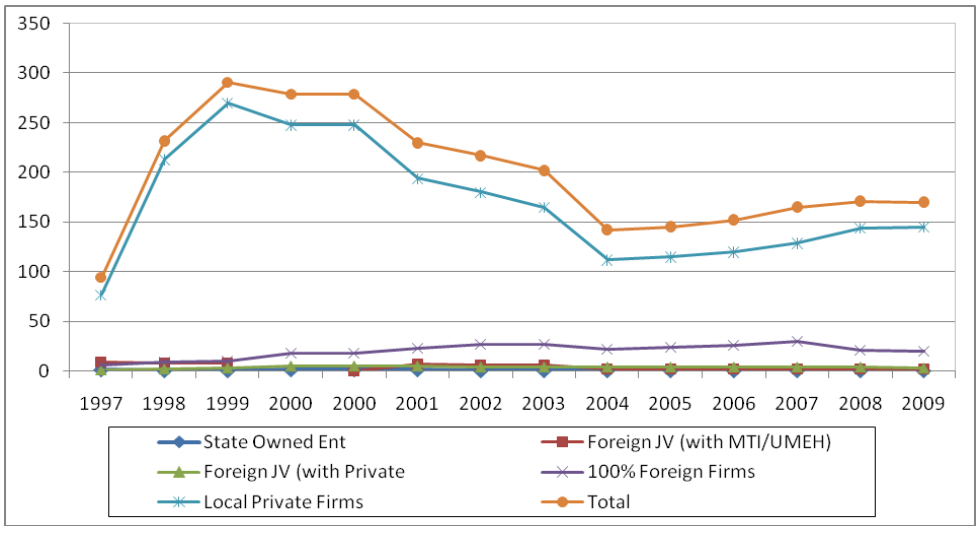
The export-oriented garment industry is a major foreign exchange earner for developing economies because of its reliance on low labor cost. Myanmar has abundant cheap labor but the garment industry is underdeveloped due to several reasons, including economic sanctions of the United States since 2003. Introduced in 1990 through a joint-venture (JV) with Union of Myanmar Economic Holding (UMEHL)[9], the garment industry thrived from 1997 to 2000 and declined afterward. During the peak period there were over 300 garment factories in Myanmar of which 70-80 percent were foreign-owned or

[9] A semi-government firm.

foreign backed up firms. Availability of abundant, cheap, and relatively well-educated labor force, MFA privileges and China+1 strategy of international buyers are the factors behind the rapid growth. In 2009, about 170 garment factories exist in Myanmar with 20 Foreign Direct Investments (FDIs), 5 JVs, and 145 local private firms. Figure 1 shows the growth of the garment industry from 1997 to 2000.

At present, the yearly exports of Myanmar garment industry is around US$390 million. It is insignificant if compared to Cambodia, which enjoys an export value of more than US$3 billion a year. US sanctions limit garment exports. Insufficient electricity supply leads to high operational cost and underdeveloped transportation and communication infrastructure result in lengthy transaction time and high cost of production.

Figure 1: Trends of Garment Industry Development from 1997 to 2009



Source: (Myanmar Garment Manufacturers Association).

1.2. The Foot Wear Industry

There are many footwear companies in Myanmar, but most of them produce Myanmar style slippers. About 10 foreign and local factories have been producing shoes and foreign style slippers for export to the European Union (EU), Japan, Korea, and other Asian markets since 1994. At present seven CMP-based[10] footwear factories and two local firms are operating in Myanmar. Business growth has been stable due to regular export since 2003. The local factories penetrated the local market and diversified their outreach by extending to neighbouring countries through border trade. The total production volume of exported footwear is around 4 million pairs, with a foreign export market value of over US$38 million a year (Table 3). Shoe manufacturers in Myanmar, a country that benefits from the "Generalized System of Preferential Tariff" (GSP) privilege, have enjoyed robust sales due to the large quantity of orders from Japan. If more raw materials were available domestically, the shoe manufacturing industry would operate more smoothly and develop more quickly. At the moment only about 20 percent of raw materials including rubber for insoles, and foam and cardboard boxes for packaging—come from domestic sources.

Table 3: Trends of shoes and footwear exports from Myanmar from 2005-2009

No	Year	Volume (pair)	Value USD
1	2005	2,807,561	21,481,066
2	2006	4,068,128	27,107,082
3	2007	4,190,777	28,056,598
4	2008	4,725,234	29,254,395
5	2009	4,274,660	38,740,987

Source: Customs Department.

[10] Cutting, Making and Packaging

The main raw material—leather—is difficult to be available domestically in Myanmar since no farm animals are specifically bred for the industry. Local non-CMP footwear manufacturers receive raw leather from cow and goat skin. Firms have to import raw leather from other countries especially China.

According to industry sources, other delays are caused by regulations requiring all manufacturing CMP system to be approved first by the Myanmar Investment Commission, then CMP Supervision Committee for operation, and by the Directorate of Trade under the Ministry of Commerce for export and import licenses' application. As a result, some factories cannot accept short-notice orders.

1.3. Electric and Electronic Appliances

Myanmar Machine Tools and Electrical Industries (MTEI) under the Ministry of Industry produced household electrical and electronic goods since 1964 in collaboration with Matsushita Electric Industrial Co. Ltd. It was then named Myanmar Heavy Industries, the only manufacturer in this sector before 1988.

Private industries have started production of electric and electronic goods and parts after 1988. Since 2000, some private firms import parts and components. They also assemble and distribute TV/VCD or refrigerators under their own brand. Wire cable, transformers, and motors for domestic markets are also being produced. These industries are capital intensive and lack supportive industries. They have to operate from beginning to end and stock raw parts for production. JV firms are overcoming the constraint and the electric and electronic industries recently started to operate. There are also some CMP-based electric and electronic parts and components assembling factories.

Battery is the most essential parts among electronic goods. High quality foreign

batteries are imported from neighboring countries. There are many foreign brands available. They are expensive compared with Myanmar brands but many people believe they are more reliable when it comes to quality and durability. Despite import competition, local entrepreneurs are committed to manufacturing batteries, in order to fulfill the local demand. There are only two private battery manufacturers and one state-owned factory in Myanmar. For the market demand, more than 50 local battery distributors are operating in Myanmar where they double their efforts to upgrade their products and manufacture international standard batteries with modern technology. Myanmar still imports US$ .35 million worth of batteries and accessory in 2008. The local batteries can substitute imported batteries.

With regard to the wire cable production, there are about 7 industries in Yangon which the Golden Lion Wire is the market leader. The electric cable is produced for industrial use and domestic use. The raw material for cabling is mostly sourced from China, Korea, and other Asian countries, notably Thailand. Locally manufactured wires and cables now make up majority of the market due to lower price and competitive quality against imported goods. But producers continue to rely on imported raw materials.

1.4. Processed Food Industry

Myanmar has been producing processed food since 1999. It is an important sector in Myanmar composed of establishments engaged in the processing/manufacturing and distribution of food and food products. Myanmar people now use more processed or preliminarily treated food to make meals, which is seen as a big opportunity for food processors.

Among the processed foodstuffs, coffee mix and instant noodle are the most popular products due to their convenient use and reasonable prices. Coffee mix, which had a market value of US$80 million in 2009, was introduced in Myanmar market in 2000 and its consumption has been growing by 10 percent annually. Instant coffee tops the demands among other commodities. The Myanmar coffee mix market has long been dominated by the Super brand, followed by Mikko, Gold Roast, Super One, Sinoda, Ben Café, and Coffee King.

The consumption of instant noodle has been growing in Yangon. Instant noodle had a market size valued at US$50 million in 2009 and the rate of consumption has been increasing by 6 percent for several years. Producers need to manufacture high quality products to reduce the market share presently gained by imported brands.

Nowadays, manufacturers try to link with the retail market through various trading methods including consignment system.

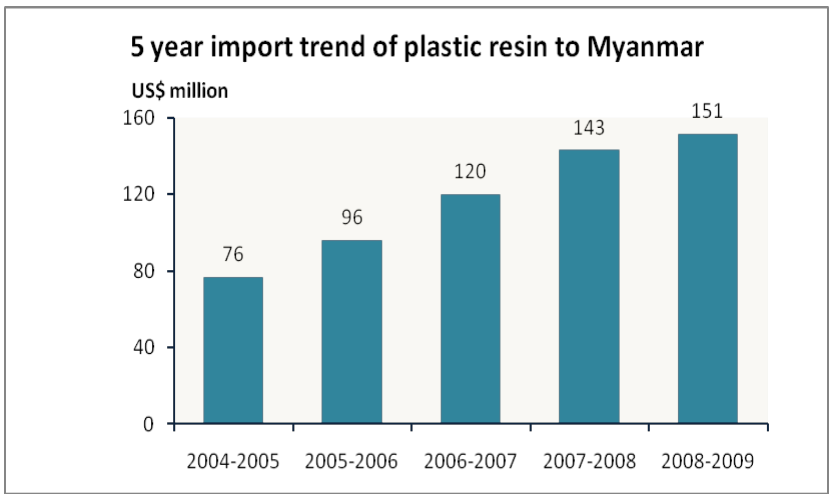
1.5. Plastic Products

The private plastic businesses had increased rapidly between 1994 and 2003. According to 2006 figures, there are 459 private plastic industries in Yangon and 73 in Mandalay which were already registered with the Directorate of Industrial Supervision and Inspection, Ministry of Industry. According to the 2009 issue of Yangon Directory and Mandalay Directory, there are 522 plastic industries in Yangon and 186 numbers in Mandalay. According to the estimates made by the Chairman of the Myanmar Plastic Industries Association, there are about 6,000 plastic factories in the whole country. Some set up by sole proprietorship and some are run by companies and partnership entities.

Nowadays, melamine, various plates, plastic chairs, pipes and plastic commodities could be produced without difficulties. All kind of plastic pipes are produced using German machines. Coffee mix bags, noodle bags, packing material and printing can be made locally. The consumption of plastic is growing by 10 percent on yearly average. Plastic resin costing US$76 million was imported in 2004-2005 and the figure reached US$150 million in 2008-2009 (Figure 2).

Myanmar people have widely utilized High-Density Polyethylene (HDPE) plastic bags for packaging—food in markets and restaurants as well as for disposal of rubbish. HDPE plastic bag producers in Myanmar's commercial city of Yangon have been instructed to stop production as part of the program for creating a thin-plastic-bag-free city and bringing about a clean environment. Myanmar has started banning use of small and thin plastic bags in a number of cities since June 2009. Plastic bag production in Myanmar has since dropped by half.

Figure 2: Import Trend of Plastic Resin to Myanmar from 2005-2009



Source: Select Monthly Economic Indicators, October 2009.

1.6. Automobile Industry

Myanmar Automobile and Diesel Engine Industries (MADI) under the Ministry of Industry is an enterprise specializing in the production of light and heavy motor vehicles, component and parts, accessories, and multipurpose diesel engines. The production of buses and trucks at the Automobile Factory in Yangon started in 1962. The production of light vehicles at the Automobile Factory in Htonbo started in 1973 under the Japanese economic and technical cooperation.

Myanmar Suzuki Motor Co., Ltd was established as a JV between Suzuki Motor and the Ministry of Industry in 1998. Some 1,000 units of Suzuki Wagon and Suzuki Light Trucks have been produced annually since then. Due to high domestic demand and the rise of motor vehicle prices in local market, vehicles from neighboring countries have entered illegally since 1990s. In order to meet the domestic demand, the private sectors have been allowed to assemble and produce jeepneys and light trucks in the industrial zones since late 1990s.

The motor vehicle industry grew after 2004 when illegal vehicles were strictly under control. At present there are about 150 car production firms in Myanmar (Table 4). The Ministry of Industry grants licenses to produce jeepneys and light trucks for automotive firms in industrial zones for more than 10,000 units a year. The car manufacturers assemble or produce based on quota system.

There are 5 motorcycle assembling plants in Myanmar which have started in 2003. Motorcycle engines are imported from China and being assembled in Myanmar. The total production of 5 local assembling plants in 2008-2009 was around 26,000 units. While the assemblers were gaining momentum, licenses were issued to illegally

Table 4: Car Manufacturers (assemblers) in Myanmar

No	Cities	Number of Assembler
1	Yangon	45
2	Mandalay	73
3	Meikhtilar	11
4	Taunggyi	7
5	Mawlamyaing	7
6	Kalay	5
7	Pathein	1
	Total	**149**

Source: Industrial Zone Management Committees.

Table 5: Motorcycle Manufacturers (assemblers) in Myanmar

No	Cities	Number of Assembler	Brands	Annual Production Unit
1	Yangon	1	Viva (Suzuki)	6,000
2	Yenanchaun	2	Star, Ram	4,000
3	Pakokku	2	Stream (Yoma Yazar) , Zaw	6,000

Source: Industrial Zones Management Committees.

imported motorcycles by the authorities, adversely affecting the motorcycle industries (Table 5).

1.7. Cold Storage and Processing

Myanmar produces and exports various types of fishery product items such as aquarium fish, live fish, sea water fish/prawn (chilled/ frozen), fresh water fish, Dried fish, Live finned eel, lobster, sea live crabs, baby long (fillet), snack skin gobran, fish meal, and

dried rosy Jew maw etc.

The fishery sector is the fourth most important source of export earnings in Myanmar. The country earned US$561 million from the export of 324,710 metric tons of fish and fishery products in 2008-2009 (Table 6).

Myanmar's cold storage businesses are mainly centered on the export market. Most of the cold storages factories are in Yangon, Rakhine State, and Myeik. There are 116 cold storage and processing plants out of 143 various processing plants in Myanmar (Table 7).

Table 6: Five years Export Trend of Fishery Products from Myanmar

No	Year	Volume (MT)	Value USD (million)
1	2004-2005	255,780.18	346.92
2	2005-2006	271,070.25	359.20
3	2006-2007	343,426.61	466.16
4	2007-2008	351,652.05	561.02
5	2008-2009	324,710.54	483.23

Source: Department of Fisheries.

Table 7: Type of Processing Plants in 2007

No	State/ Division	Classification						Total
		Cold store and processing	Surimi	Fishmeal	Dry prawn	Prawn shell dust	Canning	
1	Yangon	77	5	5	-	2	2	91
2	Tanintharyi	13	1	6	2	-	-	22
3	Ayeyarwaddy	4	-	2	-	-	-	6
4	Rakhine	14	-	-	-	-	-	14
5	Mon	7	-	2	-	-	-	9
6	Shan	1	-	-	-	-	-	1
	Total	**116**	**6**	**15**	**2**	**2**	**2**	**143**

Source: Department of Fisheries.

Standardization of the cold storage plants are currently determined by the Department of Fisheries. The products of cold storage factories could be exported with the assistance training facility provided by Myanmar Fisheries Federation[11]. Cold storage factories gain improvement in meeting international standard for operation in Myanmar. The factories have been using not only Hazard Analysis and Critical Control Point - and International Standard of Organization or ISO but also getting approval for Quality Control—checking the export product in an experiment room in accordance with international standard. The factories are trying to produce in line with the European Union (EU) standards.

Fishery products' exports grow every year with 10 percent domestic production is being exported at present. Fish and prawns for export market are stored at local cold storage factories. Main export markets are China, Japan, Malaysia, Thailand, Singapore, Saudi Arabia, Bangladesh, Austria, United Arab Emirates (UAE), and EU. One of the major constraints for cold storage industries is the shortage of skilled labors and engineers[12].

The value-added products—Fillet, Surimi and Fishmeal—are produced domestically and exported to foreign and neighbouring countries. Fishery businesses do not sell by-products to other domestic entrepreneurs. Instead, they establish their own industries to produce value-added products for export using these by-products. The buyers provide advanced technology and techniques to produce desirable products. The factories produce the products in line with international standard for safety. Buyers also

[11] Myanmar Fisheries Federation (MFF) is a leading organization body representing fisheries associations from the private sector in Myanmar. Local level associations are formed in line with public administrative structure such as division/state or districts for better coordination with local authorities and private chambers alike.

[12] 2009 Survey of Infrastructure Needs in Yangon area

have the necessary machines, technologies and experts to get quality goods.

2. COMPARISON OF INDUSTRIAL-SPECIFIC ADVANTAGES AND DISADVANTAGES

2.1. Infrastructure needs survey

At the end of 2009, with the support of the Bangkok Research Centre, CLMV countries have conducted the Survey of Infrastructure Needs. The purpose of the study is to answer the following research questions. How can the CLMV countries attract more FDI from the more advanced ASEAN nations? Which elements are needed to attract more FDI among: 1) development of infrastructure; 2) improvements of investment climate; and 3) human resource development? In case that hard infrastructure, investment climate, and human resource were to be improved in the future, what kind of "upgrading", like expansion of market and development of new products, is possible in the "existing industries"? Why have not CLMV countries been able to diversify their existing industrial structure?

The survey entails three steps to data collection by using semi-structured questionnaires.

1) Interview with business association and related policymakers
2) Targeting respondent firms
3) Interview with firms

The Infrastructure Needs Survey was conducted in Yangon in November and

Table 8: Sample of Infrastructure Needs Survey by Sector

No	Industrial sector	No of Sample	Factories' location
1	Electric parts	5	Yangon
2	Processed Food	4	Yangon
3	Garment	5	Yangon
4	Foot Wear	5	Yangon
5	Plastic Products	5	Yangon
6	Cold storage and Processing	5	Yangon
7	Automobile	1	Yangon
8	Motorcycle	1	Yenangyaung
	Total	31	

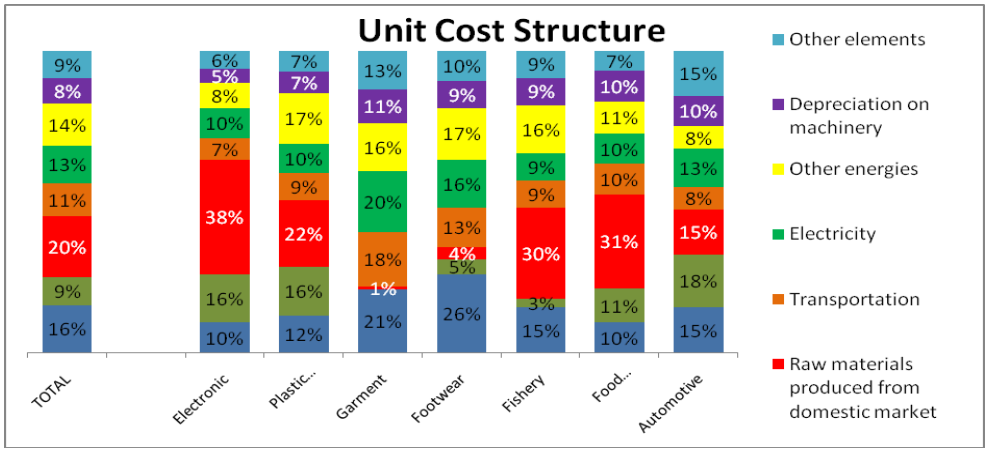
Source: Survey results, 2009.

December 2009. Five business associations and 31 private firms were interviewed in which 30 firms are located in Yangon and one motorcycle assembling factory is in Yenanchaung, central part of Myanmar.

2.2. Unit Cost Structure

In order to identify and compare industrial specific advantages and disadvantages, unit cost structure and total cost structure were surveyed. As shown in Figure 3, total cost structures vary with each sector. Cost of labor is the highest in footwear industry with 26 percent followed by the garment industry with 21 percent. Raw materials including imported items constitute the basic component of cost of production for food processing industry and plastic industry. Other industries do not rely on imported materials which are more costly and take more time to be available for production. Expenditures spent on transportation are remarkable in footwear and garment industries. Garment and footwear industry need more supply of electricity than others.

Figure 3: Unit Cost Structure by Industry



Source: Survey results, 2009.

2.3. Infrastructure and Service Link Cost

Cost for Infrastructure is directly linked with service link cost. Factories located in industrial zone enjoy significant advantages in terms of infrastructure but the level of industrial zone development varies from one zone to another.

2.3.1. Cost of electricity

The gap between electricity supply and demand is the most difficult problem for Myanmar and it severely affects the manufacturing industry. Demand for electricity is increasing overtime due to many factors [13]. Despite the hydropower projects implemented by government, the power supply cannot meet the increasing consumption (Table 9).

[13] Improvement of the living standard of the people, growth of population and expansion in urban areas, growth of industrial sector, overall economic growth of the country, building of a new capital city and its requirements for electricity.

Table 9: Yearly Power Capacity Development Prospect

Year	Plant	Existing generating capacity (MW)	Generating capacity to be increased (MW)	Availability of generating capacity (MW)	Demand estimated by the ministry (MW)
2009	30	2255	-	2255	1923
2010	32	-	865	3120	2069
2011	37	-	479	3599	
2012	40	-	312	3911	

Source: Ministry of Electric Power.

That is why every household as well as the industry are facing electricity shortage in Myanmar. The survey found out that 95 percent of the survey factories experience power interruptions frequently and only 5 percent have it for a few times within six months. These power interruptions either last longer than 30 minutes (90%) or sometimes 5-30 minutes (10%).

Insufficiency in the supply of electricity is a major problem of the manufacturing sector. Industrial zones are supplied with electricity on a rotation basis. The government charged electricity consumption for K50 per unit on private industrial use and $0.08 per unit for foreign firms. Due to black outs, factory-owned generators are used to operate the business. Therefore, daily average consumption of diesel for the industry is: Garment/footwear factory-150 gallons; electric/electronic plant-50 gallons; cold storage-300 gallons. It means that the garment/footwear factory has to spend an additional one-day cost of US$450 on diesel, US$150 for electric apparatus, and US$900 for the cold storage.

2.3.2. Cost of transportation

Industries relying on domestic market usually distribute their products through poor road infrastructure. For the export firms, due to the underdevelopment of upstream and supporting industries, garment factories in Myanmar have to import all raw materials and accessories from abroad. Then after manufacturing, all products are exported to overseas markets. These export products are transported from factories of the industrial zones in Yangon area to its port in one to two hours.

As shown in Table 10, export firms bear the transportation cost from the factory to the port while international buyers placing their orders on a CMP basis cover the transportation cost from the ports to their destination. Transportation fees to ship cargo to and from Yangon are higher than for other ports in neighbouring countries. Freight charges are volatile based on seasonal factors as Myanmar's primary export items, mostly agricultural products, are exported from February to May.

Table 10: Transportation Cost from Factory to Port in Yangon

(US$)

No	Industrial zone	Distance (Km)	Botahtaung (BSW)		Asia World (ASW)		Thilawa port terminal (MITT)	
			20' container	40' container	20' container	40' container	20' container	40' container
1	Downtown	5	50.0	70.5	55.0	82.5	78.5	127.5
2	Hlaing Tha Ya	16	73.0	107.0	73.0	107.0	127.0	179.0
3	Shwe Pyi Tha	16	73.0	107.0	73.0	107.0	127.0	179.0
4	Mingaladon/ Pyinma pin	25	79.5	115.5	84.5	125.0	127.0	179.0
5	South Dagon	25	62.0	93.5	67.0	104.5	75.5	119.5
6	Shwe Put Kan	25	68.5	101.0	735.0	111.0	120.0	170.0
7	Tharkatha	10	60.0	89.5	65.0	99.5	75.5	119.5
8	Hlegu	48	129.0	176.0	136.0	186.0	185.0	250.0
9	Mawbe	50	131.0	181.0	136.0	191.0	185.0	250.0
10	Bago	78	150.0	215.0	155.0	225.0	215.0	275.0

Source: Transportation Agency in Yangon Port.

Table 11: Freight Charges from Yangon Port to Other Destination Ports from 2007 to 2009 (US$)

Fright charges for 20' Container

Port of Destination	Freight Charges				Travel Time
	2007 March	2007 September	2008 March	2009 December	
Singapore	480	265	1050		6 days
Bangkok	685	475	1250	500	14 days
Port Klang	580	400	1038	185	5 days
Jakarta & Surabaya	800	460	1050	275	5 days
Yokohama	(All vessels go to Japan via Singapore or Port Klang.)				
Calcutta	925	940	1725		14 days
Qingdao	900	655	1350	600	10 days
Cebu	1150	800	1300		14 days

Source: Myanmar Freight Forwarders' Association.

2.3.3. Cost and time needed for customs clearance

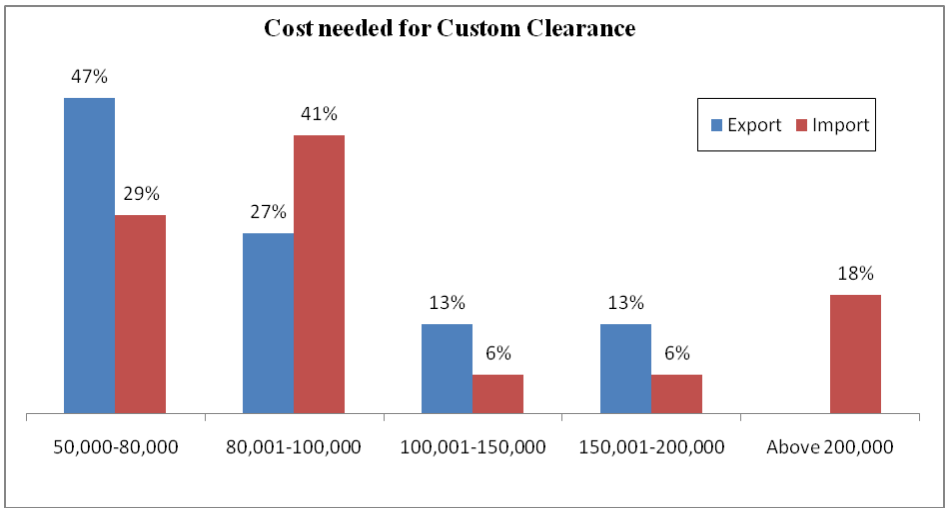
Institutional service link costs vary depending on the product items and the rules and regulations of respective departments. The procedures to apply for an export/import license entails 7 to 12 steps passing through various organizations including business associations and related departments. It usually takes two to three weeks to obtain a license. Customs clearance at Yangon Port costs from K 50,000 to 200,000 for a 20-feet container. Cost for exports is around K50,000 to 80,000 while imports cost K80,000 to 100,000 per container. The cost of customs clearance for imports is higher than exports (Figure 4). Time for export customs clearance is one day on the average while it takes three days for imports (Figure 5).

2.3.4. Production lead time

According to the survey, the period covered between customers' order and delivery of products in the export business is from three weeks to three months. This is the same

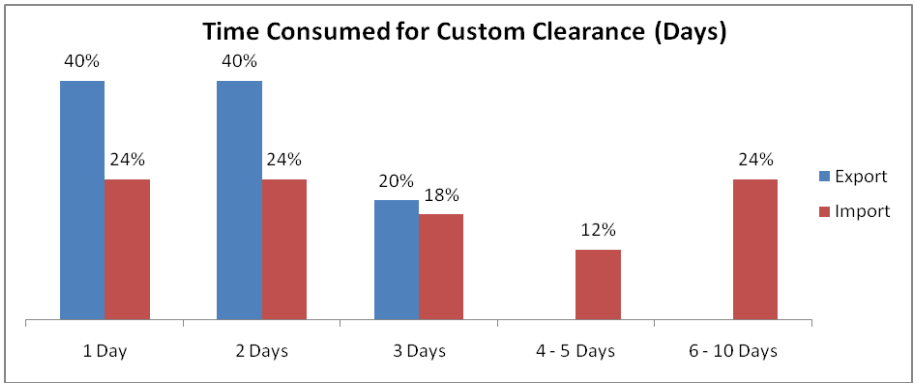
Figure 4: Cost for Customs Clearance for Exports and Imports

(kyats/20' container)



Source: Infrastructure Needs Survey, 2009.

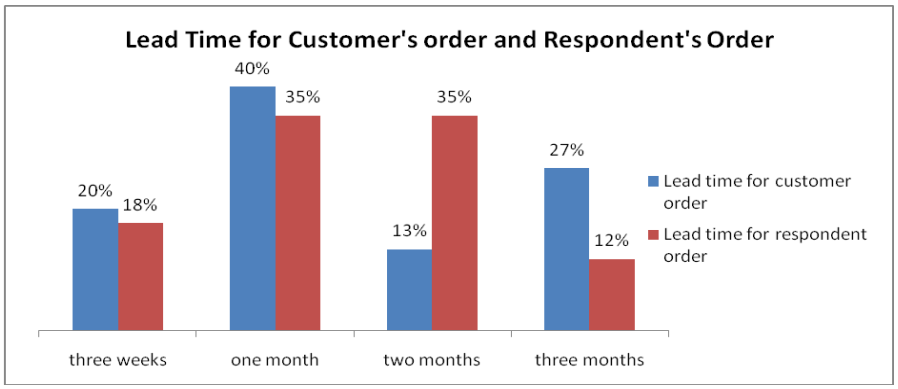
Figure 5: Time Consumed for Customs Clearance



Source: Survey results, 2009.

processing time for respondent's order on importing materials through delivery. Findings showed that lead time for the customer's order is longer than the respondents' order (Figure 6).

Figure 6: Lead time for exports and imports



Source: Survey results, 2009.

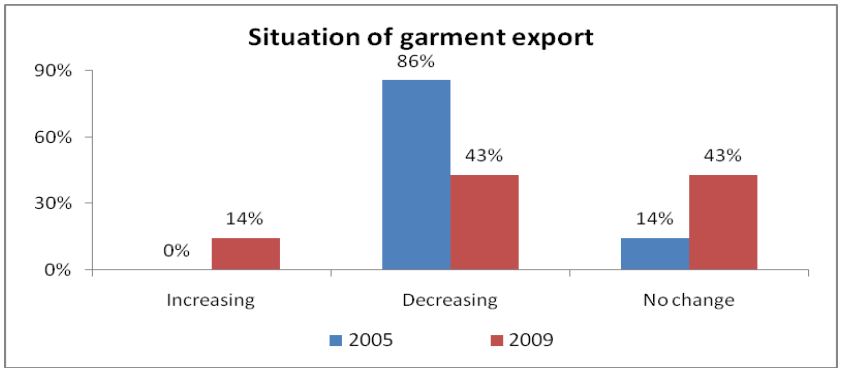
2.3.5. Turnover Ratio of Labor

According to the survey average wages for ordinary worker is K40,000 (US$40), for manager, K100,000 (US$100) and for engineer, K111,500 (US$ 111). It is quite cheap compared to Cambodia and Vietnam. Wages for workers in Lao is the cheapest in CLMV countries with US$28. Yet, labor turnover rate is nearly 10 percent, which means that employers have to spend more money to retain labor.

2.4. Comparison of Garment Industry in 2005 and 2009

In order to compare industrial specific location advantages and disadvantages, the survey chooses the garment industry as a benchmark. The analysis is based on the comparison between the 2005 and 2009 development situation of the garment industry. Seven garment factories were considered where the following variables were analyzed–amount of annual sales, time consumed for exports and imports, CMP charges, problems in investment climate, and future of the garment industry. Though according to statistics, Myanmar garments' sales/exports higher in 2009 than 2005 (Figure 7).

Figure 7: Situation of Exports by the Garment Factories



Source: Garment Survey, 2005 and 2009.

Surprisingly, many garment factories said that sales were decreasing. Time consumed for exports and imports is longer in 2009 than in 2005. The average time needed for export and import were between 12 to 17 days in 2005 while it was 21 to 30 days for imports and 36-50 days for exports in 2009. Garment factories in Myanmar faced longer lead time than in other countries. It is mainly because of the scarcity in skilled labor. Likewise, lead time in processing the transaction is another consideration in the import/export business.. Garment factories cannot accept orders with tight lead time and seasonal orders.

In adition, according to the survey data from garment factories, the average CMP charges in 2009 is higher than those in 2005. Most of the respondents in 2005 survey said CMP charges were decreasing but many respondents said CMP charges are stable or increased in 2009. Also,within five years, the average wages of hard labor increased by more than 100 percent while it is increased by 70-80 percent for white collar and semi-white collar labor (Figure 8).

Figure 8: Comparison of Average Labor Wages

Source: Garment Survey, 2005 and 2009.

Garment industries rely more on internet and email than before in order to respond to their buyers' orders and complaints. The unreliable regulatory policy has created more problems in 2009 than in 2005. Business licenses and operation permits are more difficult to obtain than before. The tenure of the exporter/importer license was one or two years' term according to the business preferences but now local and foreign firms are reduced to six months and one month, respectively. In 2005 the factories faced major obstacles in transportation but not anymore a big problem nowadays. There were more labor issues and regulations in 2005 but no longer controversial at present. Indeed, the garment factories are confronted with obstacles in doing business because of policy, regulations, and licensing in 2009.

Regarding operational issues and business growth, macroeconomic uncertainty was a major concern in 2005 due to diffuclties in license application process by shifting of the capital city and administrative organs from Yangon to Nay Pyi Taw. More important issue is on financing and corruption,. Most of the respondents observed that

the situation in 2009 is more promising than 2005 largely due to the dismal business prospect. Border trade developed after the government allowed garment exports through the check-point of Myawaddy, opening a new trade route from Yangon to Bangkok Port. Through this, other destinations can be reached. The overseas route to Bangkok Port from Yangon Port through Singapore takes at least 20 days.

2.5. Comparison of Labor in 2005 and 2009

In 2005, a Labor Survey on the Manufacturing Industry was conducted in 10 garment factories in Yangon. Again in 2009, the same survey was conducted in 9 garment factories in Yangon in order to compare the labor situation in two time-periods. A total of 100 workers were interviewed each for the year surveyed. In 2005, 13 males and 87 females, were interviewed. In 2009, 22 males and 78 females were interviewed. From the 2005 respondents, 95 percent were from production section and the remaining 5 percent were from Administrative Department. On the other hand, the 2009 respondents comprised of 84 percent production and 16 percent admin. Workers in the garment factories vary in their work areas, 43-50 percent were from Yangon City, 15-18 percent were from Bago Division, 10 percent were from Ayeyawaddy Division, and the rest were from other areas. The trend does not change significantly in 2005 and 2009. Most of them have worked at the garment factories in Yangon for 5 to 7 years. In 2005, 77 percent of them were living with their families. In 2009, it declined to 62 percent.. The distance between the workers' home and the factory was longer higher than in 2005. The 2009 conditions provide more access of the workers to the factories than the 2005...About 70 percent of the workers enjoyed ferry transport in 2009 while it was only 38 percent in 2005. Workers using public transport was only 2 percent in 2009.

The majority of workers spend less than 30 minutes coming to the factories. In terms of working hours, overtime after the regular 60 hours per week was common in 2009. Some 71 percent of garment workers assume that their wages are higher compared to other industries. Workers' remittances make more of the total family's income in 2009 than in 2005. Workers are provided with more training at the work place. Only 6 percent of workers were provided training in 2005. It has increased to 14 percent in 2009. People learned of job opportunities more often through friends. In 2005, the major reason for employment was having the appropriate skills obtained through vocational training (54%), But the 2009 data showed that employment based on skills was only 14 percent. Personal and family connection was said to be the main reason for employment at 41 percent.

2.6. Comparison of Industrial Specific Advantages and Disadvantages

Based on the findings of the three surveys, the advantages and disadvantages of the existing industries and new industries are shown Table 12 and Table 13, respectively. The main advantages that surfaced among existing industries are said to be: (1) abundant labor; (2) cheap wages; and (3) raw materials availability. On the other hand, the most common disadvantages are: (1) insufficiency of electricity; (2) high service costs due to the underdeveloped infrastructure; and (3) regulatory policy uncertainty and difficulty in business licensing.

Moreover, the common advantages for new industries are: (1) cheap wages of skilled and unskilled labor; and (2) enjoying the GSP status in some countries. Common disadvantages are: (1) scarcity of skilled labor, (2) scarcity of electricity; and (3) difficulty in business licensing.

Table 12: Advantages and Disadvantages of Existing Industries

No	Type of industries	Products	Location Advantages	Location Disadvantages
1	**Garment**	Knitting, coat, jacket, shirt, Trousers	•Abundant labors in industry •Labor wages are cheap •Enjoy special privilege for export to Japan	•Economic /trade sanctions hinders exports to US and EU •Insufficient electricity supply •Underdeveloped infrastructure in industrial zones •High transportation cost and service link cost •Regulatory policy uncertainty and difficult in business licensing and operation permits
2	**Processed food**	Juice, snack, instant noodle, dried tea	•Raw material available in domestic market •Increase production of raw materials •Substitute imported products •Availability of skilled labors •Regulatory body like FDA is relatively strong and it is good for qualified manufacturers	•Consumers have a limited knowledge on health and food •Raw materials are not available for the whole year, so products can be produced seasonally •Industrial Zone Infrastructure is underdeveloped •Scarcity of skilled labors •Insufficient electricity supply •High tax rate for manufacturers •Incentive program is not existed •There is no chemical contamination
3	**Plastic goods**	PP bags, PP Woven bag	•Increasing export volume of agro-based products from Myanmar •Increasing usage of PP woven bags in domestic market	• Limited market to export • Due to exchange rate fluctuation , price of plastic resin are unstable • Many competitors in local market.
4	**Cold storages**	Cold storage and Processing	•Abundant water resources that can produce fish and prawn •Availability of raw materials •Sufficient labor with cheap wages	•Insufficient electricity supply is main problem for 24 hour cold storage operation •Lack of advanced technology for fishing and fish breeding •Shortage of Fishermen and insufficient fishing boats and equipments

Source: Survey results, 2009.

Table 13: Advantages and Disadvantages of New Industries

No	Type of industries	Products	Location Advantages	location Disadvantages
1	Electrical goods	Electric cable, battery	•Improved infrastructure in some extent •Potential to export to neighbouring countries through borders •A few players in the industry •Wages of skilled and unskilled labor are cheap	•Scarcity of skilled labor •Insufficient electricity supply •Lack of supportive industry •lack of incentives for investment •Weak in license application process •Difficult to import chemicals related raw materials •Need to stock raw material for a year
2	Automobile	Car industry, Motorcycle Plant	•Illegal imported motorcycles are restricted to travel in many areas •Market is in growing stage •The existing number of motorcycles are not matched with population •Road infrastructure is improving overtime	•Local made cycles are difficult to compete with imported motorcycles. •No supportive industries for motorcycle industry •Authority limits quantity under production permit •Depending on imported engines & parts
3	Foot wear	Shoe, slipper	•Enjoy GSP status from some buyer countries like Japan •Wages of skilled as well as unskilled labors are cheap •Workers easily follow the techniques of footwear production	•The skilled labor is not easily available •Cannot accept seasonal order due to longer lead time •Regulatory policy uncertainty and difficult in business licensing and operation permits •Insufficient electricity supply

Source: Survey results, 2009.

3. CASE STUDY

The Survey on Infrastructure Needs revealed that needs are high in Myanmar. The following case studies of a garment factory, cold storage factory, footwear factory, and an electronic firm illustrate infrastructure related problems of private firms in Myanmar.

3.1. Jewoo Garment Factory

Jewoo Manufacturing Co., Ltd is a purely Korea-owned garment factory. It was established in the Thaketa Industrial Zone in 1998. Total investments for the Jewoo factory and workshop amounted to US$3 million. Annually, tt was able to produce an average of 340,000 pieces of garments.. Various kinds of jackets and trousers are also produced and exported.

There are 1,400 fulltime employees in the Jewoo garment factory. Skilled labor is scarce because most of the workers lack formal education. Skilled employees can can produce 130 pieces of garment per month. The main export markets are Hong Kong, Korea, and European countries. Most buyers place orders through the headquarters in Korea. As a CMP factory, raw materials are sent by the buyers, though some materials are bought from local market. Garment factories enjoy tax exemptions for raw materials. For export, they only pay a 10 percent tax.

Communication infrastructures like internet and phone lines are satisfactory in the Thaketa Industrial Zone. But public electricity is still unreliable for the 5-hour supply during working time. Jewoo has to run its own generator using 90-100 gallons of diesel a day. This result to 35 percent of total expenditure allotted for electricity generation and 20 percent on labor. Transportation is poor, unreliable, and inefficient. Lead time covers 90 days for customer's order and 30 days for Jewoo's order. The process includes import/ export license application and customs clearance.

The main difficulties are power shortage, high rate of labor turnover, and shortage of skilled labor and middle level technicians. Also, applying for export/import licenses is complicated. The June 2009 regulation of requiring a monthly renewal of licenses adds up to the burden. Factory operations are currently not very profitable. Support

from the headquarters diminishes every year. Its operations are more of striving to survive the business and for workers not to lose their jobs.

3.2. Great International Cold Storage

Great International Co. Ltd started its cold storage and processing business in 2001 when the fishery sector was considerably growing. The plant can produce an average of 1,200-1,800 metric ton of fish products a year. The company has already obtained ISO 9001: 2000 Quality Control Certificate and ISO 4001: 2000 Environmental Certificate. They have been operating according to GMP HACCP system.

Many prawn ponds were destroyed due to Nargis in Ayeyarwaddy Division, Yangon Division, and Rakhine State. The factory got their prawns from offshore fishing. Most marine products such as fishes and prawns are exported. Export is carried out through border-trade, by sea and air. They usually export to Japan, Korea, Australia, Hong Kong, China, Thailand, Vietnam, and EU countries. The industry benefits from the Generalized System of Preferential Tariff (GSP).

There are over 170 employees in the factory with an average wage range of US$40 to US$60. Most of the workers like to remain with the same company**.**

Telecommunication is much better than the previous years, but it takes time to connect to the internet. A power generator has to run to provide electricity—a very important input for a cold storage business. Total costs of operation come from 35 percent raw materials from domestic market, 20 percent electricity, and 15 percent labor wages.

The company forecasts growth by 10 to 15 percent in 2009. The main problems involve scarcity of raw materials and instability of prices after Nargis. The industry has

a high market potential because Myanmar's fishery industry is still growing and there is a huge diversity in aquatic resources. The company is trying to penetrate the EU market. Representatives of the EU Commission came and inspected the cold storage industries in Myanmar in October 2009 to check whether they are in line with EU Standards.

3.3. Myanmar Sunny Footwear Factory

Sunny Footwear Factory, a subsidiary of Sunny Incorporated, is a big shoe manufacturing company based in Seoul, Korea. It was lured to Myanmar because it benefits from the GSP adopted by Japan for developing countries.

Myanmar Sunny Footwear Co., Ltd exports only to Japan. Orders are placed with the Korean head office and transferred to the Yangon branch office. The company has one main product line—men’s shoes. Annual output is 840,000 pairs of shoes. Almost 80 percent of the raw materials that the factory uses come from China and Korea.

There are over 1,200 workers in the factory including five Chinese specialists and five Korean technicians. Skilled labor is scarce but workers become skilled by learning the job from three to six months.

The factory earned about US$672,000 in 2008 and it is hoped that annual sales will increase as the main buyer is one of the shareholders of the factory.

Myanmar Sunny also pointed out how inconvenient it is to renew export/import licenses monthly. The factory has to pay fines as punishment for the license overdue and it is trying to renew the license at a higher level authority to avoid such problems.

3.4. Nibban Electric and Electronics

The Nibban Electric and Electronics (NEE) was established in 1972 to manufacture

PAHO AC/DC adaptor. In 2006, Nibban expanded their 'Nibban' brand by introducing various new products.

Nibban started as a smallscale domestic enterprise producing all sorts of electronic goods. Later on, the company discovered that it is more advantageous to import than to manufacture them in Myanmar. Thus, Nibban started to import electronic products such as TV and EVD in 2008 and sell them with warranty. The company extended its product range by marketing audio and video products and home appliances.

Labor is and wages are cheap. Nibban has diversified its business from manufacturing to trading business which is more profitable with less problems. Nibban plans to manufacture domestically and compete with imported goods by 2015. Regarding the Asian AFTA process, the owner of Nibban said that it is necessary for local businessmen to improve quality or to reduce price of their products to be competitive. Nibban suggested that the import/export license application procedure be expedited and that financial assistance be provided for the expansion of private industries.

4. ANALYSIS AND FUTURE DEVELOPMENT AGENDA

4.1. Analysis of Comparative Advantages of the Industries

CLMV countries including Myanmar depend on resource-based economy especially agrobased. It is often said that these countries have a comparative advantage producing primary products, thus, should consider focusing on the primary sector development rather than attempting to industrialize. However, it is suggested that some of these have

Table 14: Layers of Transaction in Production and Distribution Network from Yangon, Myanmar

	Local market (Yangon)	Local market (Mandalay)	Neighbouring countries through China Border trade	Neighbouring countries through Thailand Border trade	Regional market (India, China, Japan, Korea)	Global market (EU,US, ME)
Average Lead time	1 day	3 days	7 days	7 days	14- 21 days	30 days
Frequency	Several time in a day	Once or few time in a week	Once or few time in a week	Once or few time in a week	fewer than one in a week	fewer than one in a week
Transport mode	Truck	Bus/ Truck	Truck	Truck	Sea/ waterway	Sea/ waterway
Trip length	14 Km	700 Km	1,100 Km	720 Km	1400-4,500 Km	8,000-12,000 Km

Source: Survey results, 2009.

good potential for participating in production networks[14].

Table 14 shows the layers of transaction in production and distribution network. It describes that industries in Myanmar rely on domestic and neighboring countries' markets. For external trade, utilizing the Myanmar-Thai border trade is an effective means of establishing connection with regional networks. The effective use of economic corridors may facilitate shorter processing periods for production and distribution.

Though Myanmar industries enjoy location advantages in some areas, the industries seem not to have competitive edge among others in CLMV in terms of capital, technology, infrastructure, and institutional support. Hence, the industries in CLMV with comparative advantages could have potential to participate in regional production networks. Because Myanmar have a variety of natural resources, the food processing

[14] Expansion of the production networks into the less developed ASEAN region: Implication for Development Strategy, Fukunari Kimura).

and cold storage industry or resource- based industries already have that comparative advantages. It is followed by garment, footwear, and plastic which are labor intensive and not much of a comparative due to the country's low human capital. Electrical and automobile are found to be less comparative. Table 15 shows the analysis of comparative advantages of selected industries.

Table 15: Comparative Advantages of Selected Industries in Myanmar

No	Industry	Garment	Footwear	Electrical	Automobile assembling	Processed food	Plastic	Cold storage
1	Startup capital requirement	Low	Medium	High	High	Medium	Low	Medium
2	Machinery requirement	Low	Medium	Medium	Medium	Medium	Medium	Low
3	Unskilled Labor	Available	Available	Available	Available	Available	Available	Available
4	Skilled labor	Available	Not adequate	Available	Not adequate	Available	Available	Available
5	Raw material	No	No	some	No	Available	No	Available
6	Electricity requirement	High	High	High	Medium	High	High	High
7	Telecommunication requirement	High	High	Medium	Medium	Medium	Medium	High
8	Transportation	High	High	low	low	High	Low	High
9	Other energy	High	High	Medium	Medium	High	Medium	High
10	Information	High	High	Medium	High	High	Medium	High
11	Laws and Regulations	Complicated	Complicated	Applicable	Complicated	Complicated	Applicable	Applicable
12	Technology	Low	Medium	Medium	Medium	Medium	Low	Low
13	Production cost	Low	Medium	High	High	Low	Low	Medium
14	Export Market accessibility	Medium	Medium	low	low	Low	Low	Medium
15	Tax rate	low	low	low	Medium	low	low	Medium
16	Special privilege (GSP, AISP)	No	Yes	No	No	No	No	Yes
	Overall status	**Slightly Advantage**	**Slightly Advantage**	**Less advantage**	**Less advantage**	**Advantage**	**Slightly Advantage**	**Advantage**

Source: Survey results, 2009.

4.2. Future Industrial Diversification in Myanmar

Most of the industries in Myanmar which started in the early stages of the market-oriented economy are standing with basic level industries which require low technology and ease in processing. Myanmar private manufacturers have introduced new industries since 10 years ago. The new industries apply more advanced technology, machinery, and equipments compared to the old or conventional. The new industries coming into Myanmar in the form of CMPs which are not just garment but various industries such as footwear, rubber boats and rafts, bag bindings, electrical apparatus, optical lense, plastic packaging, steel products etc. The existing industries can diversify more advanced industries in the future. The possible future industries are supporting industries in order to meet the requirement of local contents increase, rubber products, decoration materials, electronic goods, motor, and machinery (Table 16).

Table 16: Future Industrial Diversification in Myanmar

Existing Industry	New Industry	Future Industry
Garment	Footwear	Supporting industry
Crumb Rubber	Rubber Boats& Rafts	Rubber product
Lathe	Mould & Die	Plastic goods
Plastic bag	Plastic furniture	Decoration goods
Construction raw	Construction materials	Automobile production
Vehicle service	Automobile assembling	Motorcycle production
Motorcycle parts	Motorcycle assembling	Semi- conductor
Electric apparatus	Dental apparatus	Electronic goods
Packaging	Steel products	Motor and machinery
Wood-based industry	Food processing	
Cold storage and processing	Stationery	
Paper mill	Consumer goods	
Rice mill	Household goods	
Food semi-finished	Hair dressing	
Agricultural machinery & tool	Pharmaceutical Manufacturing	
Bag binding	Optical lenses	

Source: Survey results, 2009.

Table 18: Priority of Development Agenda to Attract More Production Blocks

Objective	Reduction in fixed cost/ set up cost	Reduction in service link cost	Reduction in production/ trading cost	Export Market access
Priority 1	Simplifying investment procedure	Improve industrial zone infrastructure	Improvement of transportation facilities	Drawbacks of import duty and export tax
Priority 2	Flexibility of minimum capital requirement	Electricity supply	Development of supporting service and industry	Access market information
Priority 3	Information on regulatory framework	Improvement of communications	Single and stable exchange rate	Streamlining the import/ export procedure
Priority 4	Obtaining license and permit	One stop service	Training and development programme for labors	GSP and regional privileges
Priority 5	Land lease rate	Improvement of banking system	Local raw material supply	Reduction/elimination of import/ export tax rate

Source: Survey results, 2009.

4.3. Prioritizing Development Agenda to attract more production blocks

Improvement of three kinds of costs such as network set-up, service link and production are essential to inviting fragmented production blocks. Comparative advantages will not be sufficient enough to compete with the same industries in the region. In order to gain competitive advantage, the industries must reduce the cost at the lowest level as possible. Table 18 shows the priority in reducing such costs to attract more production blocks.

5. POLICY RECOMMENDATIONS

Manufacturing and processing industries can be diversified from existing industries into new industries and advanced industries in the future. Most problems, challenges, and constraints facing the existing industries are poor infrastructure especially electricity supply, complicated and long documentation procedures, inconvenient license and

permit procedures, inconsistent tax regime, inefficient exchange rate, uncontrollable illegal imports of finished goods among others. Despite the competitive cheap labor cost and locally available raw materials which tend to reduce production cost, service link cost and other transaction costs are high in Myanmar which cannot attract investors or link with regional production blocks. The Table 19 and 20 shows the recommendations to attract more production blocks in industrial diversification. They are operational recommendations and policy recommendations as well.

Table 19: Recommendations for Export Industries to Attract More Production blocks (Continues)

No	Industry	Survey findings	Recommendations
1	**Garment**	▪ In the total cost structure, 21% for labors and 20% of electricity used in production. ▪ Easy to recruit the general workers ▪ Insufficient electricity supply ▪ Telephone charges are high to contact buyers. ▪ It is inconvenient to renew exporter/importer licenses in monthly basis ▪ Not allowed to extend the export & import license validity	▪ Improve electricity supply ▪ Should extend validity of importer/ exporter licenses to a year ▪ Import and export procedures should be streamlined ▪ Develop plans for shorter lead time
2	**Footwear**	▪ In the total cost structure, 26% for labors and 13% of electricity used in production. ▪ Too much taxation ▪ Renewal of exporters and importers license term on monthly basis ▪ Abundant labors but need to train to improve their skills. ▪ Inadequate electricity supply & power failure. ▪ Poor transportation when exporting goods	▪ Tax policy should be reviewed. ▪ Extension of validity of importer/ exporter license form monthly to yearly basis ▪ Regular electricity supply ▪ Skilled training for labors

Table 19: Recommendations for Export Industries to Attract More Production blocks (Continued)

No	Industry	Survey findings	Recommendations
3	**Electric and Electronic**	▪ In the total cost structure, 38 % for raw materials, 10% each for labors and electricity used in production. ▪ It makes no difference whether imported or produced in terms of taxation and procedures. ▪ Applying export/ import license take long and a bit complicated. ▪ Electricity supply is often disrupted It makes no difference whether imported or produced here	▪ Consider some kinds of relaxations for local electric and electronic products producers. ▪ Consistent supply of electricity ▪ Taxation should be favoured to manufacturers than traders
4	**Cold Storage**	▪ In the total cost structure, 30 % for raw materials, 15% for labors and 18% for electricity and energy used in production ▪ Inadequate and volatile electricity supply and have to use generator for 24 hrs ▪ Taking time to pass of the products through X-ray scanner in port which capacity is 120 containers a day	▪ Improve electricity supply ▪ Port and shipping facilities should be improved

Source: Survey results, 2009.

Table 20: Recommendations for Domestic Oriented Industries to Attract More Production Blocks (Continues)

No	Industry	Survey findings	Recommendations
1	**Food Processing**	▪ In the total cost structure, 31 % for raw materials, 10% for labors and 20% for electricity and energy used in production ▪ Complicated taxation system especially commercial tax and Profit tax. ▪ Raw materials are available seasonally Cost of transportation depends on the fluctuation of fuel price	▪ Relaxations on tax collecting system. ▪ Develop agriculture calendar and plan to supply raw materials

Table 20: Recommendations for Domestic Oriented Industries to Attract More Production Blocks (Continued)

No	Industry	Survey findings	Recommendations
2	**Plastic Processing**	▪ In the total cost structure, 38 % for raw materials, 12% for labors and 27% for electricity and energy used in production ▪ Muliple and unstable exchange rate system leads to fluctuation of raw material prices Movement of labor to other industries ▪ Essential for full supply of electricity ▪ Sudden changes of rules and regulations	▪ Improve electricity supply ▪ Review the foreign exchange policy and the policy and the policy of stable market exchange rate should be adopted. ▪ Allow doing business freely within the frame of rules and regulations by adopting clear-cut rules and instructions.
3	**Motorcycle**	▪ In the total cost structure, 40% for imported raw materials, 35 % for local raw materials, 15% for labors, 13% for electricity used in production ▪ Provision license to illegal import motorcycles Require financial support Unstable policy and rules on motorcycle production ▪ Need to change design to compete in the market ▪ Cannot compete used and low quality imported cycles with low prices	▪ Develop program to encourage localization to obtain machinery parts and components easily ▪ Develop supporting industry Provision license should not be issued to illegal import motorcycles ▪ Develop financing programme
4	**Automobile**	▪ In the total cost structure, 33 % for raw materials, 15% for labors and 13% for electricity and energy used in production ▪ Difficult to get engine and parts on quota basis Illegal import of motor vehicles Regulate annual production units	▪ Develop supporting industry The machineries and machinery parts should be sufficiently available in domestic market ▪ Annual production quota should be stable ▪ Car assembling industries should be controllable number

Source: Survey results, 2009.

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CHAPTER 9

THE CHALLENGES OF UPGRADING AND DIVERSIFYING VIET NAM'S INDUSTRIAL STRUCTURE

Nguyễn Bình Giang

Abstract

This research attempts to look into how the weaknesses and shortcomings in soft and hard infrastructure have been the obstacles to the upgrading and diversification of industrial structure in Viet Nam. It is important to overview the status of key industries before examining what elements of soft and hard infrastructure pose problems to firms in these industries. A survey is then conducted to determine the impacts of those elements.

It is well documented that though achieving high performance in terms of export volumes, Viet Nam's textile and apparel industry as well as footwear industry mainly include original equipment manufacturers for foreign multinational firms. These industries do not even have control over the domestic market. Meanwhile infant industries such as electronics and automotive mainly import and assemble complete knock down kits. To become higher value-added industries, they should be upgraded to become semi-knocked down kit assemblers and then own design manufacturers (or even own brand manufacturers) and free-on-board exporters. Development of supporting

industries and human resource will be the key factor while hurdles created by soft and hard infrastructure should be immediately removed.

INTRODUCTION

Viet Nam's industrial structure has considerably changed during the past 20 years. The outputs and export volumes by some manufacturing industries have grown fast. But where the value added in Viet Nam is concerned, the low growth rate of the manufacturing sector is cause for concern. Although the government has approved and implemented several development strategies, long-term development master plans for the textile, leather and footwear, wood processing, automobiles and motor, electronics and information industries, these industries are still only at the stage of simply assembling or outsourcing for global buyers. The textile and leather shoes industries have successly penetrated the international markets but have yet to do so for the domestic market. As the foreign markets went into a slump during the global economic recession in 2008-2009, these industries suffered severely. While the prices of cars and motorcycles in Viet Nam are much higher than elsewhere in the world, the per capita income is lower.

This section seeks to determine the structural weaknesses involving soft and hard infrastructure that may be hindering the upgrading and diversification of specific industries in Viet Nam.

The questions we have to ask here are: i) why has not Viet Nam been able to diversify its existing industrial structure; and ii) which elements are needed to upgrade

Viet Nam's industrial structure alongside the development of infrastructure, improvements of investment climate and human resource.

The approach employed in this research begins with an analysis that entails a review of the industrial structure of Viet Nam, the history and current situation of key industries in the country, including textile and apparel, footwear, wood processing, electronics, and automotives.

The second part of this research explores the problems related to soft and hard infrastructure that key industries face in the course of their development. Secondary sources such as journals and newspapers were used for the study.

A survey was conducted to further the above problems. Respondents were asked to identify their needs and demands for improvements of soft and hard infrastructure in Viet Nam.

1. OVERVIEW OF VIET NAM'S INDUSTRIAL STRUCTURE

After more than 20 years of reform, the structure of Viet Nam's economy has shifted from agriculture, industry and service to industry, service and agriculture. In 1991, industry and construction only accounted for 23.8 percent of the gross domestic product while agro-forestry and fisheries made up 40.5 percent and service 35.7 percent, respectively[1]. In 2009, the corresponding rates were 41.7 percent, 17 percent and 41.3 percent, respectively[2]. Although the manufacturing sector is growing steadily, it is still

[1] Phan Kế Tuấn (2009), "Tái cơ cấu ngành công nghiệp theo yêu cầu phát triển bền vững", Kinh tế và phát triển, 7/2009. ("Restructuring industry sector for sustainable development," *Journal of Economics and Development, July*.)

2 "Tình hình kinh tế- xã hội năm 2009 (Press release: 2009 Socio-Economic Statistical Data)," General Statistics Office, 31/12/2009. Retrieved 24/01/2010 from

mainly composed of original equipment manufacturers (OEM) for overseas companies such as garments and textiles, footwear, mechanical assembly and electronics or agro-processing with a low added value. For example, the textile and apparel industry in 2008 earned over 9.2 billion U.S. dollars from exports, but two-thirds of these earnings came from OEM for global buyers.[3]

The rate between the increase of the value-added and output growth (VA/GO) is always smaller than 1. This means Viet Nam's industry develops horizontally, with the processing and assembly playing an important role. VA/GO of the electronic and information industries in 2007 was 13.81 percent – a slight increase of 1.5 percent from 1995 and the lowest among other industries. This is because these industries consist simply of assembly firms. Viet Nam has around 2,000 textile and garment enterprises, but there are only 250 supporting enterprises. Similarly, manufacturing engineering and electronic appliances also focus solely on assembly. This resulted in the downward trend of VA/GO in industry over the recent past.[4]

1.1. Textile and Apparel Industry

Textile and apparel industry is one of the biggest industries in Viet Nam, with more than 2,000 enterprises and 2 million workers. More than 60 percent of the products are

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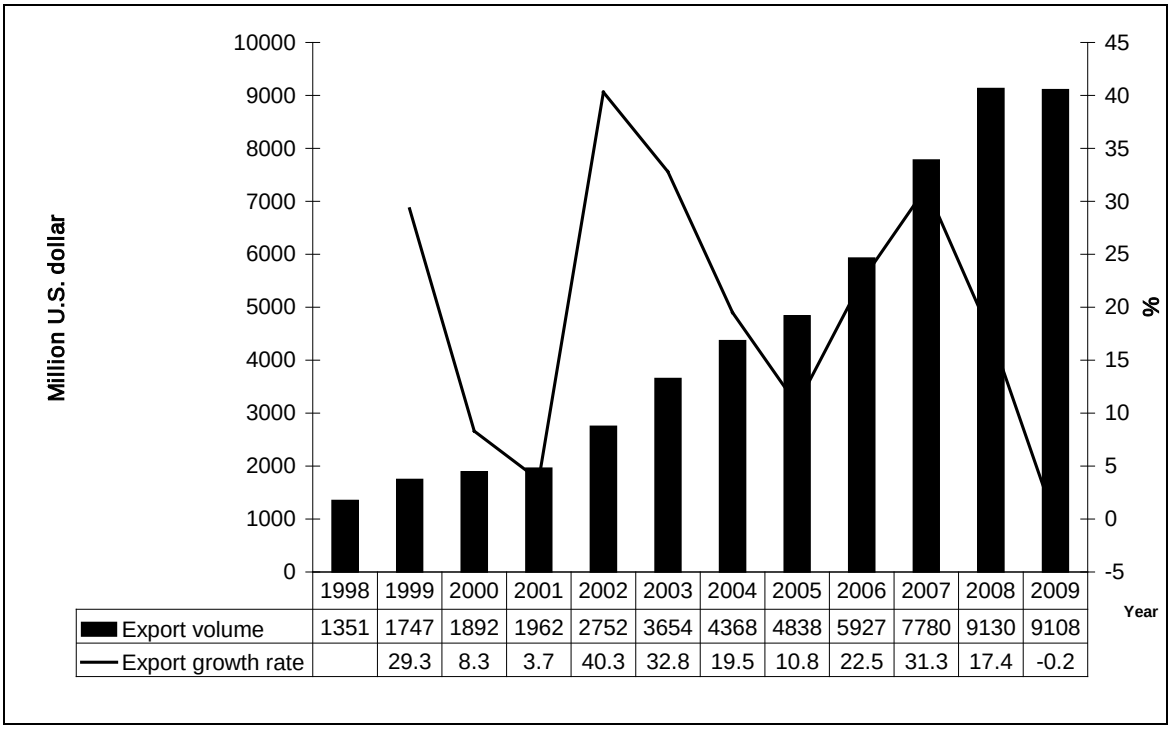
http://www.gso.gov.vn/Modules/Doc_Download.aspx?DocID=10840. It is worth noting that the industry sector in Viet Nam, based on its own system, includes the mining, manufacturing, construction, electricity and water industries. If the mining industry is lumped together with agriculture, forestry and fisheries as the primary sector, and water and electricity services are combined with the trade and services sector, then the economic structure of Vietnam's industry by 2009 would be as follows: the manufacturing sector accounting for 24.9%, primary sector 21.4%, service and trade sector 53.7%.

3 Phan Kế Tuấn (2009), Ibid.

4 "Cơ hội tái cơ cấu công nghiệp (Opportunity to restructure industry)," *VnEconomy*, 11/5/2009. Retrieved 24/01/2010 from http://vneconomy.vn/20090511091013767P0C5/co-hoi-tai-co-cau-cong-nghiep.htm

exported[5]. The export value in 2009 was more than 9 billion U.S. dollars (nearly 9.2 billion U.S. dollars in 2008), representing a 1.45-fold increase over the export of crude oil (Figure 1).[6] The current situations of textile and apparel industries are shown in Figure 2, Figure 3, Table 1 and Table 2.

Figure 1: Export Volume and Growth Rate of the Textile and Apparel Industy during 1998 and 2009



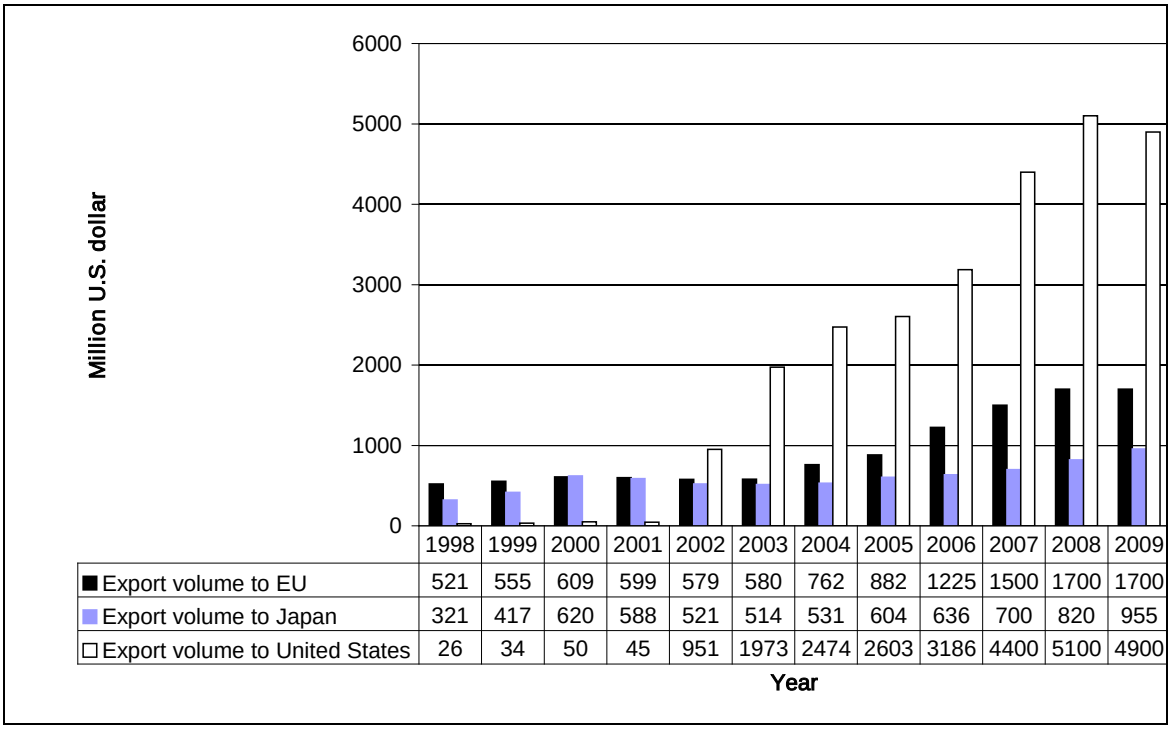
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Export volume	1351	1747	1892	1962	2752	3654	4368	4838	5927	7780	9130	9108
Export growth rate		29.3	8.3	3.7	40.3	32.8	19.5	10.8	22.5	31.3	17.4	-0.2

Source: Vitas, on-line available at http://www.vietnamtextile.org/en/ChiTietTinTuc.aspx?MaTinTuc=441&Matheloai=58.

[5] "Phát triển ngành dệt may Việt Nam sau hai năm gia nhập WTO và những giải pháp để tăng tốc (Development of Viet Nam's textile and apparel industry during two years since joining the World Trade Organization and measures adopted to accelerate it)," *WTO Việt Nam*, 27/12/2008. Retrieved 24/01/2010 from http://wto.nciec.gov.vn/Lists/MarketAccess_vn/DispForm.aspx?ID=84

[6] "Tình hình kinh tế- xã hội năm 2009 (Press release: 2009 Socio-Economic Statistical Data)," General Statistics Office, 31/12/2009. Retrieved 24/01/2010 from http://www.gso.gov.vn/Modules/Doc_Download.aspx?DocID=10855.

Figure 2: Export Volumes of Garment Products to Main Markets



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Export volume to EU	521	555	609	599	579	580	762	882	1225	1500	1700	1700
Export volume to Japan	321	417	620	588	521	514	531	604	636	700	820	955
Export volume to United States	26	34	50	45	951	1973	2474	2603	3186	4400	5100	4900

Source: Source: Vitas, on-line available at http://www.vietnamtextile.org/en/ChiTietTinTuc.aspx?MaTinTuc=441&Matheloai=58.

Garment and textile factories are allocated mainly in Ho Chi Minh city (1,400 enterprises); Ha Noi and adjacent areas (300 enterprises altogether). In 2007, this industry produced about 10,000 tons of raw cotton, 50,000 tons of synthesized fabric, 260,000 tons of short fiber, 150,000 tons of knitted fabric and 680 million m^2 of shuttled fabric.[7]

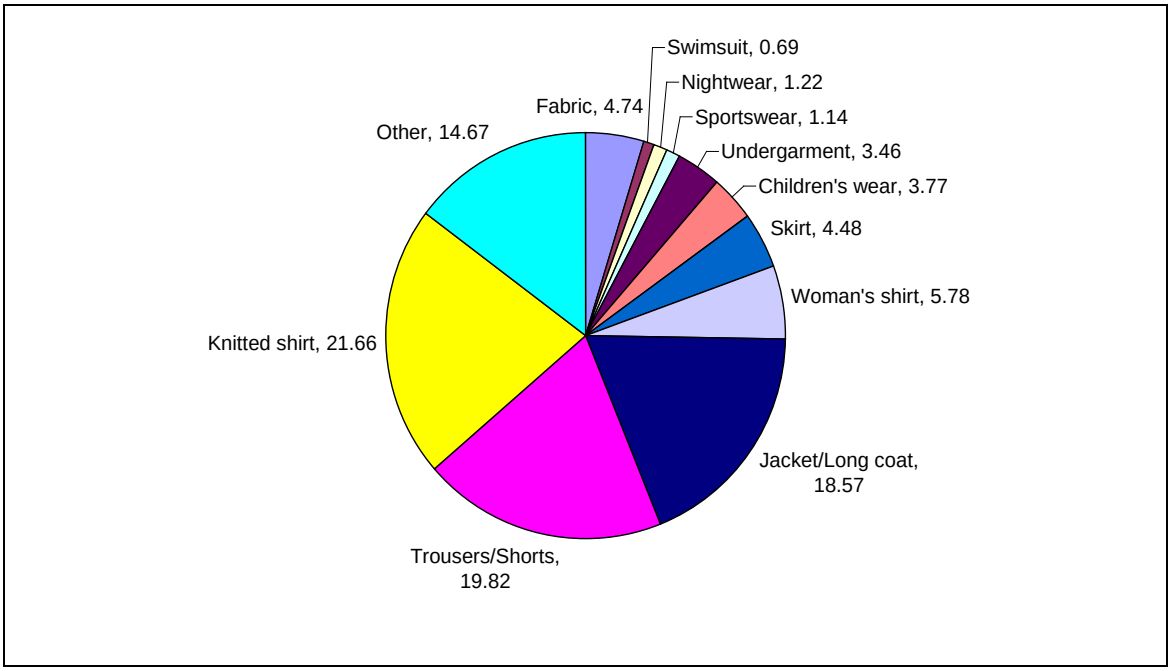
[7] "Xuất khẩu dệt may VN: Vào tốp 10 thế giới (Viet Nam's export of textile and apparel products: How it became one of world's top ten exporters," *Tiền Phong*, 04/10/2007. Retrieved 24/01/2010 from http://www.tienphong.vn/Tianyon/Index.aspx?ArticleID=97746&ChannelID=3

Table 1: Firms in the Textile and Apparel Industry, 2009

Categorize		Number	Share (%)
By ownership	State-owned firms	10	0.5
	Domestic private firms	1490	74.5
	FDI firms	500	25.0
By location	North Vietnam	300	15.0
	Central Vietnam	150	7.5
	South Vietnam	1550	77.5
By sector	Textile and apparel	600	30.0
	Apparel only	1360	68.0
	Fiber and yarn	40	2.0

Source: Vitas, on-line available at
http://www.vietnamtextile.org/ChiTietTinTuc.aspx?MaTinTuc=138&Matheloai=57.

Figure 3: Textile and Apparel Export Structure by Products (percent) in 2009



Source: Vitas, on-line available at
http://www.vietnamtextile.org/en/ChiTietTinTuc.aspx?MaTinTuc=441&Matheloai=58.

Within the fabric-garment-dye-textile chain, the textile and fabric sector have developed faster than the other two, resulting in the breaking up of the chain. Although the fabric industry has progressed, there remain limitations in terms of quality and diversity, that is, it does not meet the demands of garment and textile enterprises for a variety of fabrics. There are enterprises using cotton, while others use wool, polyester and mixed fabrics. Currently in the domestic market, Viet Nam's fabrics are facing fierce competition from cheaper Chinese products. As most enterprises process only export products, they have to accommodate customers' choice of materials, which usually prevent them from sourcing domestic materials. This causes many difficulties for the textile and dyeing industries as well as fabric producers.[8]

1.2. Footwear Industry

After 20 years of development (by the end of 2008), Viet Nam's leather and footwear industry[9] had 500 enterprises, 400 of which are in the South, including Ho Chi Minh City, Binh Duong and Dong Nai provinces, 10 in the central region and 60 in the

Table 2: Import Volume of Materials, Accessories in Million U.S. dollar

Items	2002	2003	2004	2005	2006	2007	2008
Cotton	96.7	105.7	190.2	167	219	268	468
Fibre/yarn	313.7	298.3	339.0	340	544	744	788
Fabric	997.0	1,364.0	1,927.0	2,398	2,980	3,980	4,454
Accessories	1,711.0	2033	2,253.0	2,282	1,952	2,152	2,376

Source:http://www.vietnamtextile.org/en/ChiTietTinTuc.aspx?MaTinTuc=330&Matheloai=58.

8 "Ngành sợi tìm đường xuất khẩu (Yarn industry finds the way to export)", *Thời báo kinh tế Sài Gòn*, 16/7/2009. Retrieved 11/1/2010 from
http://www.thesaigontimes.vn/Home/kinhdoanh/xuatnhapkhau/21101/

9 Including sub-industries which manufacture footwears, bags, cases, other leather products…

North.[10] This industry employs more than 650,000 workers (excluding those in small City, Binh Duong and Dong Nai provinces, 10 in the central region and 60 in the North.[11] This industry employs more than 650,000 workers (excluding those in small and material supply factories, households and craft villages), accounting for 10.6 percent of the country's industrial labor force. This figure is expected to increase to 820,000 in 2010 and 1.3 million by 2020. The industry has recorded a high growth rate in five consecutive years (2005-2009), averaging 16 percent a year, with footwear and bags being the two main products. (By 2008, the industry's production capacity was 715 million pairs of different kinds of footwear and 88 million bags of different types.) Leather products alone increased by an average of 20 percent a year (130 million leather products had been made by the end of 2008).[12]

The leather and footwear industry has contributed greatly to Viet Nam's exports, with more than 5.6 billion U.S. dollars in 2008 and 4.191 billion U.S. dollars in 2009.[13] Viet Nam's leather and footwear industry accounted for 14 percent of the world's market share, making the country the world's second biggest exporter (next to China) .[14] The country's export market has expanded and remained stable. Vietnamese

[10] "Ngành Da - giày Việt Nam: Bỏ ngỏ thị trường nội địa (Footwear industry forgets the domestic market)", *Lao Động*, 31/8/2009. Retrieved 24/1/2010 from http://www.laodong.com.vn/Utilities/PrintView.aspx?ID=153488.

[11] "Ngành Da - giày Việt Nam: Bỏ ngỏ thị trường nội địa (Footwear industry forgets the domestic market)", *Lao Động*, 31/8/2009. Retrieved 24/1/2010 from http://www.laodong.com.vn/Utilities/PrintView.aspx?ID=153488.

[12] "Ngành da giày Việt Nam: Còn nhiều gian khó (Viet Nam's footwear industry: Battling numerous challenges)," *Báo Công thương điện tử*, 21/8/2009. Retrieved 05/01/2010 from http://www.baothuongmai.com.vn/Details/chuyen-dong-cong-thuong/nganh-da-giay-viet-nam-con-nhieu-gian-kho/32/0/20035.star.

[13] "Tình hình kinh tế- xã hội năm 2009 (Press release: 2009 Socio-Economic Statistical Data)," General Statistics Office, 31/12/2009. Retrieved 24/01/2010 from http://www.gso.gov.vn/Modules/Doc_Download.aspx?DocID=10855.

[14] "Quy hoạch phát triển ngành da giày Việt Nam đến năm 2020 sẽ đạt kim ngạch xuất khẩu 16,5 tỉ USD (By the master plan for development, Viet Nam's footwear export will reach 16.5 billions U.S. dollar at

products are now available in North America (the US, Mexico and Canada), 27 European Union (EU) member countries, Russia and Eastern Europe. Over the last few years, Viet Nam's footwear exports to the EU have risen rapidly in terms of quantity and value. By the end of 2008, the EU was Viet Nam's biggest importer of footwear products with a turnover of 2.484 billion U.S. dollars, accounting for 52.32 percent of the country's revenue from exporting this item. The EU is followed by the US, in which Viet Nam has surpassed Italy to become the fourth biggest supplier after China, Brazil and Indonesia. In 2008, Viet Nam's exports to the US were valued at 1.075 billion U.S. dollars. Viet Nam's footwear products are also exported to many other countries around the world. Countries in East Asia, which share many similarities with Viet Nam in terms of tradition and customs, often import sneakers, leather shoes and slippers from Viet Nam. In 2008, exports to Japan brought in over 137 million U.S. dollars and to Hong Kong 50.2 million U.S. dollars.[15]

Local leather and footwear enterprises in Viet Nam account for 77 percent of the whole sector but they produce only 35 percent of the export value. Up to 70 percent of Viet Nam's footwear firms are simply OEMs for global buyers.[16] However, the export value is accounted for only by 50 major enterprises, with 10,000 workers or more, modern technology and many potential customers such as OEM firms for Nike, Adidas

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2020)," *Vinanet*, 26/01/2010. Retrieved 27/01/2010 from http://www.vinanet.com.vn/tin-thi-truong-hang-hoa-viet-nam.gplist.288.gpopen.176346.gpside.1.gpnewtitle.quy-hoach-phat-trien-nganh-da-giay-viet-nam-den-nam-2020-se-dat-kim-ng.asmx.

[15] "Ngành da giày Việt Nam: Còn nhiều gian khó (Viet Nam's footwear industry: A lot of hardship to face)," *Báo Công thương điện tử*, 21/8/2009. Retrieved 05/01/2010 from http://www.baothuongmai.com.vn/Details/chuyen-dong-cong-thuong/nganh-da-giay-viet-nam-con-nhieu-gian-kho/32/0/20035.star

[16] "Ngành Da - giày Việt Nam: Bỏ ngỏ thị trường nội địa (Footwear industry forgets the domestic market)," *Lao Động*, 31/8/2009. Retrieved 24/1/2010 from http://www.laodong.com.vn/Utilities/PrintView.aspx?ID=153488

and large distribution groups, including Wal-Mart, Decathlon and other distribution channels. These firms earn up to three-fourths of the total export turnover.[17]

1.3. Electronics Industry

The Viet Nam Electronic Industries Association has reported that after producing electronic products for the domestic market (1994-2000), nearly 300 enterprises nationwide (including foreign direct investment or FDI enterprises) have shifted to assembling information technology (IT) and electronic products for export.[18] However, after 20 years of development, this industry is still in the final process of small-scale assembly.[19] Spare parts, accessories and materials depend too much on overseas suppliers.[20] The local content of electronic products is only about 20-30 percent, focusing mainly on packaging, plastic details and engineering.[21] Consequently, the added value of the electronic industry is low. This is because supporting industries for the electronics industry have not yet developed while the research and development

[17] "Ngành da giày đặt mục tiêu xuất khẩu 5 tỷ USD năm 2010 (Footwear industry sets the goal of export volume of 5 billions U.S. dollar in 2010)," *Vinanet*, 21/1/2010. Retrieved 24/01/2010 from http://www.vinanet.com.vn/tin-thi-truong-hang-hoa-viet-nam.gplist.331.gpopen.176182.gpside.1.gpnewtitle.nganh-da-giay-dat-muc-tieu-xuat-khau-5-ty-usd-nam-2010.asmx

[18] "Công nghiệp điện tử: Mô hình phát triển tự gây khó (Electronic industry: a development model of self-hindering," *Nhật báo Người đại biểu nhân dân*, 06/05/2009. Retrieved 11/1/2010 from http://www.nguoidaibieu.com.vn/Trangchu/VN/tabid/66/CatID/3/ContentID/71900/Default.aspx

[19] "Phát triển công nghiệp điện tử (Electronic inudustry development)," *PC World Vietnam*. Retrieved 11/1/2010 from http://www.pcworld.com.vn/pcworld/printArticle.asp?atcl_id=5f5e5d5b5e5659

[20] "Cơ cấu công nghiệp điện tử mất cân đối nghiêm trọng (The seriously unbalanced structure of electronic industry," *Dân trí*, 26/12/2008. Retrieved 24/1/2010 from http://dantri.com.vn/c76/s76-299647/co-cau-cong-nghiep-dien-tu-mat-can-doi-nghiem-trong.htm

[21] "Công nghiệp điện tử Việt Nam giữa hai gọng kềm (Viet Nam's electronic industry is caught in trap)," *The Saigon Times*, 29/12/2008. Retrieved 11/1/2010 from http://www.thesaigontimes.vn/Home/kinhdoanh/dautu/13726/

(R&D) groups of this industry are fledging and still being formed.[22, 23] Besides technological weaknesses is the imbalance in the product structure. Household electronic appliances account for more than 80 percent while specialized electronic and IT products constitute the rest.[24]

1.4. Automotive Industry

Established in 1992, Viet Nam's automotive industry[25] has been developing for 18 years. Major landmarks in its development are the 1995-1996 period when Japanese manufacturers established their own factories in Viet Nam; 2000 when Viet Nam's automotive development strategy evolved and private enterprises were encouraged to take part in this industry. Currently, the sector has over 60 manufacturers, including 17 FDI ones, producing up to hundreds of thousands of cars every year. However, this industry in Viet Nam is still underdeveloped.[26] Most of them assemble their products in the form of CKD (complete knock down – assembled with 100 percent imported spare parts) and manually, leading to a low local content of (2-7 percent). The added value is achieved in a number of stages: welding, painting and attaching bulky items or low value-added parts that are fit for local sourcing, such as tires, batteries and wire harnesses. Nearly 90 percent of components and spare parts are imported from China

[22] "Phát triển công nghiệp điện tử (Electronic inudustry development)," *PC World Vietnam*. Retrieved 11/1/2010 from http://www.pcworld.com.vn/pcworld/printArticle.asp?atcl_id=5f5e5d5b5e5659

[23] "Công nghiệp điện tử Việt Nam tụt hậu 10-20 năm (Viet Nam's electronic industry lags 10-20 years," Sở Thông tin và Truyền thông thành phố Đà Nẵng (Da Nang's Department of Communication), 06/12/2006. Retrieved 11/1/2010 from http://www.tttt.danang.gov.vn/dpt.do?mod=3&id_cm=/ttcn/cndt&id_bt=2006/12/290

[24] Ibid.

[25] In Viet Nam, this industry consists of cars, motobicycles, and bicycles.

[26] "Ngành công nghiệp ô tô VN: Chập chững… tuổi 16 (Viet Nam's automotive industry: Still an infact at 16)," *Sài Gòn Giải Phóng*, 11/9/2008. Retrieved 11/1/2010 from http://www.sggp.org.vn/kinhte/2008/9/164877/

and the Republic of Korea. Buses and trucks have a higher local content, with 30 percent of engines, gear boxes and the transmission systems produced at home while electric and electronic components comprise around 70 percent. In particular, truck frames and trunks are entirely domestically produced. Four- to nine-seat vehicles are mainly manufactured by FDI businesses as no domestic firm has taken part in assembling them.[27, 28, 29] A trend to import cars instead of assembling them at home has evolved.[30]

After 10 years of development, the supporting industry for Viet Nam's automotive industry with 100 supporting service providers (about 30 are FDI enterprises) has made almost no progress. The Toyota Viet Nam joint venture, one of the largest auto assembly manufacturers in Viet Nam, has only 11 enterprises, supplying simple components such as batteries, electric wires, parasol covers, plastic and rubber spare parts.[31]

There are about 60 enterprises assembling and producing motorbikes in Viet Nam, including 50 manufacturers and seven FDI enterprises. Over 230 enterprises produce components and spare parts for motorbike assemblers, 80 percent of which are 80 FDI

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[27] "Phát triển công nghiệp hỗ trợ ôtô: Đường còn xa... (Automotive industry development: long way to go," *Diễn đàn doanh nghiệp*, 30/06/2008. Retrieved 24/01/2010 from http://dddn.com.vn/Print.aspx?NewsID=2008062602445578

[28] "Công nghiệp lắp ráp" ô tô (Automobile 'assembling industry')," *Thị trường Việt Nam*, 14/12/2009. Retrieved 24/01/2010 from http://thitruongvietnam.com.vn/gpmaster.gp-media.thi-truong-viet-nam.gpprint.6818.gpside.1.asmx.

[29] "Ngăn chặn hành vi "móc túi" (Prevent the stealing)," *Đất Việt*, 12/01/2010. Retrieved 24/01/2010 from http://www.baodatviet.vn/Utilities/PrintView.aspx?ID=76339.

[30] "Đi tìm dòng xe chủ lực của ngành ôtô Việt Nam (Find the main style of car to manufacture)," *VnExpress*, 30/6/2009. Retrieved 24/01/2010 from http://vneconomy.vn/20090615110128172P0C23/di-tim-dong-xe-chu-luc-cua-nganh-oto-viet-nam.htm

[31] "Công nghiệp phụ trợ: 10 năm vẫn chưa lớn (Supporting industry: Still underdeveloped at 10)," Phòng Thương mại và Công nghiệp Việt Nam (Viet Nam Chamber of Commer and Industry), 09/11/2009. Retrieved 24/01/2010 from http://www.vcci.com.vn/kinh-te/cong-nghiep-phu-tro-10-nam-van-chua-lon

enterprises. The local content of made-in-Viet Nam motorbikes is relatively high (from 40 to 70 percent) because there has been a sharp increase in demand in recent years, creating a bigger market for the supporting industry. However, locally made spare parts are produced mainly by motorbike joint ventures or bought from other FDI enterprises. The number of enterprises able to provide spare parts for motorbike assembly is very small. For example, in 2003, Honda had only identified 13 enterprises capable of supplying quality spare parts.[32]

2. HINDRANCES TO IMPROVING THE INDUSTRIAL STRUCTURE

2.1. Overview

Although administrative procedures such as tax and customs have been simplified, they are still cumbersome for enterprises.[33]

Viet Nam still has no real highways except for expressways designed for high-speed traffic wiht partial control of access. Only 20 percent of the highways have the width of a standard two-lane road. Urban roads account for less than 2 percent of the total length of roads nationwide. Land acreage for transport in Ha Noi and Ho Chi Minh City makes up only around 10 percent. Most roads are narrow and of poor quality.[34]

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[32] "Thực trạng phát triển công nghiệp phụ trợ tại Việt Nam (Situation of supporting industry development in Viet Nam)," Viện nghiên cứu Phát triển Thành phố Hồ Chí Minh (Ho Chi Minh City Institute for Development Studies). Retrieved 24/01/2010 from http://www.hids.hochiminhcity.gov.vn/xemtin.asp?idcha=3439&cap=4&id=4426.

[33] "Khó khăn chồng chất, dệt may xuất khẩu lo nước rút (Facing lots of hinderances, textile and apparel export trys to accelerates)," *VietNamNet*, 17/7/2008. Retrieved 24/01/2010 from http://vietnamnet.vn/kinhte/2008/07/793987/

[34] "Vietnam's Automotive Component Industry: Ready to go Global?" PricewaterhouseCoopers, 2007. Retrieved 24/01/2010 from http://www.pwc.com/en_GX/gx/automotive/pdf/pwc_vietnam_auto.pdf

Viet Nam has three international gateways-national ports, namely, Hai Phong Port, Vung Tau Port and Van Phong Port.[35] Hai Phong Port is in the inner city of Hai Phong and on a river, which makes it difficult to access while the other two are under construction. The Ho Chi Minh City port, which has the highest shipping traffic is also on a river and is faced with many limitations too such as being located in a big city and the road system is bad.

The *Global Competitiveness Report 2009-2010* published by the World Economic Forum puts Viet Nam in specific ranks out of 133 economies based on specific variables: 111th by the quality of overall infrastructure, 102nd by the quality of roads, 99th by the quality of port infrastructure, 84th by the quality of air transport infrastructure, and 103rd by the quality of electricity supply. Moreover, the Report ranks Viet Nam 85th based on the quality of education system, 111th by the quality of management schools, and 76th on brain drain.

2.2. Existing Industries

Recently, the three main difficulties for textile and apparel firms as well as for footwear firms have been lack of capital, electricity and workers.[36, 37]

Regular and unnoticed blackouts have caused serious losses to businesses. Productive sectors employing large numbers of workers such as leather and footwear, textile and garment, enterprises still have to pay full day salaries and other fixed

[35] Decision 2190/QĐ-TTg dated 24 December 2009 by the Vietnamese Government on approval of master plan of seaport system in Viet Nam til 2020 with vision to 2030.

[36] ""Thử sức" doanh nghiệp dệt may ("Challenge" the textile and garment firms)," *VnMedia.* Retrieved 24/01/2010 from http://www.vnmedia.vn/newsdetail.asp?NewsId=138916&CatId=26

[37] "Doanh nghiệp bức xúc vì thiếu điện và khát vốn (Firms being hard pressed by lacking of electricity and finance)," *VnExpress*, 19/7/2008. Retrieved 24/01/2010 from http://vnexpress.net/GL/Kinh-doanh/2008/07/3BA049C3/

expenses even when there are unnoticed power cuts. This affects not only productivity but also product quality.[38, 39]

The textile and apparel industry employs many workers so that the quality of the workforce plays a vital role. In order to increase the added value and workers' income, it is essential to increase labor quality, especially the quality of middle-level managers. Additionally, improving labor quality helps the industry to cope with labor shortages and reduce dependence on cheap labor force.[40]

In fact, the labor force for the textile and apparel industry is not abundant, especially in major cities. Ten years ago, textiles and garments for export attracted unskilled workers in major cities. Now the emergence of new industries in urban areas with less difficult working conditions or higher income restructures the labor force. This has made many major enterprises to defrag their production to rural areas and industrial zones in the last five to seven years. However, as OEMs depending too much on contract and season, this industry cannot compete with other sectors in terms of revenues, prompting it to expand its operations to industrial zones. The president of the Viet Nam Textile and Apparel Association has stated that "labor dispute is becoming fiercer and the textile and apparel industry will have to resettle the labor force by defragging them in towns instead of focusing just on big industrial zones."[41]

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[38] "Điện thiếu, lãi suất cao "đè" doanh nghiệp (Black-outs and high interest "press" firms)," *VnMedia*. Retrieved 24/01/2010 from http://www6.vnmedia.vn/newsdetail.asp?NewsId=138391&CatId=26#.

[39] "Khó khăn chồng chất, dệt may xuất khẩu lo nước rút (Facing lots of hinderances, textile and apparel export trys to accelerates)," VietNamNet, 17/7/2008. Retrieved 24/01/2010 from http://vietnamnet.vn/kinhte/2008/07/793987/.

[40] "Làm sao cải thiện môi trường kinh doanh? (How to improve the business climate?)," *VnEconomy*, 02/6/2007. Retrieved 24/01/2010 from http://vneconomy.vn/PrintPage.aspx?NewsID=69419.

[41] "Dệt may gặp khó về lao động (Textile and garment firms face obstacles of labors)," *Diễn đàn doanh nghiệp*, 11/9/2009. Retrieved 05/01/2009 from http://dddn.com.vn/2009090805062405cat101/det-may-gap-kho-ve-lao-dong.htm.

High production costs among firms are partly due to the training cost, which firms have to pay by themselves. Such costs reduce the firms' competitiveness.[42] Another factor that pushes up the production cost in textile and garment firms is the additional cost to hire small trucks to convey products between factories and suburb areas due to container trucks are prohibited to enter the inner city.[43]

Productivity in the footwear industry is low because of five main reasons: workers' low education level, poor training, poor coordination, disunified materials and small contracts and insufficient equipment.[44]

According to the Viet Nam Leather and Footwear Association, up to 80 percent of workers in the sector are untrained. This means that labor quality is hindering the sector's development. Moreover, managers in this industry are trained in other fields, so they have to learn on the job. Thus training and human resource development is becoming a big concern for the industry. However, just a few enterprises have made appropriate investment in training and most workers are trained only in theory over a short time before they begin to work.[45]

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[42] "Biện pháp chống đỡ cho dệt may và da giày 2009 (Measures to support textile-apparel and footwear industry in 2009)," *Dân Trí*, 25/01/2009. Retrieved 24/01/2010 from http://dantri.com.vn/c76/s82-305191/bien-phap-chong-do-cho-det-may-va-da-giay-2009.htm.

[43] "Ngành dệt may mất sức cạnh tranh vì đội phí (Textile and apparel industry loses competitveness due to cost burden)," *Sài Gòn tiếp thị*. Retrieved 24/01/2010 from http://www.sgtt.com.vn/oldweb/cacsobaotruoc/484_38/p02_03_nganhdetmay.htm.

[44] "Ngành da giày VN có "tiếng" mà chưa có "miếng" (Viet Nam's footwear industry: high "revenue" but low "value-added"), *VnExpress*, 13/6/2003. Retrieved 24/01/2010 from http://www.vnexpress.net/GL/Kinh-doanh/2003/06/3B9C8BF6/.

[45] "Ngành da giày Việt Nam: Còn nhiều gian khó (Viet Nam's footwear industry: A lot of hardship to face)," *Báo Công thương điện tử*, 21/8/2009. Retrieved 05/01/2010 from http://www.baothuongmai.com.vn/Details/chuyen-dong-cong-thuong/nganh-da-giay-viet-nam-con-nhieu-gian-kho/32/0/20035.star.

2.3. New Industries

An official from the Viet Nam Electronic Industries Association claims that cheap labor, an advantage for the assembly of electronic goods in Viet Nam, is no longer a competitive trend. In order to develop the electronic industry, Viet Nam should focus on building up a group of product R&D activities.[46] "Apart from inviting famous electronic companies, it is essential to welcome producers for contracts in assembly and spare parts manufacturing."[47]

Viet Nam's automative market is small[48] because of low income and poor infrastructure, as evidenced by the lack of highways and parking facilities[49]. As there are many manufacturers,[50] it is dificult for manufacturers to achieve the economy of scale and reducing the scale of their production. Another major factor hindering the development of the supporting industry for the motorbike and automotive industry is the lack of highly skilled workers. Only 20 percent of workers in supporting firms receive regular training.[51,52]

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[46] "Phát triển công nghiệp điện tử (Electronic industry development)," *PC World Vietnam*. Retrieved 11/1/2010 from http://www.pcworld.com.vn/pcworld/printArticle.asp?atcl_id=5f5e5d5b5e5659.

[47] "Công nghiệp điện tử Việt Nam tụt hậu 10-20 năm (Viet Nam's electronic industry lags 10-20 years)," Sở Thông tin và Truyền thông thành phố Đà Nẵng (Da Nang Department of Communication), 06/12/2006. Retrieved 11/1/2010 from http://www.tttt.danang.gov.vn/dpt.do?mod=3&id_cm=/ttcn/cndt&id_bt=2006/12/290.

[48] "Công nghiệp ôtô VN: chưa thoát khỏi vòng luẩn quẩn! (Viet Nam's automotive industry: Still in dillema)," *VietNamNet*, 23/8/2007. Retrieved on 27/02/2010 from http://vietnamnet.vn/kinhte/2007/08/733022/.

[49] "Vietnam's Automotive Component Industry: Ready to go Global?" PricewaterhouseCoopers, 2007. Retrieved 24/01/2010 from http://www.pwc.com/en_GX/gx/automotive/pdf/pwc_vietnam_auto.pdf

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[51] "Vietnam's Auto Parts Industry and Investment Environment," Nguyễn Xuân Chuẩn, Unido, Tokyo, 2007. Retrieved 24/01/2010 from http://www.grips.ac.jp/vietnam/VDFTokyo/Temp/Doc/2007/72WSNXChuanJun07Slides.pdf.

[52] *VietNamNet*, 23/8/2007, ibid.

The inconsistency in government's policies to develop electronics and automative industries is often criticized by manufacturers. The major cause of their complaint is that there are too many authorities involved in the enforcement of these policies. For example, there are five ministries involved in formulating the policies for developing the automative industry, namely, the Ministry of Industry and Commerce, the Ministry of Finance, the Ministry of Science and Technology, the Ministry of Transportation, and the Ministry of Resource and Environment. On many occassions their work overlaps and there and coordination is poor.[53] Besides, they said, policies change often.[54]

3. OTHER SURVEY FINDINGS

3.1. Overview of the Survey

In 2008 Dinh Hien Minh, Trinh Quang Long, Nguyen Minh Thao conducted a survey among 30 enterprises in Da Nang, 16 of which were textile and garment enterprises and the rest were mechanical and electronic ones. They undertook a similar survey among 35 enterprises in Ho Chi Minh City, including 15 textile and garment enterprises and 11 mechanical and electronic firms.

Ishida Masami, Nguyen Binh Giang, Vo Thi Minh Le (2009) also conducted a survey among firms in old and new industries, mainly in the northern provinces. The respondents consisted of nine firms in the textile and apparel industry (including two from the south), four in the footwear industry (including one from the south), two firms

[53] *VietNamNet*, 23/8/2007, ibid.

[54] "Ngành ôtô 'chạy' ì ạch vì chính sách thiếu ổn định (Automotive industry moves ploddingly due to instability of policies)," *VietNamNet*, 11/10/2009. Retrieved on 27/02/2010 from http://vietnamnet.vn/kinhte/chinhsach/200910/Nganh-oto-chay-i-ach-vi-chinh-sach-thieu-on-dinh-873072/

in the wood processing industry and a policy maker from a relevant agency of government , three firms in the agro-processing industry (including one from the south), four firms in the automotive industry (including one in the supporting industry making motorbikes), two firms in the electronic industry, and a sanitary ware manufacturer. There were also two interviews with the associations in textile and apparel and footwear industries.

3.2. Hard Infrastructure

As shown in Table 3 and Table 4, most respondents to the survey said they were not satisfied with electricity distribution, water supply and transport. They specifically complained about unnoticed power cuts and high electricity costs. A number of enterprises complained about the long duration of power cuts. Respondents from Ho Chi Minh City said electricity supply was not good. Viet Nam's transport system was reported to be poor in terms of cost, efficiency and reliability. Traffic jams were frequent objects of complaint in Ho Chi Minh City. Communication services were generally described as acceptable.

Based on their interviews with some firms in Ho Chi Minh City, Dong Nai, Ishida, Nguyen, and Vo (2009) learned that companies located inside industrial zones have virtually no black-outs. Power failures in the industrial zones usually only happens due to electricity network maintenance or natural disasters. There are electric generators in some industrial zones provided by the zones' board of management. However, those firms located outside the industry zones often face power outages and voltage instability. Such outages, though, usually last only up to 10 minutes, but may happen several times

Table 3: Result of Survey on Needs for Soft and Hard Infrastructure (Continues)

Respondents by industry	Logistics						
	Improvement of smoothness of national roads	Improvement of time consume for logistics	Improvement of transport in major cities	Increase in shipping frequency	Improvement of roads ports	Improvement of airport tax	Improvement of gasoline price
Knitting	3	3					
Footwear		4			5		
Knitting	3						
Garment				3			
Footwear			3				
Automotive		3		3		3	3
Spinning			2				
Handicraft	1	1					
Agro-industry	1						
Garment			2				
Garment	2	2	2				
Garment	3						
Agro-industry	2						
Agro-industry		2					
Knitting	2						

Note: 1 = first (bigest) priority; 2 = second priority; 3 = third priority; 4 = forth priority; 5 = fifth priority.

Source: Ishida Masami, Nguyen Binh Giang and Vo Thi Minh Le (2009).

Table 3: Result of Survey on Needs for Soft and Hard Infrastructure (Continued)

Respondents by industry	Labour					Investment climate		Telecom		Electricity		
	Dealing with strike action	Vocation training for exist workers	Vocation training for new workers	Improvement of education quality in university and college	Labor procurement	Improvement of customs	Improvement of corruption	Mobile phone service price	Plain old telephone service price	Electricity price	Electricity stability	Black-out
Knitting			2			1						
Footwear			3			1	1					2
Logistics						2						1
Knitting		1				2		5		4		
Garment		1				2		4				5
Footwear		1				2						4
Automotive			1			2		4	4		5	5
Garment						1	1					2
Spinning				1		4						3
Handicraft						3						2
Agro-industry						2						
Garment	1				1							
Garment					1	4						3
Footwear			1			2						
Garment			1									2
Agro-industry		4				3						1
Agro-industry						1						3
Knitting		1										3

Note: 1 = first (bigest) priority; 2 = second priority; 3 = third priority; 4 = forth priority; 5 = fifth priority.
Source: Ishida Masami, Nguyen Binh Giang and Vo Thi Minh Le (2009).

a day.

All firms interviewed in Ho Chi Minh City complained about road transport conditions, especially the traffic jams, the blocking of container trucks in peak hours, extended queues to enter Cat Lai Port, Sai Gon Station and Tan Son Nhat Airport. The yet-to-be-completed upgrading of the national route No. 51 and the provincial route No. 25, which is expeted to facilitate ease of access to Thi Vai-Cai Mep ports, as well as the construction of the access road to Hiep Phuoc Port compounds the respondents' problems, since getting in and out of the ports becomes even more difficult for the trucks. Although the distance from Bien Hoa to Cat Lai Port is 40 km, trucks take two to four hours to get into the harbor. Having to queue for too long – as was the case in 2007 and 2008 – forces firms to pay additional costs, or demurrage, for ships waiting off ports. Additional costs incurred by the container vans waiting are up to 50 U.S. dollars a month for a 20-ft container and 100 U.S. dollars a month for a 40-ft container. Total additional costs incurred by a ship owner can reach more than 10 thousand U.S. dollars a month as in the case of an large garments company in Ho Chi Minh City.

One respondent in the footwear industry complained about the flooding in the inner city of Ho Chi Minh during the rainy season, which he said makes the traffic conditions in urban areas worse. Similarly, interviews with firms in the north showed that those outside the industry zones often complain about electricity. Notably, many textile, garment, and footwear factories that are still outside the industry zones are severely affected by the poor state of electricity supply. A respondent firm in the motorcycle industry, operating an outside industrial zone, said the no warning black-out has caused huge damage to his company in terms of broken products and workers falling sick. This firm has decided to build a new factory in an industrial zone to receive

better power and water supply and be closer to its customers. Some respondent firms bewail the high electricity costs, particularly those imposed during peak hours. A firm in the garments industry complained that the peak period in the morning was expanded by the power supplier, thus increasing its production cost.

Respondent firms in the north also complained a lot about transportation in the inner Ha Noi and Hai Phong and about the national routes. Roads in cities are admittedly narrow and the turnpoints are not rationally designed, making it difficult for container trucks and container yards to maneuver and, in many instances, causing traffic jams. One company said it cannot use 40-ft container trucks because of an existing regulation in Hai Phong setting a limit to the height of container trucks that companies could use, and thus disallowing of 40 ft container trucks, which are deemed too high. Respondents also complained about the speed limit on national routes, the numerous intersection points in the national route No.5 connecting Ha Noi and Hai Phong Port, and the narrowing of the section from Nam Dinh to Ha Noi in the national route No.1A amid too much traffic.

The distance from the center of Ha Noi to Hai Phong Port is just about 100 km but it can take up to three hours to traverse it. Traveling the distance from – which is about 90 km – Nam Dinh city to the center of Ha No may take three hours too. Some respondent firms think that it is too time-consuming for logistics as well as for container handling in ports. Railway transportation is cheaper but it is less frequent and more cumbersome compared to truck transportation.

One respondent in the textile and apparel industry complained about the lack of transparency in infrastructure master planning, making it difficult to develop its own business plan.

3.3. Human Resource Development

The survey by Dinh Hien Minh, Trinh Quang Long, Nguyen Minh Thao (2008) shows that firms in Ho Chi Minh City and Da Nang mostly complained about the frequency of employee turnover, lack of or poor quality of labor, engineers and other department officials. In Da Nang, about 48 percent of workers finished high schools and 20 percent received vocational training. In Ho Chi Minh City, the proportion of workers with high schools is only 41 percent and vocational school 11 percent.

Interviews with respondents also showed that textile and shoe factories located in Ha Noi face difficulty in recruiting workers. Respondents attributed this to work disincentives, specifically low wages, including those for temporary jobs, and overtime work, especially since many potential have to travel long distances from their rural homes to factories.

On quality of workers, the survey of firms in the northern provinces confirmed the shortage of skilled labors. Textile firms tend to cooperate with technical colleges to open training courses for their new and existing middle managers, engineers, heads of production lines and other skilled laborers. A garment firm in Ha Noi even established a junior college.

Wood processing firms faced a serious shortage of skilled carpenters. The automotive and motor industry alongside electronic firms also suffer from a severe shortage of mechanics and technicians. A firm in the motor industry said it had gone several times to colleges, junior colleges and vocational schools in many provinces in search of potential employees. These efforts notwithstanding, it still could not find

qualified applicants, particularly for managerial posts. Respondents generally bewail the poor quality of university graduates.

The high turnover of engineers and middle managers is a major concern among respondents. One respondent said that fresh graduate engineers and middle managers tend to change jobs often in search of better opportunities while other set up their own businesses.

3.4. Investment Climate

Firms' evaluation of customs service is mixed. Some respondents appreciate the efforts of customs officers, particularly those that are targeted at reforms. Others are critical of these officers' work ethics. Almost all of respondents, however, admitted that they do or used to give gifts to customs officers in order to fast-track the clearance of their goods or relevant transactions. A respondent said the amount involved is minimal, usually ranging from 1 to 10 U.S. dollars. Offering bribe to customs officials is indispensable, he said, because otherwise the cost to the firm is enormous if his customs clearance is not expedited. Large firms with stable import markets have fewer complaints about customs officers. Small firms tend to hire intermediaries to facilitate their customs transactions.

Two respondents in the north complained about the bribe solicitation strategies of some tax officials as well as traffic inspectors.

Electronic customs clearance and tax declarations have been piloted in some localities beginning in early 2009. But some respondents are skeptical about these efforts. Firstly, even with the advent of electronic declarations, respondents said they are still required to submit hard copies of the dossiers to the customs or tax office.

Secondly, the online processing often fails **owing to poor transmission lines**. Thirdly, respondents complain that shipping forms and documents downloadable from customs websites either cannot be read or typed over. Some template files and programs used by customs offices may even conflict with the security software in the respondents' computers, which prevent them from being opened. Then, too, filling out template files may be too complex to someone who is barely computer literate.

Firms' evaluation of electronic payment of customs fees – which was piloted in mid-2009 – is mixed. For instance, a respondent from Ha Noi revealed that he still pays customs fees using the ATM machine at the customs office. This shows that notwithstanding the purported benefits of the electronic services at customs, some firms have yet to buy into such reforms.

CONCLUSIONS AND RECOMMENDATIONS

After 20 years of industrialization and despite a modernized Viet Nam, its industrial structure remains less developed. The industries – such as in textile and apparel, footwear, and wood processing industries – bring large export volumes and contribute significantly to job creation. Yet they have largely remained OEMs. The industries that are expected to help to modernize Viet Nam's economy such as automotive and electronic industry are basically still operating as complete knock down assemblers.

To upgrade themselves, the above industries are accelerating the development of their supporting industries and exploiting the potential domestic market. Yet the member firms are faced with many obstacles, including those involving soft and hard

infrastructure. The dearth of quality human resource is a huge obstacle. Firms lack competent engineers, middle managers and skilled workers.

Low wage now may not a competitive advantage of Viet Nam because it is not attractive to labor in major urban areas. To locate factories or defrag their production into rural areas, firms face disadvantages in transport infrastructure due to the national routes system is under developed. Even in major cities, transport infrastructure in its current state still does not support firms. Traffic jams and restrictive regulations on container trucks are persistent objects of complaint. Moreover, customs service has not been reformed enough to eliminate corruption among custom officers, resulting in firms enduring unnecessary delays and coughing up huge fees. In sum, the underdeveloped logistics infrastructure is negating the efforts of domestic firms to increase their competitiveness and turning away potential foreign investors.

High price and low reliability of electricity are other major obstacles. The high electricity prices together with broken products due to unanticipated black-outs or unstable frequencies, and costs entailed by the use of back-up generators, push up firms' production cost and pull down their competitiveness.

These things explain why when being interviewed in our survey, all firms demand for improving transport infrastructure, reducing black-out, reducing corruption by customs officers and shortening the time of customs clearance as well the time for logistics. In other words, a comprehensive development of combined soft and hard infrastructure and human resource will be vital to upgrading and diversifying industrial structure of Viet Nam.

To get higher value added, textile and apparel, footwear, wood-processing firms first should become original design manufacturers and later turn into own brand

manufacturers. For this to happen, companies should capture the interest of the domestic market. This strategy requires firms to improve their human resources and modernize their distribution networks. In the short term human resource development should focus on raising the skills of workers; long-term measures should focus on raising the quality of product design and brand building. At the same time, government must establish vocational schools for new and existing workers and improve the quality of higher education (particularly in vocational schools, junior colleges and colleges/universities). Modernizing the distribution networks will depend greatly on both production logistics management by firms and the transport and telecommunication infrastructure provided by the government. Besides, supporting industries for textile and apparel as well as footwear industries should be strongly promoted**.**

In the case of Viet Nam, becoming original design manufacturers and own brand manufacturers may be big a mission for the electronics and automotive industries in both the short and medium terms. Yet, these industries can still move to more value-added products by becoming supporting manufacturers to multinational corporations.

Developing the supporting industries cannot be stressed enough when it comes to upgrading and diversifying Viet Nam's industrial structure. Efforts toward this end have been initiated by both the government and major business groups in the textile and apparel industry. Within the supporting industries, small and medium-sized firms as well FDIs play a crucial role in these industries' development. Yet they are vulnerable to obstacles from infrastructure and poor labor force skills and high employee turnover. Foreign investors are also sensitive to these obstacles since they can easily set their sights on other countries with more conducive investment climates. Multinational enterprises may hesitate to defrag their production into countries where logistics

connectivity is underdeveloped. Thus, human resource development is of prime importance while infrastructure and logistics development may easily foster the supporting industries.

In the panorama of intra-regional production networks led by multinational corporations, attracting FDIs in supporting industries depends on the agglomeration and industrial corridor approaches. [55] Viet Nam should establish supporting special economic zones and industrial corridors, which link those zones through integrated supply chain networks.[56, 57]

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[56] Ishida (2009).

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CHAPTER 10

LOGISTICS CHALLENGES IN CAMBODIA, LAO PDR, MYANMAR, AND VIETNAM

Ruth Banomyong

Abstract

An efficient logistics system can increase a nation's or region's competitiveness and ability to attract foreign direct investment. If a nation or region lacks the reliable network of dependable transportation, telecommunications, warehousing and other related infrastructure, firms will be restricted from designing an efficient logistics strategy for the movement and storage of its traded goods. This limitation currently exists in Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV). The purpose of this chapter is to describe and highlight key issues that are affecting the integration of the CLMV countries from a logistical perspective and to use Lao PDR as an illustrative case study. Limited connectivity is not only confined within CLMV but also exists in these four nations' logistics situation with the advanced economies in Southeast Asia.

Keywords: CLMV, Logistics, Service Links, Integration

INTRODUCTION

Manufacturers and traders in Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV) require efficient and effective logistics services that can move their products to the right place, at the right time, in the right condition, and at the right price. To establish production networks and develop logistics for better access to the global market, it is therefore of great importance that regional linkages among CLMV countries are strengthened.

In CLMV, inadequate transport infrastructure and high logistics "service-link" costs have constrained industrial and economic integration. As remedy, major infrastructure investments are already being undertaken by these countries and more are planned. Physical connectivity in the CLMV will be significantly improved with the completion of these infrastructure investments. The improving infrastructure, coupled with expanded cross-border cooperation among these countries (Banomyong *et al* 2002; Than 2005) will help integrate the subregion's industrial network with the rest of the world.

The purpose of this chapter is to describe and highlight key issues that are affecting the integration of the CLMV countries from a logistical perspective and to use Lao PDR as a case study that illustrates the CLMV's limited logistics connectivity. The structure of this chapter is as follows: After the introduction, a short literature review is presented to discuss the importance of logistics to CLMV. The methodology section then focuses on the research framework and approach of the chapter. The findings section describes the key logistics issues affecting the CLMV connectivity. This is followed by the chapter's conclusion.

1. LITERATURE REVIEW

Logistics is difficult to define because it is a constantly evolving concept. Logistics no longer concerns only the handling of materials or transportation of materials. It has grown in scope to encompass the set of activities that facilitate the economic transactions associated with production and trade (Stock and Lambert 2001). These include customer service and support; demand forecasting and planning; facilities site selection, warehousing, and storage; inventory management; logistics communication and order processing; material handling and packaging; reverse logistics, sourcing; and transportation (Grant et al. 2006).

Logistics plays a key role in national and regional economies in two ways. First, it is one of the major expenditures for businesses, thereby, affecting and being affected by other economic activities. Second, it supports the movement of a multitude of economic transactions. It is an important aspect of facilitating the sale of all goods and services.

Logistics is not just confined within national borders or markets because within each country or region there are export and import firms that face specific logistics attributes that may be different from those experienced in the domestic market. In an international logistics system, many state agencies and, in particular, customs agencies play a very important role in the efficiency of the logistics system. There is also a heavy reliance on specialized service providers, such as freight forwarders or customs brokers that can facilitate the flow of goods across borders. The biggest difference between domestic and international logistics is the environment in which the logistics system operates.

An efficient logistics infrastructure increases a nation's competitiveness and its ability to attract foreign direct investment (FDI). If a nation lacks a reliable network of dependable transportation, telecommunications, warehousing, and other related infrastructure, firms will be restricted from designing an efficient logistics strategy for the distribution of finished goods (Goh and Ang 2000). This statement is especially true for CLMV.

The CLMV logistics system, like any other macro-level logistics systems, is composed of (1) shippers, traders, and consignees; (2) public and private service providers; (3) regional and national institutions, policies, and rules; and (4) transport and communications infrastructure (Banomyong 2008). These four dimensions are then combined to determine the performance of the CLMV's logistics system. The sum of all these factors will determine CLMV's international competitiveness (Banomyong 2004).

2. METHODOLOGY

The research methodology was derived partly from the methods developed by Banomyong *et al* (2008) in formulating the ASEAN logistics policy roadmap. The first step of the methodology involved a rapid assessment of the CLMV logistics sector. This meant that the status of the sectors related to logistics had to be understood in terms of:

- The general condition of the transport network and fleet for each mode.
- The level of modernisation of customs and trade facilitation initiatives.
- The level of development and liberalisation of transport and logistics services.

- The structure and scope of the freight forwarding industry and related logistics services.
- The level of modernisation of the information and communications system.

Seven questionnaires that were drawn up focused on the major advances introduced in the past few decades in relation to the logistics sectors. Data collected described which of these advances, which can be read in current trade literature, had been introduced or are planned to be introduced in the CLMV countries. The questionnaires aimed to assess the capacity of each CLMV nation's logistics-related sectors, such as:

- Customs
- Ports and maritime transport
- Rail transport
- Road transport
- Inland waterway transport
- Air transport
- Logistics services

The second phase of the methodology focused on CLMV's logistics integrated route as an indicator of connectivity within the subregion. In this phase, the aim was to better understand how the CLMV countries are inter-connected from a logistics perspective. Since industrial fragmentation (Kimura 2008, 2009) is a key theoretical concept for understanding how integrated production networks in the CLMV can be

developed, it therefore is necessary to understand the logistics connectivity or "service link" that could either enable or impede fragmentation possibilities among CLMV countries.

According to Kimura and Obashi (2009), the concept of industrial fragmentation is reflected in two dimensions: fragmentation in terms of geographical distance and the disintegration of corporate activities. The latter is particularly important in the context of ASEAN and CLMV, as it explains up to a certain extent the current proliferation of arm's length, i.e., inter-firm, transactions including various classes of outsourcing such as subcontracting, OEM (original equipment manufacturing or original equipment manufacturer)/ODM (original design manufacturing or original design manufacturer) contracts, and EMS (electronics manufacturing service) firms.

To better understand this service link connectivity, some basic data are needed:

- The origin and destination of the cargo (based on selected industries);
- The full route from origin to destination, including places where the cargo is temporarily stationary or in transit (such as national borders and points of intermodal transfer such as sea ports or airports, where applicable);
- Mode of transport for each leg;
- Distance for each leg;
- Transit time for each leg (in hours or days); and
- Cost or quotes for each leg.

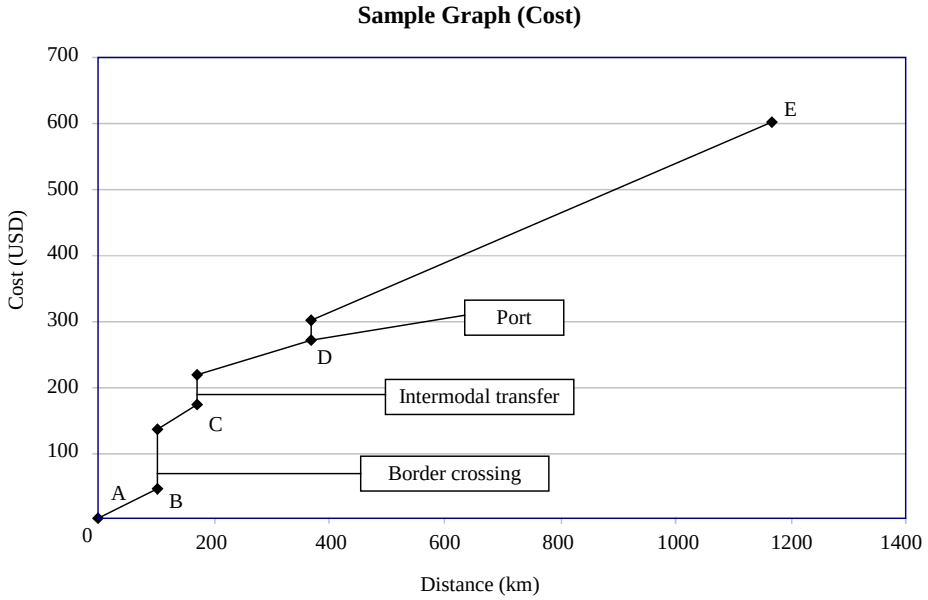
A sample data table showing the transit of goods from point A (origin) to point E (destination) is given in Table 1. Data are plotted against distance for each leg of the journey. In terms of the costs or quotes, the figure will graphically show the relative cost of each leg (or mode, where applicable), as well as indicate the approximate proportion of non-transport costs in relation to transport costs. For example, a breakdown of costs at border crossings or ports can highlight areas for policymakers' action (Banomyong and Beresford 2001). Similarly, by plotting time against distance, the relative speed of transit transport for each leg (or mode) can be compared. Figure 1 shows a sample graph using the cumulative cost data from the table. Getting the required cost, time, and distance data is the primary objective of this method. Preferred unit of analysis is for the hypothetical shipment of one container (Twenty-foot Equivalent Unit or TEU) from origin to destination.

Table 1: Sample Data Table

Leg	***Mode***	***Distance (km)***	***Cum. distance (km)***	***Cost (US$)***	***Cum. cost (US$)***	***Transit time (hours)***	***Cum. Time (hours)***
A to B	Road	100	100	50	50	4	4
Border Crossing	-	-		100	150	6	10
B to C	Road	70	170	30	180	3	13
Intermodal transfer	-	-		40	220	3	16
C to D	Rail	200	370	60	280	18	34
Port	-	-		20	300	6	40
D to E	Sea	800	1 170	300	600	72	112
TOTAL		1 170		600		112	

Source: The Author.

Figure 1: Sample Graph



Source: The author.

The output derived from the obtained data will help identify bottlenecks in transhipment points that could impede enhanced fragmentation among CLMV countries. This logistics connectivity can be measured both in terms of the cost and time dimensions.

3. FINDINGS

3.1. CLMV Customs

All CLMV countries, except for Lao PDR, are members of the World Trade Organisation (WTO). This means that in theory, countries in the subregion will have to follow WTO-based rules for customs valuation. Strangely enough, Table 2 seems to

show that in practice, not all WTO-based valuation rules are implemented. Myanmar, in particular, is the only country that is not even considering using such valuation rules. Lao PDR is not a WTO member but has started to follow some WTO-based rules so as to help negotiate its entry into the organisation, although it still has a long way to go.

Most customs issues related to logistics, such as the Association of Southeast Asian Nations (ASEAN[1]) Customs declaration form, have been only partially implemented or are at the planning stage of implementation. Full implementation of this declaration form---the same declaration form for all its member-countries---will

Table 2: CLMV Customs Comparison

	Cambodia	Lao PDR	Myanmar	Vietnam
·**Electronic single window**	Planned	Planned	Planned	Planned
·**ASEAN Customs declaration documents**	No	Planned	No	Implementing
·**WCO Harmonised system code**	Yes	Yes	Implementing	Yes
·**Customs valuation based on WTO rules**	Planned	Partial	No	Yes
·**Reduced number of tariff bands**	Implementing	Implementing	No	Planned
·**Computerised input of customs declaration data**	Partial	Planned	Planned	Yes
·**Direct trader input**	Partial	Planned	No	Planned
·**ASYCUDA or similar system**	Implementing	Implementing	Planned	Implementing
·**Green Channel**	Implementing	Planned	No	Yes
·**Post audit clearance**	Planned	Implementing	Partial	Partial
·**Computer based risk management**	Implementing	Implementing	No	Yes
·**GMS-CBTA[2] status**	Partial	Partial	Implementing	Partial
·**Inland Bonded Warehouse**	Yes	Partial	Partial	Yes

Source: The author.

[1] Cambodia, Lao PDR, Myanmar, and Vietnam are all members of ASEAN.

[2] Greater Mekong Sub-region Cross Border Transport Agreement

facilitate trade among these nations even further. Meanwhile, a significant step toward this single declaration form is the CLMV member-countries' adoption of the United Nations Conference on Trade and Development (UNCTAD) key layout form, which standardises administrative documents.

Although it is still at the planning stage, the eventual implementation of the ASEAN electronic single-window system is also critical to the development of logistics services in CLMV.

Likewise, the implementation of computerised risk management and the clearance of documents with post-audit need to be accelerated to facilitate the efficient and effective flow of goods across borders. Both activities are currently only partially implemented.

Myanmar seems to be the most restrictive in terms of customs and trade facilitation. It is important for Myanmar's Customs and related agencies to accelerate their reform process so that connectivity within the CLMV and subregional integration can truly happen.

3.2. CLMV Ports and Maritime Issues

Ports are often the chief facilities linking an economic system with the international market and therefore the main trade hubs. Based on survey results, Cambodia and Myanmar have no direct service with mainline carriers. Lao PDR is a land-locked country and is therefore not included in the analysis of ports and maritime issues.

This lack of mainline connection is because of these nations' low container volume as compared to the volume of more developed countries in Southeast Asia. The

CMV countries[3] are mostly served by shuttle feeder services to main regional hubs such as Singapore or Hong Kong. Southeast Asia has developed a system of shipping networks wherein individual ports are linked to intricate patterns of dependency in hub–feeder relationships as well as to end-to-end shipping linkages that reflect the increasing dependency between national, regional, and global economies (Flemming and Hayuth 1994).

The concept of implementing landlord ports in Vietnam is in the planning stage. This concept is not applicable in Cambodia and Myanmar. Port information and communication technology (ICT) plays an important role in the integration of the port and its stakeholders, including the shipping lines, exporters, importers, and customs. However, CMV ports are still at an early stage of ICT development, with Vietnam being the most advanced among the three nations. Certain ports in Vietnam, mostly private ones, have computerised information systems that enable ports and port users to exchange information on regulatory procedures or on the status of cargos in transit. Table 3 describes ports and maritime issues of the CMV countries. Here, Myanmar lags behind in terms of port and maritime development.

There is also an observed lack of rail link with the main ports in the CMV countries. Modal integration is mostly limited to linking the road and sea interface.

3.3. CLMV Rail Transport

Railways usually offer an efficient interface between maritime and land transportation systems, especially ever since container shipping became prevalent. Rail logistics is, however, complex as it requires management of capacity, schedule, shipment

[3] Cambodia, Myanmar, and Vietnam (CMV).

Table 3: CMV Maritime Comparison

	Cambodia	Myanmar	Vietnam
·**Direct mainline services**	Yes	No	Limited
·**Feeder services**	Yes	Yes	Yes
·**Regional services (>1,500TEU)**	No	No	Yes
·**Landlord port**	No	No	Planned
·**Container terminal concessions**	No	Yes	Planned
·**Day of the week shipping services**	Yes	Limited	Yes
·**Portnet or equivalent**	Planned	Planned	Limited
·**Direct debit payment system**	No	No	Limited
·**Pilot free entry for large vessels**	Limited	Yes	No
·**Post Panamax gantry cranes**	Yes	No	Planned
·**Computerised terminal control system**	Yes	Planned	Yes
·**Automated gate entry**	Partial	No	Planned
·**Of dock container yard**	No	No	Yes
·**Bonded distribution facilities**	Planned	No	Yes
·**Full truck scanners**	Yes	Yes	Planned
·**Shunting lines to port**	No	No	No

Source: The Author

characteristics, origin, and destinations. From the questionnaires' results, rail transport can be considered as the weakest links in the CLMV logistics infrastructure. Table 4 describes the rail situation in CLMV.

The railway system in CLMV is based on the metre-gauge system; however, this rail network is not linked. The CLMV rail freight system is characterised by:

- Access charges that are high compared to road transport
- Almost no international route, leading to excessive transit time and poor service quality, and;
- Lack of priority given to timetables, resulting in poor reliability.

Table 4: CLMV Rail Comparison

	Cambodia	Lao PDR	Myanmar	Vietnam
·**Unified gauge**	Yes	Yes	Yes	No
·**Standard gauge**	No	No	No	Planned
·**Double track**	No	No	Yes	No
·**Dedicated track for freight services**	No	No	No	Planned
·**Centralised train control**	No	No	Planned	Limited
·**Advanced train control**	No	No	No	Planned
·**Electrified lines**	No	No	No	Planned
·**Bogied Wagon**	Limited	Yes	No	No
·**Heavy Load Wagons**	No	No	No	No
·**Long train**	No	No	No	No
·**Modern locomotives**	No	Limited	Yes	Limited
·**Unit container train operations**	No	Planned	No	Yes
·**24-freight terminal operations**	No	Planned	Yes	Limited
·**Privately-owned rail wagons**	Planned	Planned	Limited	No
·**Private freight trains operations**	Planned	Planned	No	Limited

Source: The author.

Freight operations are also hindered by the lack of a centralised train control system or any other type of advanced train control system that can monitor train movements, including train identification and automatic route setting. Another limitation of the CLMV railway system is that trains could not operate once wagons have cargos weighing 80 tons or more, or once trains have more than 50 wagons. Based on the collected data, implementing the following rail transport recommendations would therefore help develop CLMV's logistics connectivity:

- Double tracks and dedicated track for freight services
- Centralised or advanced train control systems
- Wagons that can carry more than 80 tons

- Trains that can operate with more than 50 wagons

Efforts to improve and integrate the CLMV rail network will need to be based on long-term support as the network capability is currently constrained by limited infrastructure and lack of management capability. The concession operation of the Royal Cambodian Railway could be an interesting business model for other CLMV countries to follow if it becomes successful.

3.4. CLMV Road Transport

Road is the main mode of transport in CLMV. However, its management and operations still need to be harmonised and standardised. The challenge is that road infrastructure in the CLMV still lags behind those of Southeast Asian countries. Multi-lane dual carriageway only exists in Vietnam but limited access highways are non-existent in these nations. Toll roads and ring roads around major cities do exist in Myanmar and Vietnam as urban congestion has hindered the efficient flow of goods carried by trucks, especially during peak hours. This is also in the reason behind the implementation of total or partial truck bans in all the CLMV countries. Table 5 describes the road transportation issues in the CLMV.

Overloading of cargo is another issue all CLMV countries face. Axle load limits do exist, but enforcement is often lacking. Articulated trucks can be found in many CLMV countries but they are not the type that comprises most of the trucks moving the nations' cargos. In terms of compliance, roadworthiness certificate are theoretically required in most CLMV countries, but enforcement is again often lacking. This is the

Table 5: CLMV Road Comparison

	Cambodia	Lao PDR	Myanmar	Vietnam
·Multilane dual carriageway	No	Planned	No	Yes
·Limited access highway	No	Planned	No	No
·Toll Roads	Limited	Planned	Yes	Yes
·Ring road capital	Limited	Planned	Yes	Limited
·Ring road major cities	Limited	Planned	Yes	Limited
·Partial truck ban	Limited	Planned	Yes	Yes
·Control of axle load limit	Partial	Yes	Yes	Planned
·Limit enforced by police	Partial	Planned	No	No
·Articulated trucks	Yes	Limited	Yes	Yes
·Modern commercial trucks	Limited	Planned	Yes	Yes
·Road worthiness certificate	Partial	Limited	Yes	Planned
·Pollution control	No	Planned	Yes	Yes
·Pollution test failed but still on road	Partial	Yes	Yes	Yes

Source: The author.

same problem with pollution control. The CLMV countries are characterised by a lack of enforcement capability with regard road rules and regulations.

3.5. CLMV Inland Waterway Transport

The inland water transport system in the CLMV serves mostly domestic traffic. Some scheduled international inland waterway services exist in the CLMV as all are riparian to the Mekong River. Linkages to the main seaports are not readily available, hindering the development of inland waterway transport (as a key component in the CLMV logistics system). Linkages to the main seaports are currently being developed between Phnom Penh Port in Cambodia and the new port network in Southern Vietnam. Table 6 compares inland water transport (IWT) systems among CLMV countries.

When compared to maritime ports, inland waterway port facilities, equipment,

Table 6: CLMV IWT Comparison

	Cambodia	Lao PDR	Myanmar	Vietnam
• Scheduled service	Yes	No	Yes	Yes
• Links to main seaport	No	No	No	No
• Container vessel for IWT	Limited	No	No	Yes
• Landlord port	No	No	No	Limited
• Container terminal	Yes	No	No	Limited
• Portnet or equivalent	No	No	Planned	Yes
• Direct debit payment system	No	No	No	Planned
• Computerised terminal control system	Yes	No	No	No
• Automated gate entry	Limited	No	No	Yes
• Off-dock yard	Limited	No	Limited	Yes
• Bonded distribution facility	No	Limited	No	Planned
• Shunting lines to IWT terminal	No	No	No	Yes

Source: The author.

and ICT systems are sorely missing. There is a lack of container vessels and container-handling capability although some river ports do handle containers on an *ad-hoc* basis.

3.6. CLMV Air Transport

A draft of the ASEAN Multilateral Agreement on the Full Liberalization of Air Freight Services has been developed, and the 11th ASEAN Transport Ministers' (ATM) meeting endorsed and finalised this multilateral agreement in 2006. According to the survey, only Myanmar has not liberalised air freight services, even though all CLMV countries are also members of the ASEAN. Table 7 describes the air transport capability among the CLMV countries.

Pure freighter services are not common in CLMV but Lao PDR and Vietnam are keen to operate these. Myanmar and Vietnam would also hope to be considered as major air freight hubs for the region, as gleaned from their national air development

Table 7: CLMV Air Transport Comparison

	Cambodia	Lao PDR	Myanmar	Vietnam
・Liberalised air freight services	Yes	Yes	No	Yes
・Pure freighter services	No	Planned	No	Planned
・Hub for air freight	No	Planned	Yes	Yes
・On airport operations	No	No	No	Limited
・Cargo village	No	Planned	Planned	Limited
・On airport cold storage	Limited	Planned	Limited	Yes
・On airport storage for dangerous goods	Limited	Planned	Limited	Planned
・Competitive ground handling services	No	Limited	Limited	No
・Large palette scanners	No	Planned	No	Yes
・Quick clearance	Yes	No	Yes	Yes
・EDI for cargo manifest	No	No	No	Planned

Source: The author.

policies. However, pre-requisites of an airfreight hub are the improved on-site operations at airports and cargo villages. These facilities do not exist or are limited in Myanmar and Vietnam. Also, capabilities to handle cold storage and dangerous goods storage, and competitive ground handling services are important factors in the development of an airfreight hub.

Quick clearance and Electronic Data Interchange (EDI) for cargo manifests are closely related to such services but are again lacking in Lao PDR. Large palette scanners that facilitate the examination of freight shipped on aircrafts are also needed but only exist in Vietnam.

3.7. The CLMV Logistics Services Sector

Logistics services available in the ASEAN reflect the economic development achieved by member-countries, with more sophisticated services available in the more developed nations. In Vietnam, meanwhile, freight forwarders and logistics service providers are available to give extensive logistical and supply chain services, whereas freight forwarders from Cambodia, Lao PDR, and Myanmar can only provide basic or traditional logistics services such as trucking, warehousing, or customs brokerage. However, local customers are now starting to demand that global services providers also expand their services in the region.

The use of domestic containers for internal freight movement can play an important role in the development of a country's logistics system and facilitate CLMV's inter-connectivity. Cambodia and Myanmar have no such domestic containers, and domestic freight is being carried as break-bulk items. Domestic containers are limited in Lao PDR.

Track-and-trace, distribution, and cross-docking centres are now considered prerequisites for a modern logistics system, and the logistics service sector must be able to provide these activities to clients. This capability does not exist, except for some Vietnamese providers, among CLMV's logistics service providers. This means that the movement of freight in CLMV is hampered by a lack of an efficient monitoring system in the subregion.

Distribution and cross-docking activities seem to be more common, and service providers in Lao PDR and Vietnam have started to partially offer these services. Foreign logistics service providers have a limited influence over the local CLMV market. This is understandable because, apart from Vietnam, the local logistics market

is relatively small and difficult to enter. Local service providers are usually not capable of providing track-and-trace, distribution, and cross-docking services compared to international service providers from the more developed countries in Southeast Asia. This is particularly true for Cambodia, Lao PDR, Myanmar, and Vietnam. The local freight forwarding industry in Cambodia and Lao PDR is likewise concentrated due to the small market size. There are only a handful of key players in both markets. The Vietnamese market is more open, with most freight forwarding companies consisting of small- and medium-sized enterprises.

In terms of trucking services, the picture is more balanced, with no real market concentration even though there are a few dominant players in the Cambodian trucking industry. Concentration in itself is not a bad thing, as long as shippers and consignees can receive the best logistics services at the lowest price.

A critical point for logistics sector integration relates to standardised service contracts. It is important for the logistics service industry to be able to provide logistics services on the basis of standard service contracts, but this is not the case in Cambodia, Lao PDR, and Myanmar. A harmonised standard service contract would protect both clients and service providers. Table 8 describes the CLMV logistics sector.

The network of agents among CLMV countries is quite limited, with only Lao PDR and Vietnam having sufficient connections to liaise within the whole of the CLMV. This structural weakness of service providers impedes the logistics connectivity capability within CLMV.

Table 8: CLMV logistics service providers' comparison

	Cambodia	Lao PDR	Myanmar	Vietnam
· Domestic containers	No	Limited	No	Yes
· Track & trace	Planned	Planned	Planned	Yes
· Distribution centres	No	Limited	No	Limited
· Cross docking facilities	Limited	Limited	No	Limited
· National booking centres	No	No	No	No
· House B/L	Yes	Yes	Yes	Yes
· Multimodal Transport B/L	Yes	No	Yes	Yes
· Document accuracy	Limited	Yes	Yes	Yes
· Forwarding industry concentration	Yes	Yes	Limited	No
· Concentration of foreign LSP	Limited	Limited	No	Limited
· Trucking industry concentration	Limited	No	No	No
· Standard service contract	No	No	Planned	Yes
· Guaranteed service quality level	Limited	Yes	Limited	Yes
· CLMV coverage	Limited	Yes	Yes	Limited

Source: The author.

4. CLMV LOGISTICS CONNECTIVITY---AN EXAMPLE

Lao PDR is the sole land-locked country within the CLMV subregional grouping. Lao PDR has formulated a national policy where it would move from considering itself as a land-locked country to becoming a land-linked nation because it recognizes the potential benefits that can be gained from increased regional integration within the Greater Mekong Subregion[4] (GMS) and ASEAN.

When one talks of international logistics, there is usually a complex and uncertain cross-border dynamics where government actors play a prominent part (Grainger 2007) in either impeding or facilitating the flow of goods. Customs plays a very important role in reducing cross-border uncertainties. Manufacturing and trading firms have to heavily

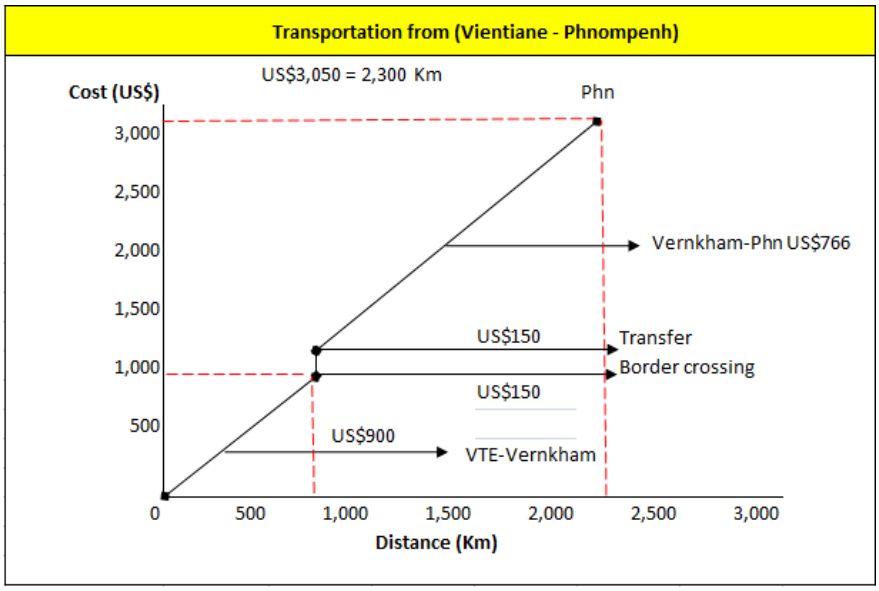
[4] Members of the GMS are Cambodia, the People's Republic of China (Yunnan & Guangxi province), Lao PDR, Myanmar, Thailand, and Viet Nam.

rely on specialised service providers to facilitate and reduce risks to goods flowing across borders (Banomyong 2004). The CLMV countries now realise that even with customs improvements, service link reliability still remain weak because of other factors affecting the handling and movement of goods between borders and hinterland, whether from the point of origin or of destination (Price 2006). Ownership from other related cross-border agencies is lacking, and many reforms are solely Customs focused. This is not sufficient in itself. A holistic approach is needed for cross-border management.

Figure 2 describes the cost structure of transport from Vientiane to Phnom Penh. The door-to-door cost of transporting goods from Vientiane to Ho Chi Minh is more expensive than from Vientiane to Phnom Penh. This is quite interesting as the distance to Ho Chi Minh is 2,060 km compared to 2,300 km to Phnom Penh. Figure 3 describes the cost structure between Vientiane and Ho Chi Minh. It is also observes that the domestic freight charges by kilometre in Lao PDR is quite expensive. This is reflected in the steep cost curves between Vientiane (VTE) and Dansavanh's (DSV) border post. However, the most expensive leg in this route is the one between DSV and Danang (at US$720 for 320 km). Border-crossing fees represent less than 10 percent of the total transport cost.

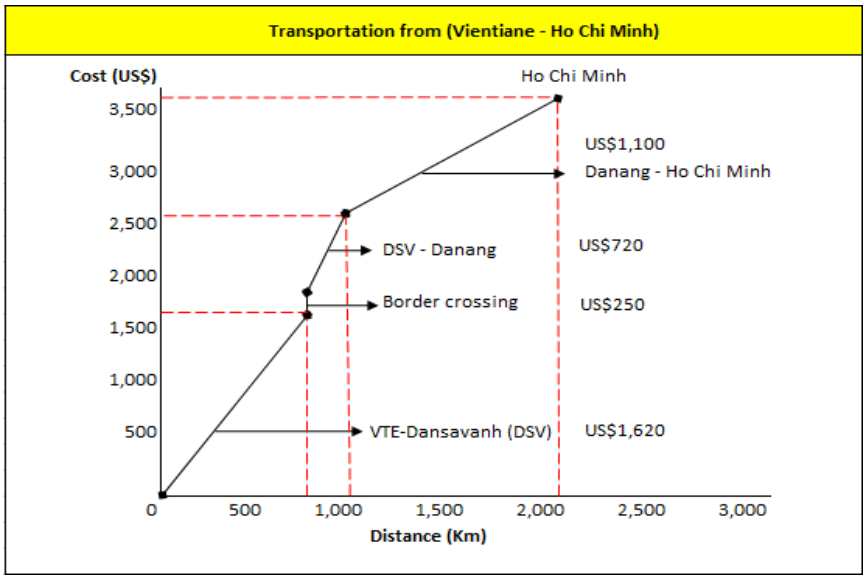
Figures 4 and 5 represent the door-to-door cost structure for the route from Vientiane to Danang and from Vientiane to Hanoi. The route from Vientiane to Danang is similar to the route for Ho Chi Minh. The route to Hanoi passes through Lak 20 and Vinh, which is a different route. However, cost per kilometre between these two routes is quite similar at around US$2.50 per km. It is interesting to note that the cheapest cost per kilometre is the route to Ho Chi Minh, which has the longest distance.

Figure 2: Vientiane to Phnom Penh Cost Model



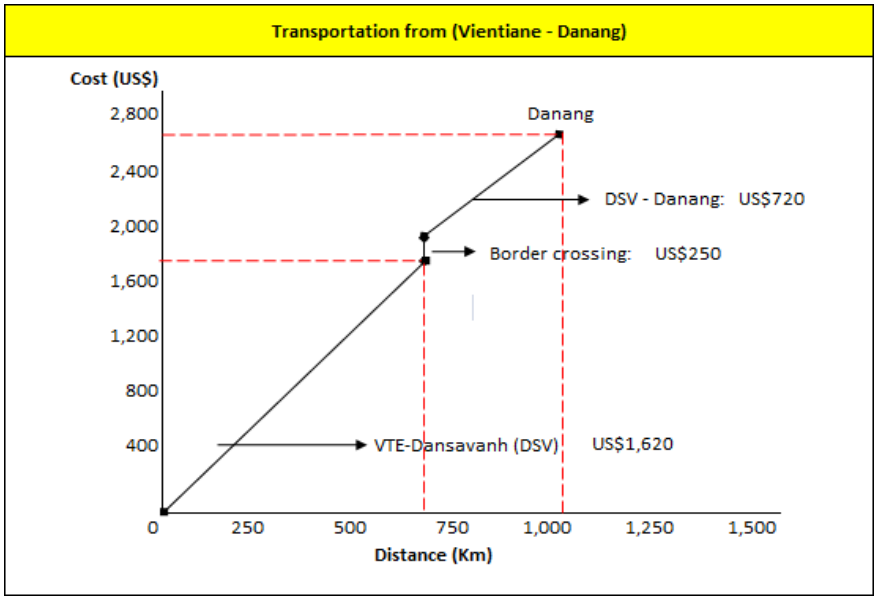
Source: Lao study team.

Figure 3: Vientiane to Ho Chi Minh Cost Model



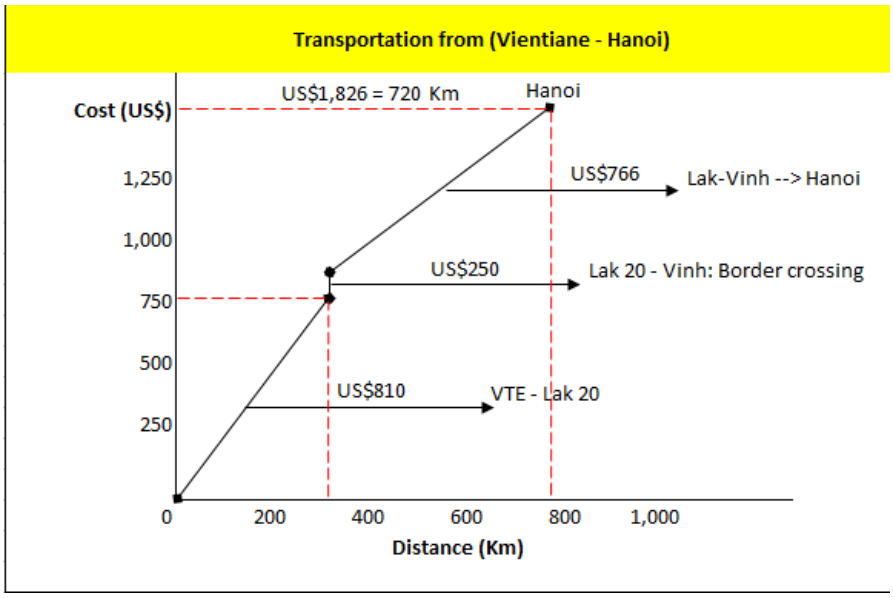
Source: Lao study team.

Figure 4: Vientiane to Danang Cost Model



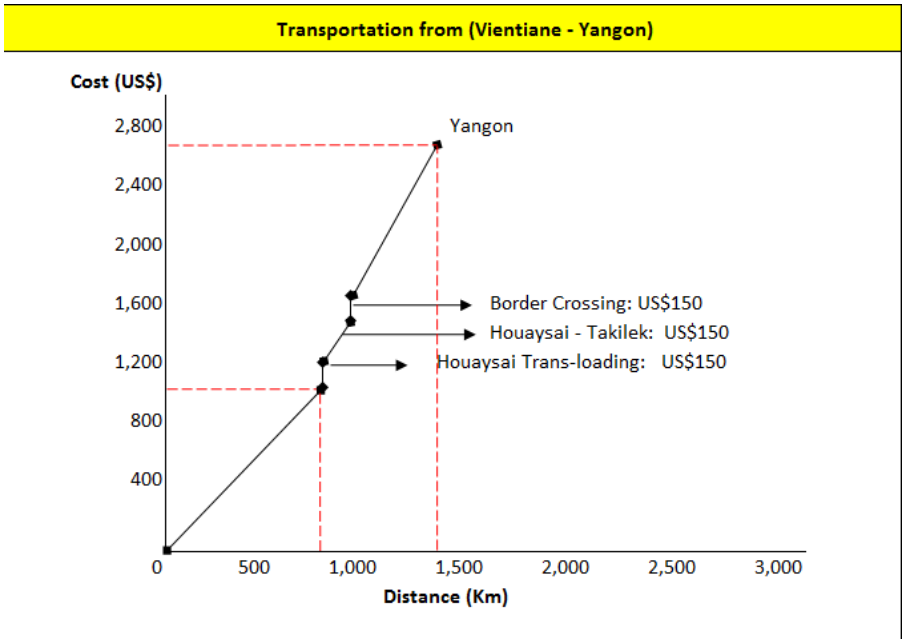
Source: Lao study team.

Figure 5: Vientiane to Hanoi Cost Model



Source: Lao study team.

Figure 6: Vientiane to Yangon



Source: Lao study team.

Figure 6 represents the cost structure of the door-to-door transport from Vientiane to Yangon. It is observed that the road transport cost in Myanmar is two times higher than road transport cost in Lao PDR. Border crossing is also cumbersome and expensive with trans-loading requirements for freight. This was not the case with the Vietnamese routes.

The above examples illustrate that it is possible to establish service links among CLMV countries. However, cost remains relatively high because the traffic volume is limited and physical infrastructure is still lacking. Scheduled services within CLMV could become an enabler in developing these service links as a support for industrial fragmentation.

5. DISCUSSIONS

Logistics connectivity remains a key challenge to the integration of CLMV. Apart from Vietnam, the CLMV countries suffer in general from a lack of connectivity with the more developed ASEAN countries such as Malaysia and Indonesia.

There exists within CLMV a limited service link capability (except for Lao with Vietnam, and Cambodia with Vietnam, but this is more related to the geographical proximity of these nations). There is a theoretical service link between Lao and Myanmar but the physical connection does not even exist. Such weak service link is further aggravated by the lack of capable logistics service providers indigenous to CLMV and by providers' limited regional network.

The Lao case illustrates that service links are possible but remain highly expensive with no regular scheduled service and weak reliability. The fact is that the limited demand within CLMV does not support the existence of such service links.

Transit issues and border crossings remain problematic and are still cause the key bottleneck in CLMV's logistics integration. Myanmar's case, for instance, shows that to cross the borders from Myanmar to other CLV countries costs about US$500. Such is a staggering number, bearing in mind that this does not yet even include freight charges.

The service link connectivity between CLMV and outside the subregion is limited as well---except for Vietnam, which stands out because of its capacity to attract massive foreign direct investment. This limited connectivity can be gleaned from the existing trade flow patterns as well as from the fact that there is a lack of service link data. Since

there is no official service link data available, this study relied on data collected from a network of respondents working in CLMV.

Port-to-port connection in the subregion does exist via regular services although the frequency of transhipment activities is limited to one to two sailings a week (maximum) to the main ports in the ASEAN. A direct route from Indonesia to the main CMV seaports does not exist. Malaysia's maritime connection with Myanmar is quite good, especially in the case of barter trade vessels, and connectivity with Vietnam is picking up. Nonetheless, trade imbalance remains high and affects freight cost to and from CLMV to the more advanced ASEAN countries.

Logistics connectivity remains difficult for both the internal and external integration of CLMV countries. Thailand seems to be the most connected country with CLMV but this is more due to its adjoining border and geographical position.

Thailand can be the catalyst for the logistics integration of CLMV countries through a hub-and-spoke system that supports Thai foreign direct investment in its neighbouring countries. This is currently happening with some agro-industrial produce but some traditional barriers such as those pertaining to border crossings remain unchanged. There exist a negative relationship between the amount of money paid at borders and the amount of time taken for clearance. The more money is paid, the less time it takes to clear goods at the border.

CONCLUSIONS

In CLMV, it is important to create an enabling environment that facilitates service linkages not only within these nations but with Southeast Asia as well. However,

having an enabling environment is not sufficient. Since logistics is a derived demand of trade, CLMV countries will need to increase their production capability to have more products to trade and from there, can require efficient and effective logistics that can create connectivity and integrate production networks across the region.

To increase their production capability, the CLMV countries will need to attract enough investment to generate economic growth. Minimum conditions in the CLMV countries will need to be met before any investment decisions are made. These minimum requirements are not confined to infrastructure issues only but should cover service link issues as well. Other key areas such as insurance coverage, freight network quality and reliability, and availability of logistics providers must be fully understood. These issues are more related to the management of logistics than the building of logistics' "hard" infrastructure. This is where the logistics challenges are for the CLMV countries in the next decade. It will not be on the infrastructure anymore.

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CHAPTER 11

POSSIBILITY OF RELOCATION OR FRAGMENTATION FROM ADVANCED ASEAN COUNTRIES TO CLMV COUNTRIES: SUMMARY OF SURVEY RESULTS

Masami Ishida

Abstract

Do firms of electronics and automotive industries in the advanced ASEAN countries make the decisions for relocation or fragmentation to Cambodia, Lao PDR, Myanmar and Vietnam (the CLMV countries)? What are needed for the CLMV countries in order to attract more foreign direct investment (FDI)? This paper tries to answer these questions by analyzing the survey results of seven countries (Indonesia, Thailand, Malaysia, Cambodia, Lao PDR, Myanmar and Vietnam). Based on the analysis, it is shown that relocation or fragmentation of the electronics industry to Vietnam has already been undertaken and will be increasing. On the other hand, no firms in the three advanced ASEAN countries intend to make a decision for relocation or fragmentation to the CLMV countries. However, this should not provide a pessimistic note to the CLMV countries because there could be measures for them to take. These countermeasures in order for them to attract FDI in the electronics and automotive industries in the future are presented in this paper.

INTRODUCTION

Investment in Vietnam has generally been considered through a concept of “China plus one” after it has been deemed risky to solely concentrate investments in China. Investments in Cambodia and Lao PDR have also been increased through a smaller concept of “Vietnam plus one.” Looking at the industrial structures, however, of Cambodia, Lao PDR and Myanmar (CLM Countries), it seems that the manufacturing industries of these countries are more dependent on garment and agro-based industries, with electronics and automotive industries being rare. The industrial structure of Vietnam is shown to be more diversified although its supporting industries are assessed as being “immature” as yet.

In order to attract investment categorized as “upgrading”, receiving substantial foreign direct investment (FDI) is necessary. In fact, advanced ASEAN countries like Malaysia, Thailand and Indonesia have experienced remarkable economic growth since the second half of the 1980s by receiving FDI. These countries have also participated in the production network of electric, electronics and automotive industries in the East Asia region.

These ASEAN countries, however, have faced tough competition from China since the mid-1990s. Looking at the data of imports of the United States, the European Union (EU) and Japan, it is evident that their imports from the ASEAN countries were surpassed by their imports from China, with the former’s share being reduced and the growth rate becoming negative from 1995 to 2000 in sundries, textile and its products, food and animal oil items. From 2000 to 2002, general machinery, electric machinery, non-metallic materials and mining fuels also showed similar trends. However, chemical

products and precision machinery in Singapore, and transport vehicles in Thailand showed high competitiveness vis-à-vis similar products from China (Ishida, 2006, pp.49 – 52).

In the advanced ASEAN countries' domestic markets, there has been a surge in the volume and sale of products made in China since 2000. For instance, in 2000, the share of sales of motorcycles made in China increased to 18 percent in Indonesia where more than 90 percent of motorcycle sales had traditionally been captured by Japanese manufacturers. However, the boom in the sale of Chinese-made motorcycles ended in 2003 and the Japanese manufacturers' share recovered once again to 90 percent (Ishida, 2007, p.119). In Thailand, the imports of apples, pears and garlic from China soared at the end of 2003, soon after the removal of the import tariffs on agricultural products with the launching of the "early harvest" program (Higashi, 2004, pp. 282-283).

In the face of such tough competition from products made in China in the advanced ASEAN countries' domestic and foreign markets, some firms withdrew or relocated their factories to other countries. In the case of multinational firms, most of them expanded in the sectors which have higher competitiveness and withdrew from those which have lost their competitive edges. On the part of China, its wage level has been competitive compared with those of Malaysia and Thailand and its supporting industries are more abundant than those in Indonesia, the Philippines and Vietnam. And even if the wage level is lower than that in China for some manufacturing firms, the total cost still becomes higher if these firms are highly dependent on imports of intermediate goods. As a matter of fact, not a few garment factories at Bandung in Indonesia had stopped production since November 2001 because of this (Ishida, 2002, p.99). In 2004, 21 Japanese firms in relatively labor-intensive electric and electronic

appliances sectors also withdrew from Malaysia (Nishi, 2007, pp.82-83). Earlier in 2002, stories of Japanese firms' relocation of production bases from ASEAN countries to China have likewise been reported in newspapers (Ishida, 2003, p. 434).

On the other hand, fragmentation behavior, aside from relocation, has also been reported in East Asia. Fragmentation refers to a firm behavior of cutting one or two production blocks out of a whole production process from upstream to downstream and moving the blocks to another location (Kimura, 2009, p.29). An electronics company which operated in some cities in Thailand, for one, moved a production block, which consisted of putting legs on simple semi-conductors, to Vientiane.[1] A Japanese wire harness firm also supplied funds to an owner in Lao PDR to set up a factory and outsourced one of its production blocks to the factory; the Japanese firm supplies semi-finished part materials from Thailand to the factory and then imports semi-finished products from this Lao PDR factory (Keola, 2008, p. 123).

Given the above background developments, the purpose of this paper is to examine the possibilities of relocation or fragmentation of electronics, automotive, and spinning and weaving industries from the advanced ASEAN countries to the CLMV countries and the challenges for the CLMV countries to attract FDI from the advanced ASEAN countries by analyzing the firm survey results conducted in three advanced ASEAN countries (Indonesia, Thailand and Malaysia) and in the CLMV countries. The number of samples is shown in Table 1. In terms of the structure of the paper, the first section examines the possibilities of relocation or fragmentation from the three ASEAN countries to the CLMV countries based on the perceptions of the firms in the advanced ASEAN countries on the CLMV countries. The second section compares some

[1] Based on an interview with a manager of an electronics factory in Vientiane on November 6, 2009.

Table 1: The Number of Samples by Countries and Industries

(Unit: Number of Samples)

	Cambodia	Lao PDR	Myanmar	Vietnam	Indonesia	Thailand	Malaysia
Agro	1	4	2	3	0	0	0
Fishery	0	0	5	0	0	0	0
Food Processing	0	1	2	0	0	0	0
Wood Processing	0	3	0	1	0	0	0
Garment & Knitting	14	8	5	8	3	0	0
Weaving & Spinning	0	1	0	1	6	0	0
Footwear	3	1	5	4	0	0	0
Cement, Chemical, Plastics & Metal Processing	3	7	5	0	0	0	1
Electric & Electronics	1	6	5	2	8	10	13
Automotive	1	6	2	0	3	5	0
Machinery	0	0	0	0	0	0	1
Others	0	0	0	2	0	0	0
Existing Industries	18	18	19	17	9	0	0
New Industries	5	19	12	7	8	15	15
Total	23	37	31	24	17	15	15

Note: The “existing industries” are composed of agro-industry, fishery, food processing, wood-processing industry, garment, knitting, weaving, spinning and footwear. The “new industries” are composed of non-metal processing, metal processing, plastics processing, electric and electronics and automotive industries.

Source: The author summarize based on survey results.

indicators like wage, education level, distances to ports and harbors, lead time, customs clearance and the electricity situation between the advanced ASEAN countries and the CLMV countries. The third section shows the needs and demands of firms for soft and hard infrastructure in the CLMV countries. And finally, the concluding section summarizes the discussions and presents policy recommendations for the CLMV countries.

1. RELOCATION OR FRAGMENTATION FROM ADVANCED ASEAN COUNTRIES TO CLMV COUNTRIES

1.1. Toughness of Competition

As described in the introduction, the manufacturing firms of many sectors in advanced ASEAN countries have been faced with competition from China since the mid- 1990s. Table 2 shows the number of respondents who answered the question on whether the competitive environment is tough or not.

More than 60 percent of the firms in the electronics industry in Malaysia and all the respondents of other industries (chemical and machinery) answered that the competitive environment is tough. On the other hand, the proportions of respondents from electronics industries in Thailand who answered "not tough," "fair" and "tough" are equally divided. The proportion of the respondents who answered "not tough" is more in the automotive and its related industries (60.0%). This response from the automotive and its related industries is consistent with the results that the imports of

Table 2: Competitive Environment in Thailand and Malaysia

(Unit: Number of Respondents)

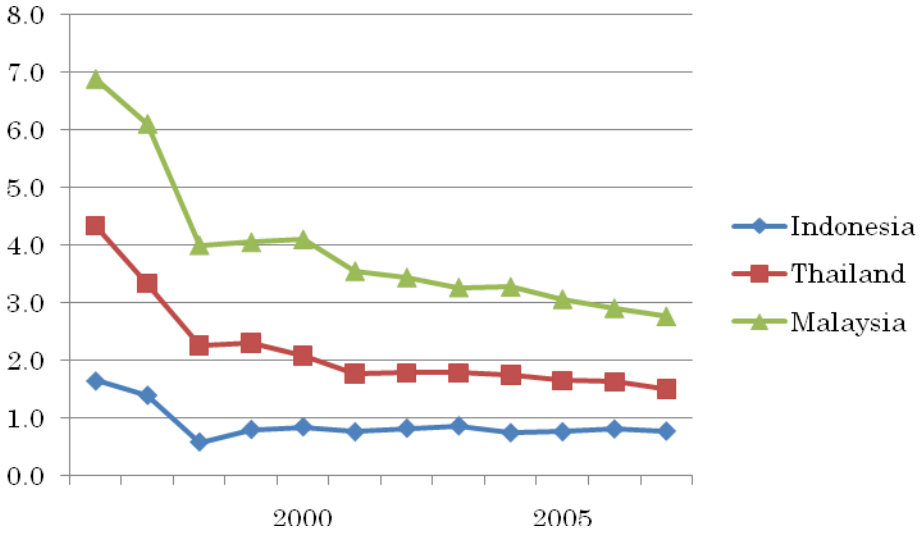
	Not Tough	Fair	Tough	No Answer	Total
Thailand					
Electronics	3 (33.3)	3 (33.3)	3 (33.3)	0 (0.0)	9 (100.0)
Automotive	3 (60.0)	0 (0.0)	1 (20.0)	1 (20.0)	5 (100.0)
Total	6 (42.9)	3 (21.4)	4 (28.6)	1 (7.1)	14 (100.0)
Malaysia					
Electronics	1 (7.7)	2 (15.4)	8 (61.5)	2 (15.4)	13 (100.0)
Others	0 (0.0)	0 (0.0)	2 (100.0)	0 (0.0)	2 (100.0)
Total	1 (2.3)	2 (4.7)	10 (23.3)	2 (4.7)	43 (100.0)

Note: The number in parentheses means the percentage share of each answer.
Source: Semi-structured survey of ERIA 2009 -10.

transport vehicles and their parts and components in the United States, the EU and Japan from Thailand showed competitiveness against the imports from China in 1995-2002 (Ishida, 2006, pp.49 – 52). In Thailand, automotive industry clusters composed of some layers of parts and components industries have been formed and the automotive manufacturers in Thailand can get the supply of many kinds of parts and components without importing. Some parts and components can also be supplied to electronics industries in Thailand, thereby raising the industrial complex's level of competitiveness.

While the automotive and its related industries as well as the precision machinery and chemical industries in Singapore are among the special cases, the reality of many other industries in the advanced ASEAN countries, however, is likely to be closer to the situation of the electronics industries in Malaysia where competition is, as mentioned, said to be tough. Figure 1 compares the ratios of GDP per capita (as a substitution variable of wage) of Indonesia, Thailand and Malaysia with that of China. As shown, the ratios fell as a result of the Asian currency crisis in 1997, with Indonesia's ratio being lower than 1.0 since 1998. It is said that the competitive environment in Indonesia has been very tough in many industries. As far as the situation in Thailand is concerned, on the other hand, the affluence of the parts and components industries is one of the important factors for its competitiveness. The difference between the GDP per capita or wage level of Malaysia and Thailand and that of China is likely to be lower. Nevertheless, the toughness of the competition between the ASEAN countries and China is not likely to decline because the affluence of the parts and components industries in China is seen to further improve.

Figure 1: The Ratio of GDP per Capita of the Advanced ASEAN Countries with China



Note: The data of Indonesia between 1996 and 1999 are based on the data of Central Statistical Agency (BPS).
Source: Web Site of ASEAN Secretariat Statistical Year Book of China (Various Years)

1.2. Relocation, Fragmentation and Expansion

(1) Experience of Relocation

The respondent firms in Thailand and Malaysia were asked whether they have experienced the relocation of factories or not. In Thailand, nine out of the ten respondents of electronics industries answered that they have experienced relocation. Among them, four firms have experienced relocation to China, two have experienced relocation to Japan, one to Singapore and Malaysia, and another, to Hungary and Germany. The ninth respondent firm answered that it has experienced relocation to Germany, Japan, Taiwan and China. On the other hand, there are no respondents of automotive industries who have experienced relocation.[2]

[2] As for five out of ten firms of the electronics industry in Thailand, the countries of destination coincide with the production points in other countries answered in other questions. There are possibilities that

In Malaysia, five out of 13 firms of the electronics industry answered that they have experienced relocation. Three out of the five firms have experiences of relocation to Vietnam and one of the three firms also has an experience of relocation to China. Another firm out of the five electronics firms has an experience of relocation to Thailand and another has experiences of relocation within Malaysia.

In sum, the cases of the electronics industry in Thailand include cases of relocation to China and developed countries while the cases of Malaysia, on the other hand, are directed toward China and other ASEAN countries, with Vietnam being considered by more firms.

(2) Experience of Considering Relocation

The respondent firms in Thailand and Malaysia were also asked whether they have considered relocation or not. Five out of the ten firms of electronics industries in Thailand answered that they have considered relocation to other places. Two firms have considered relocation to China and another two firms have considered moving to Vietnam. Of these latter two, one has also considered the relocation to India while the other company has likewise considered relocation to Pakistan. Another (the fifth) answered that the firm has considered relocating to Central and Southern America, including Brazil.

Four out of the five firms of automotive and its related industries answered that they considered relocating their factories to other places; two firms to Vietnam, one firm to Pakistan and one firm to India, China, South Africa and Vietnam. A common

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some of the respondents enumerated all the production points instead of the countries of destination for the relocation. On the other hand, there are not such cases in Malaysia because other countries are also enumerated as production points in all the following cases.

denominator of these countries listed as possible relocation sites is their bigger population than Thailand. Another common denominator is that all the three advanced ASEAN countries have considered relocation to Vietnam.

In Malaysia, only one firm out of 13 in the electronics industry and one firm in the chemical industry answered that they have considered relocation. The destinations mentioned, however, are not foreign countries but other places in Malaysia.

1.3. Priorities

What kind of investment climate elements do the firms give priority to in making decisions regarding relocation or fragmentation? In order to get the answer to this question, the researchers asked the respondent firms to rank the following nine elements:

a) land price for owning or leasing.
b) wage level for workers
c) price of energy and electricity
d) price of water for industrial use
e) access to ports and markets
f) educational level of workers
g) population and GDP per capita of the country
h) incentives like tax holidays
i) others [specify]

As examples shown to some firms, the following elements were listed:

a. quality and cost of logistics services
b. quality of suppliers and services
c. time to go through customs

d. level of unseen cost

e. availability of managerial and technical staff

f. ease of getting expatriate working visas

g. ICT availability

h. political stability

i. risks to production delays

In case there are no elements that fit into the factors being thought of by the respondents, then they were told that they could specify other elements. Table 3 shows the average value of the ranks as "score" and the rank of scores among the eight elements (not including "others"). As for the "other elements," the number of respondents who enumerated this and the average rank are shown at the lower part of the table.

The firms of the garment industry in Indonesia give the highest priority to energy price,[3] followed by land price and incentives like tax holidays. The reason why the firms give high priority to land price is because the larger one- storey factory needs vast land area. The population and GDP per capita of the country as representative indicators of market size is not indicated as a factor because the three sample firms interviewed are all export-oriented. Water price which is not also mentioned as an element to consider is given lower ranks by firms in other countries. On the other hand, access to ports and markets is unexpectedly ranked lower by the garment industry firms compared with the electronics and automotive industries in Indonesia. The education level of workers is also ranked lower although actually, the education level of workers

[3] Since the onset of the Asian currency crisis, the situation of electricity in Indonesia is said to have reached the level of "electricity crisis."

Table 3: Priorities on Conditions for Decision Making of Locations of Manufacturing Factories

<Ranks of Eight Given Elements>

	Indonesia						Thailand				Malaysia			
	Garment		Textile		Electronics		Electronics		Automotives		Electronics		Others	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
1 Land Price	2.5	2	2.7	2	4.5	4	7.7	7	8.2	8	5.0	6	3.0	2
2 Wage of Workers	4.0	4	2.5	1	2.6	1	4.7	4	5.8	5	1.7	1	1.5	1
3 Energy Price	2.0	1	4.2	3	5.1	5	5.8	5	7.0	6	4.2	5	5.5	6
4 Water Price			5.7	6	7.7	8	7.8	8	7.7	7	5.5	7	7.0	7
5 Access to M. & P.	4.7	5	5.7	6	2.8	2	3.8	2	3.8	2	3.8	3	4.0	4
6 Education Level	5.3	6	5.4	5	7.0	6	3.6	1	5.4	4	3.5	2	3.0	2
7 Market Size			8.0	8	3.0	3	6.4	6	3.2	1	8.3	8	8.0	8
8 Incentives	3.7	3	5.3	4	7.3	7	4.3	3	4.2	3	3.8	4	4.0	4

<Other Elements Specified by Firms>

	Indonesia						Thailand				Malaysia				Total	
	Garment		Textile		Electronics		Electronics		Automotives		Electronics		Others			
	Num.	Score	Num.	Score	Num.	Score	Num.	Score	Num.	Score	Num.	Score	Num.	Score	Num.	Score
9 Quality of Supplier	2	4.5					1	5.0			7	5.9	1	4.5	11	5.4
10 Logistics	2	8.0									1	4.0			3	6.7
11 Political Stability	2	8.0			2	5.0	7	2.0	3	1.7					14	3.2
12 Infrastructure							3	1.7	1	3.0					4	2.0
13 Interest Rate					1	2.0									1	2.0

Notes: 1) The samples firms of Indonesia, Thailand and Malaysia.

2) The score is the averaged value of the ranks and the rank was given in accordance with the value of scores.

3) “Num” means the number of respondent firms which specified the concerned elements.

Source: Survey results.

in the garment sector of Indonesia is higher than the high school completion as shown in the next section. For the other elements, two firms specified quality of supplier, quality and cost of logistics service and political stability, respectively. Quality of supplier is ranked higher than the other two elements.

The firms of weaving and spinning industries ("textile" in the table) give the highest priority to the wage level for workers. As for the other elements, the answers and rankings are similar. Land price and energy price are also ranked relatively higher by firms in the garment industry while market size, water price and access to ports and markets are ranked lower.

As for the electronics industry, the firms of Indonesia and Malaysia give the highest rank to wage level of workers. In Thailand, this element ranks fourth. The education level of workers is ranked highly in Thailand and Malaysia while it only ranks sixth in Indonesia. Nonetheless, one notes that the average education level of workers in the firms of the electronics industry in Indonesia is higher than high school graduates. The levels in Malaysia and Thailand are lower. In order to attract the electronics industry to relocate from the advanced ASEAN countries to the CLMV countries, the latter should thus consider the need to have a higher level of education (higher than completing middle high school) for workers. Access to ports and markets, meanwhile, is ranked either second or third in all the three ASEAN countries. For Indonesia, market size ranks third while it is ranked lower in Thailand. The average export ratio of the electronics industry in Indonesia is 55.9 while in Malaysia and Thailand, the figures are 90.0 and 83.6, respectively. Hence, the firms are more domestic market-oriented in Indonesia. In terms of other elements, seven out of ten electronics firms in Thailand and two out of eight electronics firms in Indonesia listed

political stability, with the average rank in Thailand being higher than any of the eight elements while in Indonesia, the average rank is 5.0. Looking at the rankings of the elements, therefore, one notes that the wage and education level of worker, access to ports and markets, and political stability are the most important elements in attracting direct investment in the electronics industry.

In terms of the automotive industry in Thailand, the rank of market size is the highest because the industry's domestic market orientation is higher there. For the electronics industries in Thailand and Malaysia, though, market size is ranked lower. Again in Thailand, the second highest element mentioned is access to ports and markets, followed by incentives like tax holidays, education level of workers, wage level, and energy price. On the other hand, the rank of land price and water price is evaluated lower. Regarding the other elements, three respondent firms enumerated political stability and one specified infrastructure. In particular, the average rank of political stability is higher than any of the other eight elements. Finally, for the automotive industry, the size of the domestic market, access to ports and markets, education and wage level of workers, and incentives like tax holiday are especially important.

1.4. Perceptions on CLMV Countries

(1) Knowledge about CLMV Countries

The respondent firms were first asked whether or not they know about the CLMV countries before being asked on their perceptions on these countries. Table 4 shows the number of respondents who answered the question. Indonesia and Malaysia have higher percentage shares of the respondents who know the CLMV countries. The automotive industries of Thailand also show a higher number of those familiar with the CLMV

Table 4: Answers on Whether Know or Do Not Know CLMV Countries

(Unit: Number of Respondents)

	Yes		No		No Answer		Total	
Indonesia								
Garment	3	(100.0)	0	(0.0)	0	(0.0)	3	(100.0)
Weaving & Spinning	5	(83.3)	1	(16.7)	0	(0.0)	6	(100.0)
Electronics	7	(87.5)	1	(12.5)	0	(0.0)	8	(100.0)
Thailand								
Electronics	2	(20.0)	7	(70.0)	1	(10.0)	10	(100.0)
Automotive	4	(80.0)	1	(20.0)	0	(0.0)	5	(100.0)
Malaysia								
Electronics	11	(84.6)	2	(15.4)	0	(0.0)	13	(100.0)
Others	2	(100.0)	0	(0.0)	0	(0.0)	2	(100.0)

Note: The number in parentheses means the percentage share of each answer.
Source: Semi-structured survey of ERIA 2009 -10.

countries. On the other hand, though, 70 percent of the respondents of the electronics industries in Thailand answered that they do not know the CLMV countries.

(2) Evaluation on CLMV Countries

After answering the first simple question, the respondent firms were then asked whether investing in each of the CLMV countries is good, fair or bad. This was done after they were shown a table of basic information on investment climate in CLMV countries (see Appendix Table). Table 5 shows the results.

According to the table, only Vietnam got good evaluations between 1.0 (good) and 2.0 (fair) from the firms in the three advanced ASEAN countries, with the exception of some firms of the textile industry in Indonesia which also gave good evaluations to Cambodia and Lao PDR. Among the firms that gave high evaluation to Vietnam, the higher scores came from firms in the electronics and automotive industries. These results indicate that Vietnam has already been well-developed to receive the "new

Table 5: Evaluation on CLMV Countries by Firms in Advanced ASEAN Countries

	Cambodia	Lao PDR	Myanmar	Vietnam
Garment in Indonesia	2.3	2.3	3.0	1.7
Textile in Indonesia	2.4	2.8	2.8	2.2
Electronics in Indonesia	2.8	2.8	2.5	1.1
Electronics in Thailand	2.6	2.8	2.6	1.3
Automotive in Thailand	3.0	3.0	2.5	1.0
Electronics in Malaysia	2.6	2.8	2.8	1.2
Others in Malaysia	3.0	3.0	3.0	1.0

Notes: 1) After showing the basic information on investment climate in CLMV countries, the respondent was asked to evaluate CLMV countries.
2) Each level of evaluation is:
1= Good 2= Fair 3= Bad

Source: Survey results.

industries" like electronics and automotive industries.

In contrast, the firms' evaluations on Cambodia, Lao PDR and Myanmar (CLM countries) were lower than 2.0 (fair). In particular, the evaluations on Cambodia and Lao PDR by automotive industries in Thailand and the ratings on all the CLM countries by the "other" industries in Malaysia, which are composed of chemical and machinery industries, scored 3.0 (bad). However, there were also firms that gave higher scores to the CLM countries. For instance, the evaluations on Cambodia and Lao PDR by garment industries in Indonesia and on Cambodia by textile (weaving and spinning) industries in Indonesia were better at 2.5. This thus shows that the possibilities of relocation for these industries still exixt.

(3) Advantages and Disadvantages of Cambodia

The next question asked the respondents was to enumerate the advantages and disadvantages of each of the CLMV countries. Table 6 shows the responses of the respondent firms in the advanced ASEAN countries for Cambodia.

Table 6: Perceptions of Firms in Advanced ASEAN Countries on Cambodia

<Advantages> (Unit: Number of Firms)

	Lower Wage	Available Labor	Good Incentives	Good Education	Good quality of people	Good Labor skill	Large Local Market	Good Infra.
Garment in Indonesia	3							
Textile in Indonesia	5							
Electronics in Indonesia	4		3					3
Electronics in Thailand	3		1			1		
Automotive in Thailand	1	1	2			1		
Electronics in Malaysia	3	7						
Others in Malaysia	1	1						
Total	**20**	**9**	**6**			**2**		**3**

<Disadvantages> (Unit: Number of Firms)

	Lower Education Level	Poor Infra.	Political Problem	Distance to Ports	Policy Problems	Higher Export Cost	Poor SCM	Lower Market Potential
Garment in Indonesia		2						
Textile in Indonesia			1					
Electronics in Indonesia			2	2				
Electronics in Thailand	2	3	6	1				
Automotive in Thailand		1	1					2
Electronics in Malaysia	7	10					1	
Others in Malaysia	2	2						
Total	**11**	**18**	**10**	**3**			**1**	**2**

Notes: 1) After showing the basic information on investment climate in CLMV countries, the respondent was asked to evaluate CLMV countries.

2) Each item of advantages and disadvantages is enumerated by respondents. The number in the table means the number of respondents who enumerated each item of advantages and disadvantages.

Source: Semi-structured survey of ERIA 2009 -10.

As to advantages, 20 firms listed “lower wages”, with more firms from Indonesia mentioning this. Nine firms, including the seven firms in the electronics industry in Malaysia, enumerated “available labor” as one of the advantages. However, considering the low population of Cambodia (181 thousand as of 2008), there is a possibility that

some of the answers given were based on certain misperceptions of the firms. Three firms of the electronics industries in Indonesia and one electronics firm and two automotive firms in Thailand listed “good incentive” as one of the advantages. Indeed, this may be due to recent developments seen. For one, the government of Cambodia has recently announced the grant of 3 to 9 years of tax holidays and the implementation of one-stop services in the special economic zones (SEZs) in Cambodia (Chapter 2). These developments are supposed to have been reflected in the evaluations.

In terms of disadvantages, “poor infrastructure” and “lower education level of workers” are noted to be the outstanding problems in Cambodia, especially as perceived among the firms of the electronics industries in Thailand and Malaysia. These responses contradict with the answers listed by three firms of the electronics industry in Indonesia which gave “good infrastructure” as an advantage. They also contradict with the answer of each of the firms in the electronics and automotive industries in Thailand which listed “good labor skill” as one of the advantages. These evaluations may not coincide with one another because the answers are supposed to be based on individual experiences and reasons of the respondent firms. Also in terms of disadvantages, ten firms -- seven of which are based in Thailand -- enumerated political problems or instability of politics. This result reflects the recent rift in the political relationship between Cambodia and Thailand. Other disadvantages mentioned included “poor supply chain management” and “lower market potential”, as given by one electronics firm in Malaysia and two automotive firms in Thailand. While these answers are minor in the table, supply chain management, however, is one of the important elements for electronics manufacturers in Malaysia, suggesting as well that the population size of Cambodia is small for automotive industries to decide to invest. Nevertheless, considering the

situation that several motorcycle firms operate and one motorcycle firm plans to operate in Cambodia, this result does not deny the possibilities of the motorcycle industries investing in Cambodia.

(4) Advantages and Disadvantages of Lao PDR

Table 7 shows the advantages and disadvantages of Lao PDR as enumerated by the firms in advanced ASEAN countries. As advantages, the most outstanding is "lower wage." "Good quality of people" is enumerated by electronics firms and automotive

Table 7: Perceptions of Firms in Advanced ASEAN Countries on Lao PDR

<Advantages> (Unit: Number of Firms)

	Lower Wage	Available Labor	Good Incentives	Good Education	Good quality of people	Good Labor skill	Large Local Market	Good Infra.
Garment in Indonesia	1							
Textile in Indonesia	4							
Electronics in Indonesia	3							3
Electronics in Thailand	5	1			4	1		
Automotive in Thailand		1			1	1		
Electronics in Malaysia	9							
Others in Malaysia	2							
Total	**24**	**2**			**5**	**2**		**3**

<Disadvantages> (Unit: Number of Firms)

	Lower Education Level	Poor Infra.	Political Problem	Distance to Ports	Policy Problems	Higher Export Cost	Poor SCM	Lower Market Potential
Garment in Indonesia		2		1				
Textile in Indonesia				6		5		
Electronics in Indonesia		2		3				
Electronics in Thailand	1	3					1	
Automotive in Thailand								2
Electronics in Malaysia	5	9					2	
Others in Malaysia	2	2						
Total	**8**	**18**		**10**		**5**	**3**	**2**

Notes: as same as Table 6.

Source: Semi-structured survey of ERIA 2009 -10.

firms in Thailand.

In terms of the disadvantages, “poor infrastructure” and “lower education level” are the first and second factors cited. These are similar with the results for Cambodia although the number of the firms which enumerated “lower education” is smaller than in the case of Cambodia. The answers, “distance to ports”, “higher export cost” and “poor supply chain management” are reflected by the fact that Lao PDR is a landlocked country, with the distance to Khlong Toey and Laemchabang being 600–700 km. The “lower marker potential” response enumerated by two automotive firms in Thailand is reflected in the population size of Lao PDR (56 thousand as of 2008) just like in the case of Cambodia.

(5) Advantages and Disadvantages of Myanmar

Table 8 shows the advantages and disadvantages on Myanmar as enumerated by the firms in advanced ASEAN countries. Regarding the advantages, “lower wage” is the major answer given by majority of the respondent firms composed of electronics industries. This also coincides with the answers given in the cases of Cambodia and Lao PDR. “Good quality of people” is also enumerated by electronics and automotive firms in Thailand, again a similar response with that given for Lao PDR (Table 7).

As for the disadvantages, “political problem” or “political instability” is the outstanding factor cited, reflecting the current political situation in Myanmar. The number of firms which enumerate “poor infrastructure” is the second largest while the factor, “lower education level” was cited by the third largest number of firms. However, the number of firms which enumerated “lower education” as a disadvantage is smaller than in the cases of Cambodia and Lao PDR.

Table 8: Perceptions of Firms in Advanced ASEAN Countries on Myanmar

<Advantages> (Unit: Number of Firms)

	Lower Wage	Available Labor	Good Incentives	Good Education	Good quality of people	Good Labor skill	Large Local Market	Good Infra.
Garment in Indonesia	1							
Textile in Indonesia	4							
Electronics in Indonesia	3							3
Electronics in Thailand	4				1			
Automotive in Thailand	1	1			1			
Electronics in Malaysia	9	1						
Others in Malaysia	2							
Total	**24**	**2**			**2**			**3**

<Disadvantages> (Unit: Number of Firms)

	Lower Education Level	Poor Infra.	Political Problem	Distance to Ports	Policy Problems	Higher Export Cost	Poor SCM	Market Potential
Garment in Indonesia		2	1					
Textile in Indonesia			4					
Electronics in Indonesia		1	5	2				
Electronics in Thailand	1	1	5	1	1			
Automotive in Thailand		1	4		2			
Electronics in Malaysia	2	10	10				1	
Others in Malaysia	1	2	2					
Total	**4**	**17**	**31**	**3**	**3**		**1**	

Notes: as same as Table 6.

Source: Semi-structured survey of ERIA 2009 -10.

(6) Advantages and Disadvantages of Vietnam

For the evaluation on Vietnam, the answers given are shown in Table 9. “Lower wage,” “available labor,” “good incentives,” and “good education” are enumerated by many firms, mainly by electronics firms of Malaysia, as advantages. And while two electronics firms enumerated “lower education level” as a disadvantage, the number of firms which enumerated “good education” as an advantage is clearly more. “Large local market” is enumerated by two automotive firms in Thailand as another advantage,

Table 9: Perceptions of Firms in Advanced ASEAN Countries on Vietnam

<Advantages> (Unit: Number of Firms)

	Lower Wage	Available Labor	Good Incentives	Good Education	Good quality of people	Good Labor skill	Large Local Market	Good Infra.
Garment in Indonesia	1		1					
Textile in Indonesia	3							
Electronics in Indonesia	4		3				1	2
Electronics in Thailand	4	1		1	4	1		
Automotive in Thailand	1	2	1		1	2	3	
Electronics in Malaysia	11	9	3	4			1	
Others in Malaysia	2	1						
Total	**26**	**13**	**8**	**5**	**5**	**3**	**5**	**2**

<Disadvantages> (Unit: Number of Firms)

	Lower Education Level	Poor Infra.	Political Problem	Distance to Ports	Policy Problems	Higher Export Cost	Poor SCM	Market Potential
Garment in Indonesia		1						
Textile in Indonesia								
Electronics in Indonesia		1		2	1			
Electronics in Thailand		4			1			
Automotive in Thailand		2			2			
Electronics in Malaysia	2	10	1		2		1	
Others in Malaysia		2						
Total	**2**	**20**	**1**	**2**	**6**		**1**	

Notes: as same as Table 6.

Source: Semi-structured survey results of ERIA 2009 -10.

clearly in contrast to the cases of Cambodia and Lao PDR where firms cited "lower market potential" as one of the disadvantages. "Good quality of people" and "good labor skill" are also enumerated by electronics and automotive firms in Thailand as advantages. An electronics firm of Indonesia enumerated "higher discipline of people" while an automotive firm in Thailand enumerated "closeness to China," as other advantages of Vietnam.

As disadvantages, many firms, mainly the electronics firms in Malaysia,

enumerated “poor infrastructure.” In addition, “policy problems,”[4] are mentioned by electronics firms in Indonesia, Thailand and Malaysia and by two automotive firms in Thailand. The challenges for Vietnam are clearer than for the CLM countries as far as the perceptions of the advanced ASEAN countries are concerned.

2. COMPARISON OF INVESTMENT CLIMATES

2.1. Wage and Education Level of Labor Force

As seen in section 1, the wage and education levels of workers are the important elements for investors in deciding the location of factories. Table 10 shows the wage and education levels of workers, middle managers and engineers by industry in the CLMV and three advanced ASEAN countries.

Looking at the average wage of workers in each of these countries (specified as “total” in Table 10), the wage level increases in the following sequence: Myanmar, Cambodia, Lao PDR, Vietnam, Indonesia, Malaysia and Thailand. The wage levels of workers in Myanmar, Cambodia and Lao PDR are less than US$ 100, those in Vietnam and Indonesia are between US$ 100 and US$ 150, and those in Malaysia and Thailand are higher than US$ 200. The wage levels in the CLMV countries, especially in the CLM countries, are clearly lower and these results coincide with the perceptions of the firms of the advanced ASEAN countries enumerated as advantages of the CLMV countries. In terms of the difference of the wage levels with the minimum wage, it

[4] In the survey, the firms evaluated that policy reforms are needed.

increases in the following sequence: Indonesia (US$ 19.6), Cambodia (US$ 23.1), Vietnam (US$ 40.1), Lao PDR (US$ 44.2) and Thailand (US$ 78.1). The scale of the difference can be said to be partly affected by the supply and demand gap of workers in the respective countries.

As for the education level of workers, Cambodia has the lowest and the average exists between completing elementary school and junior high school level. The average educational levels of workers in Myanmar, Lao PDR, Thailand and Malaysia are between completing junior high school level and high school level while those of Vietnam and Indonesia are higher than completing high school. In order to attract foreign direct investment in the

Table 10: Wage and Education Level of CLMV and Advanced ASEAN Countries by Industries (Continues)

	Worker				Middle Manager				Engineer			
	Ave.	**Min.**	**Max.**	**Edu.**	**Ave.**	**Min.**	**Max.**	**Edu.**	**Ave.**	**Min.**	**Max.**	**Edu.**
Cambodia (US$ 50)												
Agro Industry (1)	55.0	55.0	55.0	2.3	200.0	200.0	200.0	5.8	-	-	-	-
Garment & Knitting (14)	64.5	52.5	105.0	2.2	265.4	70.0	700.0	5.2	731.1	180.0	1,750.0	5.2
Footwear (3)	58.5	45.0	70.5	2.3	156.7	100.0	250.0	4.7	225.0	100.0	350.0	
Cement, Plastics & Metal (3)	115.8	67.5	180.0	3.6	358.3	325.0	400.0	5.3	800.0	500.0	1,300.0	5.2
Electronics (1)	100.0	100.0	100.0	4.2	375.0	375.0	375.0	6.0	2,000.0	2,000.0	2,000.0	7.0
Automotive (1)	100.0	100.0	100.0	5.1	n.a.	n.a.	n.a.	5.4	n.a.	n.a.	n.a.	5.0
Total (23)	**73.1**	**45.0**	**180.0**	**2.6**	**265.2**	**70.0**	**700.0**	**5.2**	**762.0**	**100.0**	**2,000.0**	**5.2**
Lao PDR (US$ 45)												
Agro Industry (4)	98.2	80.0	117.6	3.7	176.5	176.5	176.5	6.4	208.3	208.3	208.3	5.9
Food Processing (1)	90.0	90.0	90.0	2.4	225.0	225.0	225.0	6.0	200.0	200.0	200.0	n.a.
Wood Processing (3)	95.0	85.0	105.0	3.6	166.7	125.0	200.0	5.4	212.5	125.0	300.0	n.a.
Garment & Knitting (8)	84.6	70.0	110.0	3.6	161.1	100.0	300.0	5.7	336.3	100.0	1,000.0	5.3
Weaving & Spinning (1)	95.0	95.0	95.0	4.4	125.0	125.0	125.0	n.a.				
Footwear (1)	90.0	90.0	90.0	4.1	n.a.	n.a.	n.a.	6.0	n.a.	n.a.	n.a.	6.0
Plastics & Metal (7)	88.8	80.0	100.0	3.5	168.4	115.0	225.0	5.0	251.0	130.0	400.0	6.1
Electronics (6)	74.0	50.0	94.1	3.3	146.6	90.0	250.0	6.0	174.0	80.0	300.0	6.0

Automotive (6)	100.8	80.0	150.0	4.2	218.8	175.0	247.1	5.5	213.5	160.0	247.1	6.3
Total (23)	**89.2**	**50.0**	**150.0**	**3.6**	**171.6**	**90.0**	**300.0**	**5.7**	**232.3**	**80.0**	**1,000.0**	**6.0**
Myanmar (n.a.)												
Agro Industry (2)	32.5	20.0	45.0	3.1	105.0	60.0	150.0	7.0	102.5	85.0	120.0	5.7
Fishery (5)	38.0	30.0	50.0	3.5	110.0	80.0	200.0	6.5	120.0	80.0	180.0	6.2
Food Processing (2)	32.5	30.0	35.0	3.0	85.0	70.0	100.0	6.5	80.0	80.0	80.0	5.0
Knitting (5)	39.0	35.0	50.0	3.6	97.0	70.0	150.0	6.5	100.0	80.0	120.0	6.1
Footwear (5)	35.2	23.0	45.0	3.6	84.0	60.0	100.0	6.3	136.7	100.0	210.0	6.3
Plastics (5)	38.0	30.0	45.0	3.4	90.0	80.0	100.0	6.8	110.0	100.0	120.0	6.3
Electronics (5)	38.0	30.0	50.0	3.4	141.0	85.0	200.0	6.8	117.0	85.0	150.0	5.6
Automotive (2)	52.5	25.0	80.0	2.9	90.0	90.0	90.0	5.8	70.0	70.0	70.0	6.0
Total (31)	**40.2**	**20.0**	**80.0**	**3.5**	**102.3**	**60.0**	**200.0**	**6.5**	**118.1**	**70.0**	**250.0**	**6.0**

Table 10: Wage and Education Level of CLMV and Advanced ASEAN Countries by Industries (Continued)

	Worker				Middle Manager				Engineer			
	Ave.	**Min.**	**Max.**	**Edu.**	**Ave.**	**Min.**	**Max.**	**Edu.**	**Ave.**	**Min.**	**Max.**	**Edu.**
Vietnam (US$ 66.1)												
Agro-Industry (1)	300.0	300.0	300.0	4.0	371.4	371.4	371.4	5.7	371.4	371.4	371.4	5.7
Wood Processing (1)	102.9	102.9	102.9	4.2	228.6	228.6	228.6	6.0	200.0	200.0	200.0	6.0
Garment & Knitting (8)	109.1	62.9	171.4	3.5	204.9	131.4	342.9	5.6	267.9	200.0	342.9	6.0
Weaving & Spinning (1)	68.6	68.6	68.6	4.0	200.0	200.0	200.0	6.0	200.0	200.0	200.0	6.0
Footwear (4)	75.7	57.1	91.4	3.6	171.4	114.3	228.6	5.9	155.7	108.6	171.4	5.8
Electronics (2)	121.4	114.3	128.6	4.6	289.3	228.6	350.0	6.0	317.9	285.7	350.0	6.0
Automotive (3)	87.6	62.9	114.3	4.7	148.6	125.7	171.4	6.0	209.5	142.9	257.1	6.0
Others (2)	85.7	85.7	85.7	4.0	257.1	257.1	257.1	6.0	n.a.	n.a.	n.a.	6.0
Total (24)	**106.2**	**57.1**	**300.0**	**4.0**	**214.3**	**114.3**	**371.4**	**5.8**	**233.1**	**108.6**	**371.4**	**6.0**
Indonesia (US$ 118.6)												
Garment & Knitting (3)	134.9	110.0	157.8	4.1	568.4	526.3	600.0	5.9	318.3	250.0	368.0	5.7
Waving & Spinning (6)	122.5	115.0	130.0	4.5	520.8	400.0	600.0	5.9	250.0	225.0	275.0	5.5
Electronics (8)	151.3	100.0	350.0	4.4	787.5	500.0	1,000.0	5.9	387.5	300.0	450.0	5.6
Total (17)	**138.2**	**100.0**	**350.0**	**4.4**	**654.7**	**400.0**	**1,000.0**	**5.9**	**326.8**	**225.0**	**450.0**	**5.6**
Thailand (US$ 136.4)												
Electric & Electronics (10)	212.6	151.5	288.2	3.6	1,302.9	1,176.5	1,911.8	6.1	505.9	441.2	617.6	6.1
Automotive (5)	221.0	155.9	264.7	4.0	1,246.3	1,102.9	1,544.1	6.2	727.9	441.2	1,264.7	6.0
Total (15)	**215.0**	**151.5**	**288.2**	**3.7**	**1,286.8**	**1,102.9**	**1,911.8**	**6.1**	**569.3**	**441.2**	**1,264.7**	**6.0**
Malaysia (n.a.)												
Chemicals (1)	179.1	179.1	179.1	4.0	2,388.1	2,388.1	2,388.1	6.0	895.5	895.5	895.5	6.0
Electronics (13)	209.4	80.0	298.5	3.6	1,795.1	500.0	2,985.1	6.0	921.8	550.0	1,492.5	6.0
Others (1)	238.8	238.8	238.8	4.0	2,089.6	2,089.6	2,089.6	6.0	895.5	895.5	895.5	6.0
Total (15)	**209.3**	**80.0**	**298.5**	**3.7**	**1,854.2**	**500.0**	**2,985.1**	**6.0**	**918.3**	**550.0**	**1,492.5**	**6.0**

Notes: 1) Exchange rates per one US$ is assumed to be 8,500 kip for Lao PDR, 1,000 kyat for Myanmar, 17,500 dong for Vietnam, 3.35 ringgit for Malaysia, 34 baht for Thailand, 10,000 Rupiah for Indonesia.

2) "Edu." means education level of each type of employees. The indicator of each level is:

1= No formal schooling 2=Elementary School 3=Middle High School 4=High School

5=Vocational School 6=College/University 7=Graduate School

3) The number in the parentheses in the first column means:
The numbers following the name of countries: minimum wage in US dollars.
The numbers following the name of industries: the number of samples

4) The minimum wage in Vietnam is the case of second area, while those of the first, third and fourth areas are US$ 74.4, US$ 57.8 and US$ 55.6, respectively.

5) The minimum wage of Indonesia is the case of Bekasi and that of Thailand is the case of Chonburi.

Source: Calculated based on Survey Results.

electronics industries for the CLMV countries, the education level should equal the level of completion of junior high school as in Malaysia and Thailand.

Regarding the wage levels of the middle managers[5] and engineers, the sequence among the countries is similar with the case of the workers' wages. The wage of middle managers in Cambodia, however, is higher than in Vietnam and the wage of engineers is the second highest after Malaysia. The reason for the higher wages of the middle managers and engineers in Cambodia is considered to be partly because the supply and demand gap of intelligent labor force is larger there than in other countries. In the CLM countries, including Cambodia, some middle managers and engineers are foreigners and this is another reason for the higher wage of managers and engineers in Cambodia. The average education level of these middle managers and engineers is equal to a completion of college/university level or is between the completion of vocational school and college/university, except in the case of the average educational level of the middle managers in Myanmar which is equivalent to that between completing college/university and graduate school.

In terms of the difference among the industries, the wage and education levels of workers can be divided into two groups; one is composed of agro industry, garment and knitting, and footwear ("existing industries") and another is composed of cement, plastics and metal processing, electronics and automotive industries ("new industries"). A higher educational level of workers is supposed to be needed in the "new industries." This trend is clear in Cambodia; the wage and education levels of workers in the "new industries" are higher than in the others. In Lao PDR, the education levels in the automotive industries as well as in the weaving and spinning, and footwear industries

[5] The position of the middle manager is higher than that of supervisor. But the position is sometimes higher than that of engineers and sometimes lower than it, depending on the firms.

are higher than the high school level. As for the electronics industries showing lower education level in Lao PDR, the workers are engaged in one production block that just puts the legs to simple semi-conductors in a sample firm. This kind of operation does not need skillfulness. One automotive firm in Myanmar, meanwhile, manufactures an outdated simple jeep and the factory is more similar to a repair shop. Considering these situations, therefore, workers with higher education would be needed if the new industries such as the electronics and automotive industries are to be enticed to relocate and invest.

2.3. Access to Ports and Harbors

Table 11 shows the distances and time needed to travel between the major industrial areas and ports in the CLMV countries, Malaysia and Indonesia. Some industrial areas are located in the suburban areas of metropolitan areas. For example, Bien Hoa, Shah Alam and Bekasi are located in the suburbs of Ho Chi Minh City, Kuala Lumpur and Jakarta, respectively.

Vientiane is the most industrialized area in Lao PDR. Not a few factories have been located along the road connecting the First Mekong Friendship Bridge and the center of Vientiane, and also along the road connecting the bridge and national road No. 13, which in turn connects major cities like Luangprabang, Vientiane, Thakhek, Savannakhet and Pakse. On the latter road, a new railway station extending from Thailand is also located. The distance to Khlong Toey Port in Bangkok, however, is 650 km, the longest as seen in Table 11, and thus, the long distance to the port is one of the biggest disadvantages for Vientiane, as some firms in Indonesia enumerated as one of the disadvantages of Lao PDR (please refer to previous section).

Table 11: Access of Major Industrial Areas to Ports and Harbors

	Industrial Area	Port	Distance	Time
Cambodia	Phnom Penh	Sihanouk Ville	220km	4-6h
	Phnom Penh	Phnom Penh	13km	
Lao PDR	Vientiane	Khlongtoey	650km	10h
Myanmar	Yangon	Yangon	16km	1h
Vietnam	Hanoi	Hai Phong	100km	3h
	Bien Hoa	Ho Chi Minh	18km	0.7h
	Bien Hoa	Caimep & Thivai	60km	1h
Malaysia	Shah Alam	Port Kelang	40km	1.5h
	Penang	Penang	12km	1h
Indonesia	Bekasi	Tanjung Priok	55km	1h

Notes: 1) Distances between Phnom Penh and Sihanouk Ville, Phnom Penh (Phnom Penh SEZ) and Phnom Penh, Hanoi and Haiphong, Bien Hoa and Ho Chi Minh (Saigon Port), Bien Hoa and Caimep Thivai are based on the real measurement by cars and maps.

2) Distances between Vientiane and Khlongtoey, Yangon (Hlaing Thar Yar Tsp. Industrial Zone) and Yangon Port, Shah Alam and Port Kelang and Penang and Penang Port are based on the answers of respondents of the survey.

3) Distance between Bekasi and Tanjung Priok Port is based on the brochure of Jababeka Industrial Estate, Cikarang, Indonesia.

4) Transport time needed is based on the answers of respondents of the survey.

Source: See the notes.

The distance between Phnom Penh and Sihanouk Ville Port is the second longest. The logistics cost of traveling 220 km can be a burden for firms, most of whom produce garments, although this distance is much shorter (about one third) than that between Vientiane and Khlong Toey port. The firms in Phnom Penh and in its suburban area sometimes use Phnom Penh Port at the Mekong River. From Phnom Penh Port, barge carriers convey containers to Saigon port or Caimep-Thivai port where the containers are then moved to larger liners. The number of containers, expressed as a twenty-feet-container-equivalent unit (TEU), that can be conveyed by one barge carrier varies. The larger ones can convey 128 TEUs while the smaller ones can convey 24

TEUs.[6] The depth of Phnom Penh Port, however, changes from 8 m during the rainy season to 4-5 m during the dry season; thus, the transport volume can decrease in the dry season.[7] The major port for the firms around Phnom Penh is therefore Sihanouk Ville Port where there are liners going to Port Kelang of Malaysia, Laemchabang of Thailand and Singapore. The cargo ships to Singapore are the most frequent, with five ships dropping in a week, but operated by several shipping firms.[8] After transporting to Singapore, the cargo is moved to larger ships; however, the cargoes sometimes are left at Singapore Port when the demand for unloading and loading at Singapore Port becomes excessively high.[9]

The third longest distance, as indicated in Table 11, is the distance between Hanoi and Haiphong Port. It is just half of the distance between Phnom Penh and Sihanouk Ville but the surrounding industrial area of Hanoi is larger, with the additional distance of 20 -30 km in the case of Bac Ninh, the North-Eastern neighboring province of Hanoi; and 18 km in the case of the distance between the port and Nomura Hai-Phong Industrial Zone.

Regarding other industrial areas, it is not easy to evaluate the accessibility to the ports in terms of distance because the time spent for the transport to the port and harbor depends on the traffic conditions, the availability of expressway and the time of the day. For example, the distance between Bien Hoa and Saigon Port is just 18km, but it can take three or four hours of travel if the truck leaves Bien Hoa after 4:00 p.m. This is because of the many commuters from Ho Chi Minh City to Bien Hoa, most of whom go

[6] It is based on an interview with the staff of Tan Cang-Caimep Joint Stock Company held on September 14, 2009.

[7] It is based on an interview with the staff of the Sihanouk Ville Autonomous Port conducted on September 10, 2009.

[8] The source is the same as in the previous footnote.

[9] This is based on an interview with the staff of Phnom Penh SEZ held on September 11, 2009.

home in the evening. In addition, there are two rivers between the two cities, Dong Nai River and Saigon River, and the number of bridges for each river is only three or four. However, the ports in Ho Chi Minh City such as Saigon Port and New Saigon Port are being planned to be closed in a few years' time to give way to the transfer of the functions to the deepest ports in Vietnam, Thi Vai and Cai Mep Ports.[10] Several container terminals have started operation and others will be opened at Thi Vai and Cai Mep Port. Because of this, traffic jams at National Road No. 51 as an access road to Thi Vai and Cai Mep Port are expected although construction of additional lanes (to be increased to four) has already been started and another highway is also being planned to be built to ease the expected traffic.

2.3. Two Kinds of Lead Time

Lead time is one of the important elements in designing the manufacturing processes for firms. Generally, there are two kinds of lead time. The first one is the period taken from the time the manufacturer receives an order from a customer to the time the delivery is made. The second one is the time taken after the manufacturer's order is sent and the arrival of the raw materials and intermediate goods takes place. For the firms that participated in the global production network, the time taken in the exporting process occupies major parts of the first lead time while the time taken in the importing process occupies that of the second lead time.

Table 12 shows the two kinds of lead time for export-oriented firms whose export ratios are higher than 50 percent of the selected industries. The first lead time becomes too short for domestic market-oriented firms compared with firms that export to the

[10] Based on an interview at Saigon Port conducted on December 8, 2009.

Table 12: Two Kinds of Lead Time of Firms of Selected Industries

<Garment & Knitting> (unit: days)

	From Customer's Order to Delivery				From respondent's Order to Arrival			
	Number of Samples	Avg.	Min.	Max.	Number of Samples	Avg.	Min.	Max.
Cambodia	14	49	18	90	14	33	25	60
Lao PDR	6	35	25	64	5	42	14	90
Myanmar	5	58	15	80	5	37	12	80
Vietnam	6	60	30	75	6	40	15	60
Indonesia	3	23	18	25	3	28	25	30

<Footwear> (unit: days)

	From Customer's Order to Delivery				From respondent's Order to Arrival			
	Number of Samples	Avg.	Min.	Max.	Number of Samples	Avg.	Min.	Max.
Cambodia	3	68	45	90	3	35	30	45
Lao PDR	1	105	105	105	1	105	105	105
Myanmar	4	45	18	90	4	19	11	29
Vietnam	0	-	-	-	1	40	40	40

<Electronics> (unit: days)

	From Customer's Order to Delivery				From respondent's Order to Arrival			
	Number of Samples	Avg.	Min.	Max.	Number of Samples	Avg.	Min.	Max.
Cambodia	1	21	21	21	1	38	38	38
Lao PDR	4	29	15	52	4	23	14	30
Indonesia	6	30	18	45	6	22	14	45
Thailand	8	18	3	51	8	27	3	90
Malaysia	8	29	7	120	8	75	14	140

Notes: 1) Only export-oriented firms (larger than 50%) are selected as firms.
2) "Avg." means average.
3) The lead time of the electronics firms in Myanmar and Vietnam are not available.

Source: Semi-structured survey results of ERIA 2009 -10.

United States and the EU. The lead time differs between a case of exporting to countries in Asia and a case of exporting to the EU. The first lead time can be longer when the process includes the time spent for decision-making between a manufacturer and a customer on the design.

As for the garment and footwear industries, the lead time varies between 10 and 90 days. In the case of the footwear industry, the first lead time is longer than the second one or at least the same as the second. Generally, the firms of a footwear industry import the raw materials and intermediate goods from the East Asian countries and then export the finished products to the developed countries in North America and the EU. These situations are reflected in the relationship between the first and second lead times. And while this author expects that such a relationship can be discernible in the garment industries, said relationship, however, cannot be discerned as far as Table 12 is concerned.

The variance becomes smaller in cases of electronics industries except in several cases involving maximum lead times in Malaysia. Nevertheless, the minimum values of the first and second lead times in Thailand and Malaysia are smaller than other countries. As a matter of fact, the first lead times of four sample firms of Thailand and two sample firms of Malaysia as seen in Table 12 are less than 10 days. One of the firms of Malaysia enumerated “poor supply chain management” in the CLMV countries while the first lead times of other two firms which enumerated the same disadvantage in Malaysia and Thailand are 30 days. The firms with shorter first lead time send small, light, compact and high value-added products by air even though they may import the parts and components by ship. In order to attract full-fledged electronics firms, better access to an airport is thereby also needed.

Table 13: Time Taken and Payments for Customs Clearance

<Time Taken for Customs Clearance> (hours)

	Export Customs Clearance				Import Customs Clearance			
	Number of Samples	Avg.	Min.	Max.	Number of Samples	Avg.	Min.	Max.
Cambodia	17	6.8	1.0	24.0	18	7.8	1.0	24.0
Lao PDR	15	7.7	1.0	24.0	29	11.6	1.0	108.0
Myanmar	17	53.7	1.0	168.0	26	82.5	1.0	336.0
Vietnam	1	6.0	6.0	6.0	1	6.0	6.0	6.0
Indonesia	17	1.0	0.5	2.5	17	10.0	1.0	120.0
Thailand	4	14.0	1.0	48.0	13	19.3	1.0	48.0
Malaysia	8	18.9	0.5	48.0	8	58.1	2.0	169.0

<Payments for Customs Clearance> (US$)

	Export Customs Clearance				Import Customs Clearance			
	Number of Samples	Avg.	Min.	Max.	Number of Samples	Avg.	Min.	Max.
Cambodia	15	437.3	180.0	700.0	17	487.9	180.0	900.0
Lao PDR	10	84.0	15.0	200.0	18	100.3	0.4	325.0
Myanmar	17	120.0	50.0	480.0	26	121.5	10.0	500.0
Vietnam	11	39.2	5.7	285.7	11	41.0	11.4	285.7
Indonesia	17	52.9	35.0	250.0	17	67.8	25.0	300.0
Thailand	2	52.9	47.1	58.8	6	200.1	47.1	559.0
Malaysia	6	101.6	29.9	250.0	6	120.8	0.0	395.0

Notes: 1) Time is taken and payments are made per on container.
2) Samples measured per shipment and per carton are not included.

Source: Semi-structured survey results of ERIA 2009 -10.

2.4. Time Taken and Payments for Customs Clearance

Table 13 shows the time taken and payments made for export and import customs clearance. In terms of time taken for customs clearance, it is remarkable that it takes two or three days in Myanmar while it takes only less than ten hours on the average in Cambodia, Lao PDR and Vietnam. In Lao PDR, however, it takes 2 – 7 days for the

preparation process for importing and exporting. In Malaysia and Thailand, the average time is longer than Cambodia, Lao PDR and Vietnam, but when one takes the median, it becomes just 36 hours.

As for the payments for the customs clearance, the value in Cambodia is outstanding. In Cambodia, the level of governance is evaluated to be lower and the value of the payments made for customs clearance illustrates the situation. Actually, customs clearance can be done in SEZs in Cambodia and the wage for the customs officer can be paid by SEZs in order to avoid the bribery behaviors. Unfortunately, there are no sample firms located in SEZs in the survey of Cambodia. Cambodia is followed by Thailand, Myanmar, Malaysia and Lao PDR in terms of the value of payment for import customs clearance. In the case of Malaysia, however, the average value is raised by the maximum value. and the median for import customs clearance value is US$ 24.00. For export customs clearance, meanwhile, the median value is US$ 24.50.

As seen from above, improvements must be made in the time taken for customs clearance in Myanmar. And countermeasures to avoid corruption in the customs office are also needed in Cambodia.

2.5. Electricity Price and Supply

One of the results of the questionnaire survey implemented as part of an ERIA research project in fiscal year 2008 on “Developing Strategies for CLMV countries” suggested that the situations of electricity in Cambodia and Myanmar are serious (Chapter 2). In the survey, respondents were asked to evaluate the situation according to five levels, namely: 1- very poor, 2 - poor, 3-fair, 4- good, and 5- excellent. The evaluations of Phnom Penh, Sihanouk Ville and Bavet were 3.2, 2.8 and 3.5, respectively (Sisovana,

Table 14: Electricity Price, Frequency and the Longest Hours of Black-outs

		Electricity	Number of	Average		Min		Max	
		Price (¢)	Samples	Freq.	L. H.	Freq.	L. H.	Freq.	L. H.
Cambodia	Others	16.3	18	3.1	4.4	2.0	3.0	5.0	5.0
Lao PDR	IE		1	3.0	4.0	3.0	4.0	3.0	4.0
	SEZ	3.0	2	3.5	4.5	3.0	4.0	4.0	5.0
	Others		33	2.9	4.0	2.0	3.0	5.0	5.0
	Whole		**36**	**3.0**	**4.0**	**3.0**	**4.0**	**3.0**	**4.0**
Myanmar	IE		22	5.0	5.0	5.0	5.0	5.0	5.0
	Others	5.0	6	4.5	5.0	2.0	5.0	5.0	5.0
	Whole		28	4.9	5.0	4.9	5.0	4.9	5.0
Vietnam	IE		8	1.8	3.8	1.0	2.0	3.0	5.0
	Others	3.0-10.5	12	2.6	4.2	2.0	3.0	4.0	5.0
	Whole		**20**	**2.3**	**4.0**	**2.3**	**4.0**	**2.3**	**4.0**
Indonesia	IE		9	4.4	5.0	3.0	5.0	5.0	5.0
	SEZ	8.0-9.0	1	3.0	5.0	3.0	5.0	3.0	5.0
	Others		7	3.1	4.9	2.0	4.0	4.0	5.0
	Whole		**17**	**3.8**	**4.9**	**3.8**	**4.9**	**3.8**	**4.9**
Thailand	IE		9	2.0	3.7	2.0	1.0	2.0	5.0
	SEZ	10.0	2	2.0	3.5	2.0	3.0	2.0	4.0
	Others		4	2.3	3.0	1.0	1.0	4.0	4.0
	Whole		**15**	**2.1**	**3.5**	**2.1**	**3.5**	**2.1**	**3.5**
Malaysia	IE		6	1.3	5.0	1.0	5.0	3.0	5.0
	SEZ	8.0	6	1.0	—	1.0	—	1.0	—
	Whole		**12**	**1.2**	**5.0**	**1.2**	**5.0**	**1.2**	**5.0**

Notes: 1) "Freq." means frequency of black-outs. The each level indicator of frequency is:
1=have not experienced in a year 2=Once or a few times in six months
3= Once or a few times in a month 4= Once or a few times in a week
5=Several times in a day

2) "L. H." mean the longest hours among the cases of black-outs. The each level indicator of frequency is:
1=Less than a few second 2=a few seconds – one minute
3= One minute – five minutes 4= Five minutes – thirty minutes
5=Longer than thirty minutes

3) "IE," "SEZ" and "Others" mean that a firm locates inside the industrial estates, special economic zone and outside of IE and SEZ, respectively.

4) The unit of electricity price is cents per kilo-watt-hour (kwh.).

5) Electricity prices of Cambodia, Lao PDR, Myanmar and Vietnam are based on Sisovanna (2010), Suzuki (2007), Ishida (2010), Kyaw (2010) and Indonesia, Thailand and Malaysia are based on JETRO (2009).

Source: Note 5) and Semi-structured survey results of ERIA 2009 -10.

2009), indicating that the condition of Sihanouk Ville is critical. The situations on electricity in Yangon, Mandalay and Myeik, meanwhile, were given worse ratings at 2.2, 2.2 and 2.0, respectively (Kyaw, 2009). On the other hand, the evaluation for Vientiane and Savannakhet were 3.4 and 3.8, respectively (Oraboune, 2009), and for Ho Chi Minh City' situation, it was 3.9 (Dinh, 2009).

The reasons why Cambodia and Myanmar were evaluated lower were not clear in the 2008 project report of ERIA. In the case of developing countries, issues on electricity are divided into two, namely, electricity price and reliability. Table 14 shows the electricity price, frequency and longest hours of black-out cases for CLMV and the three advanced ASEAN countries. The respondent firms were divided into firms located in the industrial estates, firms located in SEZs and firms located outside of SEZs because the evaluation of electricity done in the 2008 ERIA survey in Vietnam was different for firms inside industrial estates or SEZs and for firms outside of such locations.

In the case of Cambodia, it is clear that the lower evaluation was based on its higher electricity price and the frequent black-out occurrences before 2009. The price of electricity in Cambodia is almost two times higher than those of advanced ASEAN countries. On the other hand, the problem of Myanmar lies on reliability. Most of the firms answered that black-outs occur several times in a day. More specifically, firms in Yangon have to use electricity generators for four or five hours in a day due to black-outs even as the electricity price is just five cents per kwh. and even lower. In Indonesia, on the other hand, the "electricity crisis" was based on social issues and the situation was worse in the industrial estates as seen in Table 14.

As for the frequency of black-outs, Cambodia and Lao PDR are better off than Myanmar and Indonesia. It is well-known that Lao PDR exports electricity to Thailand. In Cambodia, the frequency of black-out has decreased[11] after the transmission line was extended to Phnom Penh from Takeo Province, in accordance with a signed contract between the Vietnam Electricity Group and Electricite du Cambodge on May 26, 2009.[12] Thus, the electricity supply in Cambodia has been improved although the price still remains very high. The situation of Vietnam is even better. As shown in the 2008 survey, the supply of electricity in Vietnam's industrial estates is clearly better and close to that of Thailand.

From a comparative perspective, Malaysia has the most reliable and relatively better priced electricity. Only one firm answered that black-out occurs once or a few times in a month and the longest hour is just longer than thirty minutes. Because other firms answered that they have not experienced black-outs in a year, it seems that the situation is not serious anymore.

3. NEEDS AND DEMANDS OF FIRMS IN CLMV COUNTRIES

After getting the information on some elements of investment climate for firms in the CLMV and three advanced ASEAN countries, the survey teams asked the firms in the CLMV countries, through open-answer style of questionnaire, the needs and demands for soft and hard infrastructure or investment climates. The enumerated needs and demands were categorized by "existing industries" and "new industries" and shown in

[11] Based on an interview with a manager of a garment factory in Phnom Penh.

[12] An article dated May 27, 2009 on the website of NASDAQ News Letter (referred on January 21, 2010).

Table 15. The “existing industries” are composed of agro-industry, fishery, food processing, wood-processing, garment, knitting, weaving, spinning and footwear industries. The “new industries”, on the other hand, are composed of non-metal processing, metal processing, plastics processing, electric and electronics, and automotive industries. The number of answers in the table means the number of respondents who enumerated the needs and demands as the categorized items. After the enumeration, the needs and demands were ranked according to the respondents’ priority. The average score in the table means the average value of the ranks.

The number of answers and the average score of the labor-related and institution-related elements are likely to be higher in Cambodia, Lao PDR and among the “existing industries” in Vietnam. For the “new industries” in Vietnam, the needs and demand for the logistics are higher. In Myanmar, complaints on the supply of electricity and black-outs, and telecommunication are many. As for the “others”, it is remarkable that some firms of agro and fishery industries in Lao PDR and Myanmar give the highest priority on the procurement of raw materials or natural resources. In the following sub-sections, more concrete needs and demands are presented by country.

3.1. Needs and Demands in Cambodia

In Cambodia, the needs and demands on the institution-related elements are the highest both in terms of the number and the score. More concretely, tax system (6, 1.5; 3 1.3),[13] corruption (6, 1.7; 1, 1.0), documentation process (6, 2.8; 1. 4.0), license process (2, 1.0;

[13] The meaning of the numbers in the parenthesis is that six firms of the “existing industries” and three firms of the “new industries” enumerated the improvement of the tax system as needs and demands and the average scores are 1.5 and 1.3, respectively. In the succeeding paragraphs, the numbers are introduced in the same way.

Table 15: Needs and Demands for Investment Climates in CLMV Countries

		Labor	Institution	Logistics	Telecom	Electricity	Others
Existing							
Cambodia	No. of Answers	17	18	16	12	17	
	Averaged Score	2.0	1.6	3.4	4.3	3.4	
Lao PDR	No. of Answers	14	16	5		5	4
	Averaged Score	1.5	1.8	2.8		2.2	2.8
Myanmar	No. of Answers	11	8	14	16	18	6
	Averaged Score	3.1	2.0	3.0	2.8	1.9	1.2
Vietnam	No. of Answers	12	12	13	2	11	
	Averaged Score	1.5	2.1	2.5	4.5	2.9	
New							
Cambodia	No. of Answers	5	5	4	3	5	
	Averaged Score	1.6	1.6	4.0	4.7	3.0	
Lao PDR	No. of Answers	14	19	6		13	1
	Averaged Score	2.4	1.4	2.5		2.2	5.0
Myanmar	No. of Answers	7	4	5	7	11	
	Averaged Score	2.7	1.0	2.4	2.6	1.9	
Vietnam	No. of Answers	3	4	4	1	3	
	Averaged Score	2.0	2.3	1.5	4.0	2.7	
Total							
Cambodia	No. of Answers	22	23	20	15	22	
	Averaged Score	1.9	1.6	3.6	4.3	3.3	
Lao PDR	No. of Answers	28	35	11		18	5
	Averaged Score	1.9	1.6	2.6		2.2	3.2
Myanmar	No. of Answers	18	12	19	23	29	6
	Averaged Score	2.9	1.7	2.8	2.7	1.9	1.2
Vietnam	No. of Answers	15	16	17	3	14	
	Averaged Score	1.6	2.1	2.2	4.3	2.9	

Notes: 1) Questions on needs and demands for investment climates are asked with free-answer-typed questions (multi-answers). The number of answers is the number of respondents who enumerated the answers categorized to each item.

2) After the enumeration, the needs and demands were ranked with the respondent's priority. The "Avrgd. Scores" (averaged scores) mean the averaged value of ranks.

3) The "existing industries" are composed of agro-industry, fishery, food processing, wood-processing industry, garment, knitting, weaving, spinning and footwear. The "new industries" are composed of non-metal processing, metal processing, plastics processing, electric and electronics and automotive industries.

4) As for Myanmar, the priority was not asked explicitly in the survey. The score of rank is based on the author's subjective prioritization after analyzing the answers qualitatively.

Source: Survey results.

0)[14] and customs clearance (2, 1.7; 1, 4.0) are enumerated. In other words, the process for tax, documentation, licenses and customs clearance takes a lot of time. The staffs of the firms are also requested by government officials to pay money. These situations faced by the firms in Cambodia are illustrated by the highest amount of average payment for customs clearance shown earlier in Table 13.

In terms of labor-related needs and demands, they are divided into the needs for vocational schools (8, 1.6; 5, 1.6) and the needs for improving the relation between the employer and the trade union (11, 2.1; 0). The fact that there are no firms that enumerated labor relation in the new industries is reflected through the higher wages and higher education levels of workers in the "new industries" as previously noted in Table 10. On the other hand, in the existing industries, mostly the garment industries, it is said that there are several trade unions in each firm which sometimes go on strikes. Nevertheless, the employers have to keep good communication with the trade unions, according to a manager of a garment firm. If the employers cause the relations to worsen and such relations result in rifts in the country, the developed countries which give the benefits of the generalized system of preferential trade (GSP) can suspend it. [15]

As for electricity, price of electricity (5, 3.3; 5, 3.0), weak voltages of electricity (4, 2.8; 1, 3.0) and black-outs (3, 3.3; 0) are enumerated. The reason as to why the number of firms which enumerated black-out is smaller than those which mentioned price of electricity has already been explained in the previous section. The demands for improving the road infrastructure (8, 3.0; 1, 4.0) and the access to the national road (1, 3.0; 1, 4.0) are many. The claims on the internet price (2, 5.0; 1, 5.0), price of mobile phones (1, 2.0; 0) and interruption of telephone cables (1, 2.0; 0) are also enumerated.

[14] The number of firms of "new industries" is zero, so there is no score.

[15] Based on an interview with a manager of a garment factory in Phnom Penh dated October 27, 2009.

The priorities mentioned for the improvement of telecommunication are lower than the other elements; however, it is well-known that a higher price is charged in making a mobile phone call from one mobile phone company to another company.

3.2. Needs and Demands in Lao PDR

In Lao PDR, the needs and demands for institutions, vocational training and hard infrastructure are higher. In terms of institutional processes, needs and demands for improving license process (4, 2.5; 11, 1.5), export and import process (8, 2.9; 10, 3.8), documentation process (9, 2.6; 6, 4.0), law enforcement (6, 2.0; 7, 3.3), incentives like tax holidays (3, 2.3; 5, 1.4), customs clearance (2, 2.0; 1, 3.0), and investment climate in general (1, 3.0; 4, 2.0) were frequently mentioned. The claims that procedures for export and import, licenses and customs clearance are time-and cost-consuming are many. Among them, it is noteworthy to mention that the number of firms of the "new industries" which enumerated improving the export and import, licenses and customs clearance is larger than that of the "existing industries." In terms of labor- related elements, the needs and demands for vocational training (11, 1.3; 9, 2.3) and improvement of education (2, 1.5; 2, 3.0) are enumerated. There are no demands, though, for improving the relation between the employer and the trade union in Lao PDR.

The number of firms that enumerated "black-out" is unexpectedly larger (5, 2.2; 10, 2.7). There are also claims of weak voltages of electricity (0; 2, 2.0) and price of electricity (0; 1, 1.0). In terms of logistics, needs for transport infrastructure (5, 2.6; 9; 2.9) and needs for improving the access to a national road are enumerated. Other needs and demands mentioned include demands for improving circulation of goods as

enumerated by three firms of “new industries.”

3.3. Needs and Demands in Myanmar

In Myanmar, the needs and demands for improving infrastructure are higher than in other CLMV countries. The needs for improving electricity supply or black-outs (18, 1.9; 11, 2.0) are especially higher although there are also demands for improving the weak voltages of electricity (3, 1.3; 0). In terms of telecommunication, the needs for improving the quality and speed of internet (7, 3.0; 5, 2.4), interruption of telecommunication cables (6, 2.3; 4, 2.3), price of telecommunication in general, including that of fixed cable (6, 2.2; 1, 4.0), cost of mobile phones (4, 2.5; 0) and internet price (2, 2.5; 1, 1.0) are higher although the priorities are not so high compared with the improvement of electricity. The needs for improving logistics such as improving transport infrastructure in general (9, 2.9; 3, 2.3), traffic jam in the city areas (2, 2.0; 2, 2.5), the increased toll rate of bridges and roads (1, 5.0; 2, 2.0) and of fuel price (2, 4.0; 1, 2.0) are also enumerated by many firms.

The demands for improving institutional process are not as many as those compared with Cambodia and Lao PDR, but the priority emphasized for them by the firms is not low either. Complaints on the tax system (2, 1.5; 2, 1.0), process for getting licenses (1, 1.0; 1, 1.0), process for documentation (1, 1.0; 0) and export and import process (2, 3.0; 1, 1.0) are enumerated. In terms of the latter, it is known that firms in Myanmar can import only by using the foreign currencies earned by exporting goods. As for labor issues, not a few firms enumerated difficulty in procuring skillful labor manpower (7, 3.0; 4, 2.0) and there are also needs for vocational training (4, 2.0; 3, 3.7).

3.4. Needs and Demands in Vietnam

In Vietnam, the needs and demands for the "existing industries" and "new industries" are different. The firms in the "existing industries" are interested in vocational training while those in the "new industries" are more interested in logistics.

The demand for vocational training is higher (10, 1.8; 13, 1.9) and difficulties in procuring skilled labor are also enumerated (2, 1.0; 0). Meanwhile, demands for improvement of the relation with the trade union are not major ones. What is more noteworthy to mention is that some firms seem not to be satisfied with the skills of the manpower. This seems to be in contrast with the listing given by a number of respondent firms in the three advanced ASEAN countries where "better education level" and "good quality of labor" were cited as advantages in investing Vietnam. In fact, they noted that the education level of workers is surely higher than that of other countries. This difference in opinion is therefore a case of a gap between perception and reality on the ground. In terms of the institutional elements, most of the demands are focused on the improvement of customs clearance (12, 2.1; 3, 2.3) and solution of the issue of corruption (3, 1.3; 4, 1.5). Some firms complain that some parts of the customs clearance process are still being processed by customs officers even though electric customs clearance service has already been introduced in Vietnam.

As for infrastructure, improvements of transport infrastructure (8, 2.3; 3, 1.0), better access to a national road (4, 3.0; 6, 2.7), traffic jams in city areas (5, 2; 0), frequency of ships at ports and harbors (1, 3.0; 1, 3.0), terminal handling charges (1, 3.0; 1, 2.0), black-outs (3, 2.7; 13, 2.8) and price of electricity (0; 1, 4.0) are enumerated. The fact that demands for improvement for better access to a national road are enumerated by many firms shows that the network of national roads has been

improved to some extent. The regulation of container trucks in the center of Hanoi and Ho Chi Minh City during day time is also being complained by some firms. The problems of black-outs are also still serious for firms located outside of industrial estates as can be gleaned from Table 13.

CONCLUDING REMARKS

More than half of the respondent firms in Malaysia answered that the competitive environment is tough while firms in the electronics and automotive industries in Thailand said that it is minor. The latter response is in view of the thick layers of supporting industries in Thailand which supposedly raise the country's competitiveness. However, in Indonesia and Malaysia, a number of firms seem to be faced with tough competition from China and India. Thus, local and multinational firms located in these advanced ASEAN countries might decide to look for location advantages in connection with possible plans for relocation and fragmentation.

In this regard, not a few firms in Indonesia, Malaysia and Thailand answered that they have relocated or have considered relocating some production points to Vietnam as well as to China and India. For the firms of the electronics industry, the features of "lower wage," "availability of workers," "good education" and "good labor skill" of Vietnam are attractive while for the firms of the automotive industries, Vietnam's "large local market" is also attractive. On the other hand, many firms of the three advanced ASEAN countries enumerated "poor infrastructure" and "policy problems" as disadvantages. At the same time, many firms operating in Vietnam enumerate as one of their demands the need for more vocational training of the labor force. Which may thus

make the evaluation of “good labor skill” in Vietnam somewhat overestimated. In the meantime, with regard to the perception on “poor infrastructure,” the improvement of the access road to a national road and the easing of the traffic congestion in the city area should be prioritized. In addition, in order to be able to attract many electronics firms, the government should support the firms by making sure that the lead time between the customer’s order and the delivery of the order is shortened through the improvement of the air transportation facilities.

As for the CLM countries, the possibility of relocation or fragmentation from the advanced ASEAN countries seems to be very low. In addition, the relocation or the fragmentation of the automobile industries to Cambodia and Lao PDR may not be easy nor feasible considering the two countries’ small levels of population. However, these countries should not lose hope. If the other disadvantageous elements are improved, the possibility of attracting and getting the electronics and motorcycle industries to move there can be more positive. In Cambodia, the average education level of workers is too low to attract the electronics industry. This is especially so in the rural areas where the population’s education level is much lower than that in the city area as indicated in Cambodia’s population census of 2008 (Sisovanna, 2010, p.14). It is said that only four years of education are provided at the elementary schools in some rural areas and the children who graduated from such schools cannot enter into middle high school because they have to move to a city area in order to get the additional education (Hirohata and Takeuchi, 2005, p.98). The improvement of the elementary and secondary education in Cambodia should therefore be prioritized. The needs for vocational training are also high. As for the institutional procedures, the process for the customs clearance, license and other documentation should be improved. More so, the firms’ burden of

paying for the customs clearance should be reduced. Related to this, the improvements implemented by the government such as the one-stop service and tax holidays for firms located in SEZs should be welcomed. In addition, the better access to Phnom Penh Airport for the firms in the industrialized area can be a positive element in the future.

In Lao PDR, upgrading of the education level of workers and expansion of the vocational training are needed to respond to the perceptions of “low education level” and “limited human resources” enumerated by not a few firms in the three advanced ASEAN countries, although the average education level of workers is not that different from Thailand and Malaysia. Moreover, the documentation process for export and import and for licenses should be improved. The improvement can reduce the time and cost for export and import. One unexpected result is the complaint by many firms about black-outs in Lao PDR, a net electricity-exporting country. The reason and background for this should therefore be clarified.

And finally, for Myanmar, there is no way to receive new investments in terms of the electronics and automobile industries for as long as the political situation there is not changed. This is so because the most major disadvantage of Myanmar as enumerated by firms in the three advanced ASEAN countries is “political instability”. Not a few firms of the electronics and automotive industries put higher priorities on “political stability” as the condition for relocation and fragmentation. In addition to this, infrastructure like electricity and telecommunication as well as the time taken for customs clearance should be looked into and improved by the authorities in Myanmar.

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Appendix Table: Basic Information on Investment Climate in CLMV Countries

	Cambodia			Laos	Myanmar	Vietnam		
	Poipet	Phnom Penh	Bavet	Vientiane	Yangon	Hanoi	HCMC	Danang
Land Ownership (US$ per m^2 per Month) [1]	US$ 30	US$ 50	US$ 25 - 33	-	-	-	-	–
Land Leases (US$ per m^2)	US$ 30	US$ 50		US$ 0.5 - 1.0[2]	US$0.15 - 0.26	US$ 50-55	US$ 85	US$ 16
Water Supply Charges (Cent per m^3)	¢ 35	¢ 33	¢ 15	US$ 4.8 or ¢ 60[3]	¢ 88	¢ 29.2	¢ 15.9-47.1	¢ 16.3
Electricity Charges (Cent per KWh)	¢ 12	¢ 19.3	¢ 12.65	¢ 3.0	¢ 0.08[4]	¢ 2.8-10.3	¢ 2.8-10.3	¢ 2.8–10.3
Minimum wage (US$ per Month)	US$ 56	US$ 56	US$ 56	US$ 28	-	US$ 70.7	US$ 70.7	US$ 70.7
Average wage for workers	n.a.	US$ 80	US$ 80	US$ 30-40	US$ 16.3	US$ 95.8	US$ 95.8	US$ 95.8
Distance to ports and harbor (km)	n.a.	20km or 210km[5]	70km	720km	24km or 50km[6]	114km	30km	19km
Education Level of Majority of Workers [7]	Elementary & Junior High School (J.H.)			Elementary and J.H.	J.H.	High School		
Middle Managers	High School			College/Univ.	College/Univ.	College/University		
Engineers	Technical/Vocational and College/Univ.			College/Univ.	Technical/Vocational	College/University		
Population (Thousand Persons)	14,356			5,763	58,510	86,160		
GDP per Capita (US$)	US$ 756.1			US$ 917.8	US$ 464.6	US$ 1052.7		
Corporate Tax Ratio [8]	9%, **20%**			7.5 - **20%**		10%, 15%, 20%, **28%**		
Tax Holiday Periors (Years)	3-9 years			2 Years	3 Years	2 - 4 Years		

Notes: 1) Firms with the nationality of Cambodia, which means that the share of Cambodian capital is 51% or larger than it, can own land. Foreign investors cannot own land in Lao PDR, Myanmar and Vietnam.

2) The land lease price is average price of land around Vientiane, and the land concession price is US$ 30 -50 in the same area.

3) US$ 4.8 is the case that the consumption is 10 m^3 or larger than it and ¢ 60 is the case that it is less than 10 m^3. Both cases are for non-residents.

4) The electricity price of Myanmar is lower, but it is often heard from investors that the black-out is frequent and electric generator is needed.

5) 20km is the case from Phnom Penh SEZ to Phnom Penh River Port and 210 km is the case to Sihanoukville Port.

6) 24km is the case from Mingaladon Industrial Park to Yangon Port and 50km is the case to Thilawa Port.

7) These data are based on the results of survey done for ERIA project in the fiscal year of 2008.

8) Corporate tax ratio does not include the cases during tax holiday period and the bold and underlined ratio means the tax ratio without tax incentives.

Source: JETRO, ASEAN Secretariat, Japan-ASEAN Center, Brochures of Industrial Estates and Other Information Source.

CHAPTER 12

CHALLENGES AND PROSPECTS FOR UPGRADING AND DIVERSIFICATION OF INDUSTRIAL STRUCTURE IN CLMV COUNTRIES

Ruth Banomyong

INTRODUCTION

Over the last decade, Cambodia, Lao PDR, Myanmar and Vietnam (CLMV) have shown remarkable economic growth. This economic growth was facilitated through sustained foreign direct investment (FDI) that was facilitated by improved physical infrastructure, cheap labour cost and preferential market access treatment by developed countries' market. However, with the exception of Vietnam, most of the FDI in Cambodia, Lao PDR and Myanmar was mainly focused on the textile and garment industries.

The purpose of this chapter is to present an overview of the challenges and prospects for upgrading and diversifying industrial structures in the CLMV countries based on the obtained respective country surveys as well as the lessons that can learned from past experiences of the more advanced ASEAN nations.

Indonesia, Malaysia and Thailand are considered part of the more advanced economies within ASEAN when compared to the CLMV. These countries have benefitted from remarkable economic growth since the second half of the 1980s when they started receiving FDI. These countries are now fully integrated in electrical, electronics and automotive regional and global production networks.

Since the start of the 21st century, competition intensity has increased, especially with the rise of China as a global economic powerhouse. This has led a number of well established industries in the more advanced ASEAN nations considering the possibility of "fragmenting". This means that they would be inclined to move the more labour-intensive blocs of their manufacturing process to lower-wage countries such as the CLMV. It is under this framework of industries' potential to "fragment" that CLMV are expected to upgrade and diversify their industrial structures by becoming beneficiary of "fragmentation" and relocation efforts from established industries (Kimura, 2009) such as electronics and automotive from Indonesia, Malaysia, and Thailand.

The chapter starts with an introduction to the corridor concept and its importance to the development of "fragmentation". The 2nd section deals with CLMV challenges and prospects while the 3rd section focuses on the experiences of the more developed ASEAN countries in industrialising their respective economies. The chapter concludes with policy proposals to develop network of key industrial corridors targeted for specific industries and commodities.

1. INDUSTRIAL CORRIDORS

The concept of industrial corridor is of critical importance in understanding how "fragmented" production network can be developed. Lower labour cost does not automatically mean that industries' labour intensive blocs will relocate to areas where labour wages are low. There are a number of other conditions that needs to be established as a pre-requisite for this re-location to occur.

These pre-requisites include having infrastructure that is capable of not only accommodating industrial activities but also industries' respective inbound and outbound flows. This is a key challenge for the CLMV as infrastructure is still lacking in many areas, the current institutional framework is usually complex and not very business friendly. Even

though labour cost in these countries is cheap, labour skills levels still need to be upgraded. CLMV logistics systems are still under-performing due to current physical and regulatory constraints.

This is why it is important to focus on a corridor development approach in these countries as it is impossible to fully improve holistically infrastructure, the institutional framework, labour or even logistics issues in a single effort. It makes more sense to target specific geographical areas by implementing the corridor concept. A corridor approach will link key nodes both within and between countries. These corridors can then serve as a geographical blueprint for industries to select not only the location of their "fragmented" activities but also their respective logistics linkages. This approach will enable industries to develop regional supply chains that benefits from existing technological expertise and know how in the more developed ASEAN countries as well as lower wage labour in the CLMV for the more labour intensive units. Table 1 hereunder proposes a corridor development stage that could be used in understanding which type of corridor can best support industries' "fragmentation" approach.

It is not necessary for the targeted corridor to achieve industrial or economic level for "fragmentation" to be considered. The establishment of a transport corridor is the starting level where "fragmentation" can be explored and developed. However, in order to benefit from the completion of the physical infrastructure in the corridor, it is advised that the institutional framework within the corridor be in place to facilitate the movement and storage of freight, vehicles, people and information from node to node within and across borders. This will facilitate the logistics linkages between industries' activities along targeted corridor. A logistics corridor is the recommended corridor development level in order for disaggregated production networks to inter-link effectively and efficiently.

Table 1: Level of Corridor Development

Stage	Corridor	Definition
Level 1	Transport Corridor	• Corridor that physically links an area or region
Level 2	Logistics Corridor	• Corridor that not only physically links an area or a region but also harmonise the corridor institutional framework to facilitate the efficient movement and storage of freight, people and related information.
Level3	Industrial Corridor	• Corridor that links key industrial nodes in a geographical area through integrated supply chain networks. These supply chain networks provide value-added activities along the corridor in order to meet respective customers' requirements.
Level 4	Economic Corridor	• Corridor that is able to attract investment and generate economic activities along the less developed area or region. Physical linkages, logistics facilitation and supply chain integration must be in place in the corridor as a prerequisite.

Source: The author.

2. CLMV CHALLENGES & PROSPECTS

It is interesting to observe that investment promotion policies and incentive do exist in the CLMV. Each respective CLMV country has developed investment promotion laws and regulations that are attracting foreign direct investment (FDI) with more or less success. This FDI attraction capability is not solely based on policies or investment promotion laws as other pre-requisite factors are needed to make CLMV attractive enough to attract foreign investment.

In theory, the CLMV countries may have the most favourable investment promotion laws but this does not mean that they'll be able to attract much FDI if infrastructure, labour capabilities or logistics linkages are not in place.

CLMV usually relied on obtained GSP privileges in certain industries to attract FDI. These GSP were obtained through the fact that CLMV countries have traditionally been part of the less developed economies in the world and needed preferential access to main markets. This has led a number of industries, in particular the garment industry, to invest and provide export driven "cut & sew" operations in the CLMV. These labour intensive industries not only benefited from cheap labour force but also preferential market access to compete with the more established garment exporting nation. However, the reliance on GSP is in itself not sufficient as the end of the multi-fibre agreement has increased the competitive environment for CLMV countries in this industry.

Industrialisation in the CLMV countries is a relatively recent phenomenon with Vietnam becoming the main FDI recipient country of this sub-regional grouping. This is reflected in the level of economic growth and activities sustained by each CLMV countries. In general most of the FDI, apart from Vietnam, are often relatively "light" industries that do not require much capital or technological input. This is one of the reasons why industrialization in Cambodia, Lao and Myanmar are not very diversified as other investors need to consider a full range of other criteria before making any relocation decisions. The industrial sector does not have, at the present moment, the highest share of economic activities generated in CLMV.

However, there is a strong potential for the development of agro-based industries in the CLMV. The example of Lao PDR is interesting as the manufacturing sector in the country is small, not developed with limited numbers of industries. Lao PDR depends on imports for most consumer products, machinery and manufacturing equipment as well as for raw and semi-processed materials. Agriculture remains the backbone of the economy, accounting for 2008 around 30.1 % of total GDP, followed by the industrial sector at 25.9%. The food and agro-based processing industries have the potential to become a major driving force for economic development. All CLMV countries have strong agricultural base and this needs to

be further explored in order to assess the opportunity to diversify their respective industrial development.

2.1. CLMV Common Industrial Development Issues

CLMV countries suffer from a number of common issues that constrains FDI attractiveness and therefore industrial development. Logistics infrastructure and facilities are lacking in CLMV. Even though there are numerous over-lapping infrastructure development plans, it is acknowledged that these fundamental infrastructures will not be ready until the year 2015. Even after the year 2015, the issue of establishing inter-connected sub-regional logistics facilities will still need to be considered in order to develop an integrated CLMV nodal network.

The consideration for the establishment of this integrated network of logistics facilities need to be done in parallel with targeted zones for FDI in areas such as a specific free trade zone (FTZ), an industrial zone (IZ) or even an industrial estate (IE). The established logistics facilities will serve as a support platform for industrial activities located in such areas.

However, the establishment of such logistics facilities must also be supported by an institutional environment that is able to facilitate export and import procedures. As CLMV countries are export-driven, the export facilitation issue is not as critical as compared to importation issues. These logistics facilities can benefit from a special legal status that will enable them to streamline both export and import procedures for the benefits of industries located within these clearly defined targeted areas.

These clearly defined areas should be understood not only individually but also as part of a network of inter-connected industrial nodes. Reliability with each node is critical and issues such as electricity supply reliability must not be overlooked. These designated areas must be able to guarantee electricity supply service level if FDI is to be attracted. Currently

this is a key problem in Myanmar. Electricity cost is also an important criterion but not as much as the lack of electricity service reliability.

Labour availability and skills is another key criterion that needs to be taken into account when decisions to relocate occur. It does not make any sense to decide on a relocation strategy when labour is not available in the targeted area. This is an even worse case scenario than just having un-skilled labour that needs to be trained. Labour related laws will need to be more employers friendly in order to help investor gain the most from the available cheap labour cost.

2.2. Attracting FDI into the CLMV

The capability to attract FDI, as described hereover, is not just dependent on cheap labour cost. A number of criteria are needed for investment decisions to be made. Table 2 illustrates some of the key investment criteria that need to be taken into account. Low labour cost is an insufficient criterion no matter how attractive it is. Low labour cost need to be coupled with labour availability and adequate skill level.

Table 2 clearly demonstrate that there are 2 levels related to the relocation decision-

Table 2: Foreign Direct Investment

Investment	Criteria
Investment Qualifiers	• Rehabilitated infrastructure. • Facilitating Institutional Framework. • Sufficient labour force and capability. • Political stability. • Ease of access to key markets.
Investment Winners	• Incentive Policy • Integrated Service-link Connectivity • Provision of investors' confidence • Large domestic/regional market

Source: The author.

making process. The first level focuses on the necessary conditions that are needed to consider the possibility of re-locating to the CLMV countries. If these criteria are not met then the intention to consider relocation investment will not even be made. It is only after these conditions are met than the decision-making process can focus on investment winner criteria that will determine the attractiveness and potential of such the investment.

FDI is very much dependent upon investor confidence. It is therefore needed, especially in CLMV, that foreign investor should receive at least equal treatment to domestic investors. The investor need to feel that the local government is pro-business and willing to support. Transparency of procedures is also important as foreign investors need to understand their operating environment. A marketing campaign is therefore needed to build investors' confidence is CLMV countries are selected as destination for the relocation of labour intensive production blocks. The attraction of FDI must also include having the capability to attract supporting industries of key industrial products.

However the marketing campaign and existing investment incentive policies are still not sufficient. The performance of logistics systems within and between CLMV countries need to be considered as a key driver of service-link connectivity.

A common issue is related to the lack of diversified industrial FDI in Cambodia, Lao PDR and Myanmar is the limited domestic market size. FDI maturity is also different among CLMV. This is why a sub-regional integrated market approach encompassing all CLMV countries are required or else most of the FDI will be mainly targeted in Vietnam.

It is important that a supply chain and/or a value chain approach is utilised in order for industrial corridors to be developed. This will enable the identification of strategic locations for key industrial activities nodes at a sub-regional level.

3. LESSONS LEARNED FROM THE MORE ADVANCED ASEAN COUNTRIES

3.1. Common Development Theme

The more advanced ASEAN countries such as Indonesia, Malaysia and Thailand has benefitted from FDI since the 1960s and 1970s. This has enabled these countries to quickly industrialise themselves. FDI to the more advanced ASEAN nations accelerated due to the sustained investment promotion policies developed by these countries.

It was observed that the success of these more advanced ASEAN nations in attracting FDI was also based on a cluster development approach. FDI that came into these countries did not come alone and supporting industries followed their key industrial customers. Technological know-how was transferred with FDI and this has enabled these countries to start develop their own research design capability.

3.2. Common Issues

The more advanced ASEAN nations suffer from limited labour skills that need to be enhanced in order to make the workforce still attractive to investors. Labour laws and regulations must be seen as neutral while protecting the interest of both groups. Labour issues are becoming more critical on investors' decision to remain or move out of the more advanced ASEAN nations.

The more advanced ASEAN nations has been subject to competitive pressure from China and are starting to suffer from a loss of competitiveness. This loss of competitiveness is not solely based on labour cost or relationship issues but also because there is a lack of local innovation capability that could enable more capital intensive types of FDI thus transferring the more labour intensive production units to lower cost location such as the CLMV countries.

4. SUMMARY & POLICY RECOMMENDATIONS

"Hard" infrastructure in the CLMV is still an important issue but not as high as expected. The highest issues were more focused on the "soft" aspects of infrastructure, in particular those related to institutional complexity and improving service-links to connect fragmented production blocks. It is therefore of great importance for CLMV policies to be developed according to these recommendations proposed hereunder if CLMV countries are going to diversify their current industrial structure.

- A CLMV sub-regional cooperation framework is needed for investment policy coherence between and within countries. CLMV should be considered as a sub-regional grouping in its own right and marketed as a single investment destination.
- Existing policies, laws, regulations need to be implemented in a fair and transparent manner in order to convince foreign investors of equal treatment.
- Logistics linkages within CLMV must be improved for further integration that is based on key development corridor axis. These corridors need to achieve at least a logistics corridor development level in order to facilitate the efficient and effective flow and storage of goods, vehicles, people and information from origin to destination.
- The development of these corridors should be based on a supply chain/value chain development strategy that focuses on the integration of key identified industries or sectors. This will enable the establishment of industrial corridors with multinational firms FDI as a key driving force. There will be industrial corridors dedicated to supporting specific types of commodities as illustrated in the proposed list herebelow:

    - The key proposed industrial corridor for the automotive sector is:

        - Thailand-Lao-Vietnam (Hanoi)
    - The key proposed industrial corridors for electronics are:
        - Thailand-Malaysia (Penang)-Thailand
        - Thailand-Lao-Vietnam (Ho Chi Minh)-Thailand
        - Thailand-Cambodia-Vietnam (Ho Chi Minh)
    - The key proposed industrial corridors for the agro-industry are:
        - Thailand-Cambodia-Vietnam
        - Thailand-Lao-Vietnam
        - Thailand-Myanmar-Thailand
    - The key proposed industrial corridors for textiles and garments are:
        - Thailand-Lao-Thailand
        - Thailand-Cambodia-Vietnam
        - Indonesia-Cambodia-Vietnam

This list of proposed industrial corridors is not exhaustive and is based on the survey results of the more advanced ASEAN with CLMV countries and on their potential linkages in terms of having a fragmented production network approach.

The success of these industrial corridors will depend very much on the improvement of the service-links that will connect each key industrial node in the CLMV. These service-links need specific development policies if fragmentation is to be successful in the sub-region. Table 3 describes the types of policies needed to improve CLMV service-link.

In order for the fragmentation of production networks to occur in the CLMV countries, it is necessary that a holistic approach is taken in the decision to relocate labour intensive production blocks. This relocation cannot be solely based on labour cost or availability alone. A number of different criteria are taken into account with service-link capability becoming a main issue. The efficient and effective movement and storage of freight,

vehicles, people and information is representative of strong service-link connectivity. This improved service-link

Table 3: Service Link Related Policies

Perceived problems	Proposed Guidelines	Concrete Policies
Lack of adequate CLMV service links	Improve CLMV service links	• Accelerate establishment of service links within CLMV • Accelerate CLMV connectivity with outside markets
Uneven performance level between corridors	Develop common performance guidelines for industrial corridors	• Harmonised procedures • Standardised procedures • Transparent procedures
Uncertainties at key nodal points	Eliminate uncertainties at key nodal points	• Improve border facilities • Develop specific infrastructure required for identified freight flows
Limited understanding of industrial corridors concept	Convince investors of industrial corridor benefits	• Expansion of domestic market access • Improved regional and global market access • Facilitate establishment of a network of industrial zones along industrial corridors

Source: The author.

connectivity will support enhanced integration of production networks across the CLMV. Highly connected service-links plays a key role in the re-location decisions.

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