OUTWARD FOREIGN DIRECT INVESTMENT
THE CASE OF TAIWAN

BY

HENNESSEY HSING-SHIH CHIU

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ABSTRACT

Traditionally, most studies of foreign direct investment (FDI) have focused on investment flows of multinational companies (MNCs) from developed countries (DCs). However, some of the newly industrialized countries (NICs) are now manufacturing, importing and exporting high quality high technology products. Moreover, they have also begun to serve as the "home" countries for their own "multinational companies". Taiwan is such a country.

In this thesis, two FDI theories, namely the Product Life Cycle Theory and Eclectic Theory of International Production will be used to provide a theoretical framework for the general FDI theories regarding NICs. Some characteristics, competitive advantages, as well as motivations will be examined in reference to MNCs from NICs. Most of Taiwan's FDI can in fact be explained by these generalized theories.

Next, Taiwan is used as a real life example. Before looking into the overall experiences and pattern of FDI from Taiwan, its economic history will be studied first. Taiwan has taken an giant economic step in the last 30 years, moving from an agricultural economy in 1945 to an industrialized economy that currently plays an important role in the international business arena. Its success is attributed to its 18 million people's diligence as well as to the government's leadership.

Since 1971, Taiwan has been involved in outward foreign investment. The rate of FDI has further speeded up in the last past 5 years. At the end of 1983, Taiwan had most of its FDI in the United States.

Finally, the biggest private electronics company in Taiwan, Tatung Corp., and the biggest private enterprise in Taiwan, Formosa Plastics Group, are used to demonstrate the applicability of the FDI theory. Both market and resource seeking are the most important factors in pursuing FDI in the respective cases, which are similar motivation for most MNCs from DCs.

In conclusion, since NICs will begin to play an important role in the world economy, it is important for MNCs from DCs to understand their strengths so that they can best position themselves in the increasingly competitive world market.

Thesis Supervisor: Professor Denis F. Simon
Title: Professor of International Management, Sloan Management School
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I would like to dedicate this thesis to my parents for their con-
stant support, intellectual, emotional and financial. I would also like
to thank Professor Denis Simon for his invaluable comments and expertise
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notwithstanding his busy teaching schedule and various trips to Taiwan
and China.
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INTRODUCTION

Traditionally, most studies of foreign direct investment (FDI) have focused on investment flows of multinational companies from developed countries (DCs). Not until the past decade when a number of Third World countries emerged from their traditional economic status as sources of raw materials and cheap labor, and achieved high rates of GNP growth and productivity, e.g., Singapore, Taiwan and Korea, have the overseas investment activities of these newly industrialized countries (NICs) become an attraction.

These NICs are now manufacturing, importing and exporting high quality high technology products. More importantly, they have also begun to serve as the "home" countries for their own "multinational companies" (MNCs). Both the process of and motivation for FDI of these firms, though similar in some characteristics, may be different from the investment practices of the DCs' firms.

Since NICs will play a major role in the world economy, it is important to study the general FDI pattern of NICs. In particular, understanding the NICs' economic development and their overall process and motivation for FDI will prepare the MNCs of the DCs to meet their future competition as well as provide some kind of model for other less developed countries (LDCs).

In this thesis, the general FDI theories regarding NICs will be
examined first. Next, Taiwan will be considered as an example to demonstrate its successful economic development in the last three decades and increasingly important role in international business activities. Finally, two case studies will be used to demonstrate the internationalization process of MNCs from NICs. Thus, the purposes of this thesis are three-fold:

(1) To promote a better understanding of general FDI theories about NICs, from the existing FDI theories. The study will place special emphasis on the similarities and differences in comparing FDI from DCs with FDI from NICs.

(2) To examine the economic history of Taiwan in order to comprehend Taiwan's emergence from being a less developed Third World country to a newly industrialized country that exports high technology products and serves as a home base for many of its MNCs.

(3) To test the applicability of FDI theories to the case of Taiwan. In particular, to examine whether or not the theories apply to multinationals from Taiwan.

After the study, it was found that most FDI by NICs can be understood in the light of the existing FDI theories with some modifications. With consideration of the country's special characteristics, Taiwan further serves as a great example in demonstrating the pattern of FDI coming from NICs. Finally, the two case studies, namely Tatung Corp.
and Formosa Plastics Group, show a close relationship with the general FDI theories of NICs.

The thesis will be organized in the following way:

I. Introduction

II. Chapter 1: General Theory of Foreign Direct Investment from Newly Industrialized Countries

III. Chapter 2: Taiwan's Model of Economic Growth

IV. Chapter 3: Taiwan's Overall Experience with Outward Foreign Direct Investment

V. Chapter 4: Case Study—Formosa Plastics Group

VI. Chapter 5: Case Study—Tatung Corporation

VII. Conclusion
CHAPTER 1

GENERAL THEORY OF FOREIGN DIRECT INVESTMENT
FROM NEWLY INDUSTRIALIZED COUNTRIES

A. INTRODUCTION

Foreign investment by MNCs of DCs has been a phenomenon for the last three decades. Many existing theories have tried to explain the determinants of FDI by those MNCs, from DCs. In addition, another stream of FDI from newly industrialized countries was observed in the last decade. However, not until recent years, have scholars paid attention to this stream of FDI by NICs and tried to explain the determinants behind them.

FDI from either DCs or NICs, share some similarities but they contrast in many ways. This chapter will first examine the two major FDI theories of MNCs from DCs, namely the Product Life Cycle Theory and the Eclectic Theory of International Production. These theories used to explain the formation of FDI by MNCs from DCs will provide some insight and understanding of the formation of FDI by MNCs from NICs as well as explain how they relate to the formation of FDI by NICs. Next, the differences in the nature and characteristics of FDI coming from NICs, in comparison with FDI from DCs, will be examined. Finally, FDI in both nonmanufacturing and public sectors from NICs will be discussed briefly.

B. PRODUCT LIFE CYCLE THEORY
(1) The Underlying Assumptions:

-The flow of information across national borders is restricted.

-Products undergo predictable changes in their production and marketing characteristics over time.

-The production process is characterized by economies of scale, production changes over time and the tastes of consumers differ in different countries.

The important elements of the Product Life Cycle can be summarized in tabular form:

<table>
<thead>
<tr>
<th>Cycle Phase</th>
<th>Early</th>
<th>Growth</th>
<th>Mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Structure</td>
<td>Low price elasticity for aggregate demand and for individual firm.</td>
<td>Growing price elasticity for firm. Price competition begins.</td>
<td>Basis of competition is price or product differentiation through marketing techniques.</td>
</tr>
<tr>
<td>Industry Structure</td>
<td>Small number of firms.</td>
<td>Large number of firms, but many casualties and mergers.</td>
<td>Number of firms declining.</td>
</tr>
</tbody>
</table>

(2) The Explanation of Product Life Cycle Theory
On the basis of the underlying assumptions, the Product Life Cycle Theory can explain both the trade and FDI pattern for manufactured goods. It is said that a country will produce products reflecting the special characteristics of the home countries. That is, the local market demand will be the motivating force for product invention and/or innovation. The United States is characterized by its higher average income and higher unit labor cost. Thus, products for higher income consumers and labor saving devices will tend to be invented first in the United States. On the other hand, Japan is characterized by its lack of resources, and space. Thus, capital and space saving products are first invented in Japan. An example of each is a dishwasher from the United States and a small car from Japan.

(3) Location of Production

When the product is first introduced according to the domestic consumers' tastes, it is more likely to be produced domestically in order to better serve the market. Moreover, the demand for the new product is usually less price sensitive, thus, there is less pressure to look for an optimal production location to minimize the production cost. Gradually, as demand increases and the product becomes more price sensitive, achieving scale economies becomes desirable.

In order to achieve economy of scale, the firm, from either a DC, or NIC, has to increase its production volume and look for an export market. The primary export market for this firm will be the countries in less
advanced stages of industrialization. This is due to the fact that as the living standards of countries lower on the ladder of industrialization increase, and since the information on manufacturing the product is unavailable to other countries, foreigners will demand this same product invented in countries higher on the ladder. For example, products which formerly satisfied only American high income standards will now be demanded by European countries and Japan. This foreign demand is the beginning of a pattern of international trade in which a country will export products, produced solely within its borders, to other countries.

As demand increases and the product becomes more price sensitive, price competition begins. With standardized technology and low barriers to entry, not only does the number of domestic firms increase but also the possibility of local production by foreign firms increases. Consequently, firms will be forced to seek efficient production methods in order to remain competitive. As long as average unit production cost abroad is lower than domestic unit production cost, plus unit transportation cost, the firm will invest in the foreign country to better serve the market as well as to maintain its competitive edge internationally. This is the beginning of a pattern of foreign direct investment.

Furthermore, if a firm can find a country in which its production costs can be minimized, production overseas will not only serve this foreign market but also act as an offshore subsidiary exporting to other countries. In particular, unit production costs become very important for price sensitive products when the technological know-how has been
copied. Thus, when the demand structure or production technique has changed, the firm will exploit its firm specific advantage, namely the product, through exporting first, then engaging in FDI at a later date in order to exploit its advantages to the fullest extent.

Recently, the Product Life Cycle theory used to rationalize FDI of the manufacturing industries has been challenged by certain scholars. They challenge it because of the increasing convergence of the characteristics of different countries which make it possible to invest new products in any of the industrialized countries. The theory is, however, still sufficiently valid to explain the FDI from those NICs because the characteristics of NICs are still very different from those of less developed countries (LDCs) and from those of DCs. The theory asserts that firms from DCs and NICs will invent and innovate products that reflect their domestic consumers' tastes, and that they will further exploit their temporary monopolistic advantages first through export and later through FDI.

(4) The Choice of FDI vs. Licensing

The Product Life Cycle Theory does not explain why firms choose FDI instead of licensing as a way to exploit their firm specific advantages. One common attribute of manufactured goods is that the technology imbedded in the product can be copied or improved very easily. Licensing know-how, thus, does not seem to be a feasible way to exploit this firm specific advantage. Even if it were feasible, profits received from licensing
are usually less than those from actual FDI and, therefore, it is less desirable.

C. ECLECTIC THEORY OF INTERNATIONAL PRODUCTION

The Eclectic Theory of International Production (production financed by FDI) suggests that the propensity for a country's enterprises to engage in foreign direct investment is determined by three conditions, namely firm specific advantage, internalization and location preference.³

(1) Firm Specific Advantage (Ownership Advantage)

Firm specific advantages are those assets intrinsic to certain enterprises to which they alone have access and to which their competitors do not have the right of access. "Ownership advantages usually can be explained by reference to the theory of industrial organization and to the extent that market imperfections create barriers for competition."⁴ Examples of ownership advantage are:⁵

- Proprietary technology, trademarks
- Production, management, organizational and marketing system; R & D capacity; "bank" of human capital and experience
- Exclusive or favored access to inputs, for example, labor, natural resources, finance, and information
- Ability to obtain inputs on favored terms
- Government protection, for example, control of market entry
(2) **Internalization**

When firms have ownership advantages, the next consideration is whether it would pay these enterprises to exploit these proprietary advantages themselves. That is, whether the firm should internalize their use or sell them, or the right to use them, to foreign firms. The consideration, of course, will depend on the extent to which the market mechanism is capable of capturing the full economic rent of these advantages. Since every firm would like to maximize its profit, it will choose an available optimal method to exploit its advantages. Examples of internalization incentive advantages are:

- Avoidance of transaction and negotiating costs
- Avoidance of costs in enforcing property rights
- Need of seller to protect quality of products
- Avoidance or exploitation of government intervention, i.e., quotas, tariffs, price controls, and so forth.

(3) **Location Preference**

After a firm has ownership advantage and is able to choose to internalize this advantage, it faces the additional decision of whether it would like to locate at least part of the production of the output generated by its advantages outside of its home country. Of course, this will depend on certain relative factors, including transport cost, productivity, market characteristics and government policies, of the alternative loca-
Examples of location variables that must be considered before moving a production plant abroad are:  

- Input prices, quality and productivity  
- Transport, communication availability and costs  
- Government intervention  
- Control of imports, including new tariff barriers, tax rates, incentives, climate for investment, political stability, and so forth  
- Infrastructure (commercial, legal and transportation)  
- Psychic distance (language, cultural and customs differences).

The Eclectic Theory not only explains the process of FDI by MNCs from DCs but also explains how a MNC decides to exploit its proprietary advantage through either exporting, contractual resource transfers (i.e., licensing, management contracts and technical service agreements) or FDI. Since firms located in DCs are most likely to have firm specific advantages, the conditions determining the forms of foreign involvement by enterprises from DCs will be studied. A summary of conditions follows:

<table>
<thead>
<tr>
<th>Route of Investment</th>
<th>Advantages</th>
<th>Ownership</th>
<th>Internalization</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign direct</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Servicing</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Market</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>
Though the Eclectic Theory of International Production is used to explain FDI of MNCs from DCs, it can be used to explain FDI of MNCs from NICs as well. So long as firms from NICs meet the conditions of having firm specific advantages, internalization and location preference, they will pursue FDI as MNCs from DCs do.

When NICs invest directly in other countries, they follow two routes: (1) less developed countries (LDCs) and other NICs and (2) developed countries. Similar to most of the industrialized countries that invest in other industrialized countries or in countries lower on the ladder of industrialization namely the NICs and LDCs, NICs invest in other NICs and in LDCs to exploit their ownership advantages. NICs invest in LDCs and other NICs either to take advantage of the local market elements, i.e., an even cheaper labor supply or to expand their markets. Their ownership specific advantages and their characteristics in business are different compared with those of MNCs from DCs. Nevertheless, their motivations in trying to capture the maximum economic rents of their proprietary advantages are the same. On the other hand, when MNCs of NICs invest in DCs, their motivations are based more on long-term strategic considerations than on pure exploitation of their ownership advantages. The strategic planning may include: technology seeking, resources seeking, penetration of the low end market, capital outflow movement and supporting export facilities.

D. DIFFERENT OWNERSHIP SPECIFIC ADVANTAGES OF MNCS FROM NICS
(1) **Small Scale**

Firms from NICs usually have technology for a smaller scale of production due to the small size of their domestic markets. Since the industrialized countries have achieved mass production and economies of scale, they usually have a problem of overcapacity, and thus higher production costs. The small market size of less developed countries can not absorb an overcapacity. Since most NICs have a similar market size and may have innovated the mass production technology earlier to fit their own needs, the technology introduced by NICs thus will be more suitable for LDCs and other NICs. It will, thus, be more economical than that introduced by industrialized countries.

(2) **Labor Intensity**

Due to both the abundance of labor and the lower domestic capital labor ratio, NICs also tend to introduce production methods that are more labor intensive. This may be attractive from the less developed and other newly industrialized countries' viewpoint for LDCs and NICs have also more labor and less capital domestically. Implementing a more labor intensive technology in LDCs not only provides more employment opportunities for local workers but also reduces the unit production cost, providing the local labor cost is cheap.
(3) **Flexibility**

Another phenomenon observed in most of the investment by NICs is its flexibility. In order to compete effectively with both MNCs from DCs and local firms, MNCs from NICs have to be very efficient. In many cases, multi-functional machinery is used instead of more sophisticated but standardized machinery. When multi-functional machines are used, it is possible to shift production to meet many different kinds of but small local demand. Sometimes the flexibility may result from the more labor intensive production method as well as from the smaller scale of production, since laborers are more flexible than machines and smaller scale production is more flexible than large scale. Being flexible, firms are able to respond to market demand sooner and more cheaply than MNCs from DCs can respond. This is one of the major competitive edges provided by MNCs from NICs.

(4) **Price Sensitive Market**

Due to both the lower technology imbedded with in the product and the lower unit production cost, most of the NICs' products are regarded as being lower in quality and are priced competitively at the low end of the market. MNCs from NICs use less sophisticated technology; they engage in little R & D and employ less marketing and advertising techniques. However, being price competitive, although with products lower in quality, provides firms from NICs
certain market niches, especially in serving the poorer LDCs. NICs are further well positioned to penetrate the low end, price sensitive market in the DCs.

(5) Other Special Advantages

NICs' MNCs may also have ownership advantages over firms from DCs in serving LDCs and other NICs, because they may have similarities in physical environment and natural resources. Products developed by NICs will have features which well more closely meet the market demand of other LDCs and NICs, in which the physical environment is similar to that of the investing country, i.e., temperature resistant products. Furthermore, the similarities in natural resources may give the investing countries certain advantages, i.e., rice as main course is true for all the Southeast Asian rice-growing countries. These similarities provide NICs in the same region with a competitive edge in serving host countries, e.g., one Taiwan firm is very successful in selling its rice cookers and electric fans among Southeast Asian countries.

E. CHARACTERISTICS OF FDI FROM MNCS OF NICS

(1) Proximity of Location

It is observed that most of the FDI by MNCs from NICs occurs around their own home countries, i.e., countries like Taiwan and Hong Kong have many investments in the ASEAN region; NICs such as
Brazil and Mexico tend to invest in other Latin American countries. This phenomenon perhaps can be explained by the fact that information about the neighboring countries is easier to gather before the outward investment takes place as well as by the fact that geographical proximity and similarity in culture are advantages in the process of FDI. This is also observed at the advanced countries' first stage of outward investment, i.e., U.S. FDI was first placed in Canada, then in Britain. Nevertheless, due to both geographic and cultural proximity, many of the NICs remain at the stage of FDI for a longer period of time than DCs do.

(2) Ownership

NICs are more likely to engage in joint ventures with local partners, in either the private or public sector. This can be explained by the fact that MNCs from NICs

(a) are less risk seeking

(b) have less financial support from its parent company

(c) are less sophisticated in marketing and distribution channels (so that a local partner who is familiar with the local market is desirable)

(d) are more afraid of local hostility from either consumers or government

(e) have less conflict with local partner since they are less sophisticated in marketing and management skill and they seldomly include foreign subsidiaries as part of their global strategy

(g) are more likely to leave their foreign subsidiary as an
independent unit, thus 100% ownership is required to be included in its parent's global strategy in planning for production and transferring resources.

(3) Export/Import Ratio

Investments by NICs abroad, especially in LDCs, aim mostly at serving the local market while most investment by DCs in less developed countries are in offshore production plants. Investments of many U.S. and European MNCs in the developing countries are responsible for only one stage of production, usually the labor intensive stage. However, investment by NICs is intended for manufacturing complete products for export or sale on the local market. Therefore, the export rate from subsidiaries of newly industrialized countries' MNCs is considerably lower than that of MNCs of developed countries.

Furthermore, since MNCs from NICs have been exposed to the new technology for a longer period of time than the LDCs, they are more likely to develop technology that substitutes expensive imported input with local resources. Thus, the percentage of local material used by NICs' MNCs is higher than that of the DC counterparts and the import ratio for input materials is lower for firms of NICs.

(4) Capital/Labor Ratio

As mentioned before, because of the more labor intensive skills introduced into the LDCs by NICs, the capital/labor ratio is relatively low for FDI by MNCs of NICs. Moreover, because more labor is
used, there is further need for MNCs from NICs to hire more local managers to be in charge of the local workers. Thus, MNCs from NICs tend to hire more local workers for both management level and lower positions in LDCs.

(5) Ethnic Groups

When one observes FDI in ASEAN countries, an interesting point is the inter-investment by people having the same ethnic origin, especially the dominance of Chinese and Indians. Many of the investments in the Asian countries are made by Chinese or Indians due to their large networks spread throughout Southeast Asia. (However, this is not generally true for FDI in Latin America.) Investment among ethnic groups usually has the advantage of there being no cultural and language barriers between the parties involved.

F. NIC'S MOTIVATIONS FOR FDI

(1) FDI in LDCs and NICs

Besides some differences in certain characteristics and firm specific advantages between MNCs from DCs and NICs, motivations toward FDI across or lower on the ladder of industrialization are quite similar between MNCs from DCs and NICs.

(a) Market Seeking and Market Defense
MNCs from NICs usually invest in countries where they formerly supplied by export. In order to get close to the market as well as to respond to competitors' attempts to enter the market, firms from NICs may decide to invest in certain manufacturing, sales and/or marketing functions overseas. However, it is also possible for MNCs from NICs to enter a market for the first time by establishing a foreign subsidiary if market information is available at no or little cost. In this case, the firm will not go through the process of export first.

(b) Resource Seeking

A MNC from a NIC may also invest abroad to secure supplies of raw materials. A firm seeking for backward integration will not only attain a higher profit margin but also provide a stable production schedule. For example, a plywood manufacturer invested in Indonesia to secure its supply of plywood locally. Investing in a local manufacturing facility sometimes prevents the local government from accusing the foreign firm of exploiting local resources.

(c) More Efficient Production Methods and Lower Cost Production

Firms from NICs may also set up manufacturing facilities in LDCs to take advantages of their lower labor or land costs, i.e., offshore factories from Hong Kong are especially common in most of the Asian countries. Their production from offshore plants is mainly for export to developed countries. Thus, seeking more cost
efficient production methods is also a motivation for NICs to invest in LDCs.

(d) **Family and Ethnic Ties**

Because of the strong ties among Chinese and Indian ethnic groups in ASEAN countries and because of the strong extended family system among those of Chinese origin, an overseas investment may take place because of ethnic or family connections. Foreign investment may be established for the purpose of training a family member or simply as a way to distribute power among family members. Investment opportunities may also arise through ethnic connections. Ethnic and family ties are less likely to be the reasons for MNCs from DCs to invest abroad.

(e) **Political Reasons**

Another motivation for NICs to engage in FDI is the consideration of political reasons and/or government regulations. Countries like Hong Kong or Taiwan may face political uncertainty from the threat of being taken over by the People's Republic of China. For other NICs, there may still be the problem of political or economic instability. Thus firms from NICs may want to invest in other countries in order to diversify their risks. Furthermore, governments may regulate capital outflow. Thus, firms may invest abroad as a means of transferring some of their capital out of the country. Though many LDCs are even more unstable, both politically and econo-
mically, than many NICs, this strategy is still better than putting all eggs into one basket.

(2) FDI in DCs

While firms from NICs, by and large will have similar firm specific advantages and characteristics as discussed above, their motivations for investment in DCs may be different from those regarding investment in LDCs or other NICs. Besides the typical motivations of market seeking or resource seeking due to the larger domestic market and more abundant natural resources available in developed countries, NICs especially will invest in DCs for purposes such as acquiring technology, export support facilities, diversification and circumvention of trade barriers.

(a) Acquiring Technology

In order to get closer to technology, many NICs have invested in the United States or Europe by acquiring a company or through joint venture. This is especially true for high-tech industries. Many Taiwan and Korean firms have invested in Silicon Valley ranging from technical contracts to fully-owned subsidiaries. Being in the market and at the location where technology takes place is the best way for NICs to learn the new technology and gather market information.

(b) Supporting Export Facilities
This is also an extension of the exporting process. Many NICs with the comparative advantage of a cheaper but efficient labor input factor export their industrial products to DCs by penetrating the low end of the market. After the export market has been established, they will further build a sales agency, a simple assembly plant or some kind of after-sales service in extending their forward vertical integration process and increasing their competitiveness. Many electronic appliance manufacturing plants in the United States are owned by electronic firms from Asian countries following their export operation to the United States.

(c) Diversification Effect

Because both the political and economic situation in NICs may still be unstable, it is desirable for firms from NICs to invest in stable DCs. Though this might not be the major reason, for firms from NICs, it is a typical motivation for investment to occur. Besides taking out capital and investing in a stable environment, it is further true that factors affecting DCs' and NICs' economies are very different. Thus, there will be some diversification effect from having investments in both NICs and DCs.

(d) Circumventing the Trade Barriers

In a period of increasing national trade protectionism, especially for the labor intensive and low technology industries, governments of DCs are likely to impose trade barriers, i.e., tariffs and
quotas upon NICs and LDCs to protect their own home industries. Cases such as imposing import tariffs and quotas on footwear, textiles and TV sets by the U.S. government upon Southeast Asian countries are the most recent examples. Firms from NICs will sometimes set up manufacturing plants in the DCs in order to circumvent the trade barriers. These plants usually import most of the labor intensive components from their home countries and finish the final assembly procedures locally.

In summary, although motivations of MNCs from NICs to invest in either DCs or LDCs and other NICs are somewhat similar and overlapping, the main differences are in competition and the nature of the market faced by NICs when entering the DC versus LDC markets. In general, DC markets are more competitive and market-oriented while LDC markets are less competitive and practical-usage oriented. The less favorable economic condition in LDCs and the stability of DCs also play an important role in affecting NICs' decisions regarding FDI. NICs would like to invest in the DCs to take the advantages of their stable environment. NICs would like to invest in LDCs in responding to their poverty.

A modern and complete Foreign Direct Investment theory should not only explain the motivation for FDI and the process of FDI but also how a firm successfully competes in a foreign environment. A firm must have advantages so that the disadvantages of functioning in an unfamiliar and distant location will be offset. Furthermore, the FDI theory of NICs should also provide an explanation of how a MNC from a NIC can compete
successfully with firms from DCs as well as with firms from LDCs and other NICs.

G. COMPETITIVE ADVANTAGES OF NICs

(1) MNCs from NICs over MNCs from DCs in Serving LDCs and NICs

MNCs from NICs have a competitive edge over those from DCs in serving LDCs and other NICs. They usually provide a more suitable technology through innovation and prior adaptation. NICs play important roles as intermediaries in technology transfer from DCs to LDCs and other NICs. Sometimes, because of ethnic and family ties, MNCs from NICs have better local connections and receive better treatment than firms from DCs. Firms from NICs also have a better understanding of LDCs and NICs than their counterparts from DCs. It is thus true that firms from NICs are able to adapt to the local environment more easily because of their greater flexibility and adaptability. Furthermore, management and technical staffs sent by MNCs from NICs are paid lower wages.

As the result of all the above factors, firms from NICs have a competitive edge over firms from DCs due to their more "appropriate" technologies, lower administrative expenses, lower production costs and greater flexibility in serving LDCs and other NICs.

(2) of MNCs from NICs over local firms in serving LDCs and NICs
Analogous to the situation of DCs serving NICs and LDCs, MNCs from NICs have the appropriate technology and more advanced techniques to be competitive in LDCs and other NICs. Furthermore, firms from NICs claim that they have greater experience in operation and production and have better management skills compared to local firms. Also their flexibility and adaptability from past experiences give them further advantages over local firms.

(3) MNCs from NICs over local firms and other MNCs from DCs in serving DCs

By working effectively, NICs are successful in penetrating the low end market in many DCs. Although their product quality may be low or mediocre, they will move up to higher quality once the learning effect takes place. Firms from NICs have cheap labor, low R&D, low management salaries management and they put less emphasis on marketing, advertising and brand names. As a consequence, they can save a lot of money throughout the value added chain and can afford to be very price competitive.

So far only the FDI from NICs' private manufacturing sectors has been discussed in terms of their process of FDI, motivations for FDI, differences compared with FDI from DCs and advantages they have over MNCs from DCs and local firms. A brief discussion of FDI from NICs' public sectors as well as from NICs' non-manufacturing sectors will follow.

H. FDI FROM PUBLIC SECTORS OF NICS
(1) Motivation

The public sector enterprises, like all government bureaucracies, are supposed to be the instruments for achieving national objectives, which are not merely economic but social and political as well. Five sets of motivations can be identified.

(a) Protecting Existing Markets or Searching for New Markets

Public sector enterprises may have started overseas subsidiaries or joint ventures for their existing export markets that were threatened by the import substitution policies of the host government or the entry of new competitors. Public sector enterprises may also enter new markets by setting up foreign subsidiaries as private manufacturing firms do.

(b) The Sale of Technology

Public enterprises have been able to adapt or modify technologies originally secured from industrialized nations. While the process of adaptation and innovation has been slow, they would like to make the acquired technology available to other developing countries.

(3) Access to Raw Materials

Many NICs such as Brazil, Hong Kong, South Korea and Taiwan have begun to experience a shortage of materials, especially oil
and minerals. Facing not only the problem of high price but also uncertainty regarding supplies of materials, many government enterprises of those countries have joined with other countries in projects to exploit oil or natural minerals and to attempt to prevent over dependence on MNCs from DCs.

(d) Rational Utilization of Productive Resources at Binational and Regional Levels

In trying to achieve economies of scale or to accomplish projects that one single country is too small to undertake, two countries may enter a joint venture by pooling and utilizing their human and material resources productively, as to achieve a common goal.

(e) Political Objectives

NICs are likely to use overseas investments by their public enterprises to initiate and strengthen political relations with other countries. Many political considerations have affected the decisions about FDI by public sector enterprises. Sometimes a country, e.g., Taiwan, will use its public sector enterprises as working substitutes for political relations.

(2) Strengths and Weaknesses of FDI by Public Sector Enterprises

(a) Strengths
Public sector enterprises normally have accumulated significant technological expertise through their adaptation and innovation processes. Public sector enterprises are more competitive than those of the private sector since they receive government assistance or cooperation easily. They can use government bureaucracies in initiating or administering foreign projects and they are less likely to fail in fulfillment of their foreign obligations.

(2) Weaknesses

Because of the potential for bureaucratic intervention, public sector enterprises are likely to be poorly managed. In addition, they may be protected and enjoy a certain kind of monopolistic position in their home market, thus, they may function inefficiently. Also, public sector enterprises' capital and technology might be limited and restricted to certain industries, depending on the government's interests.

I. FDI BY NONMANUFACTURING FIRMS FROM NICS

While both the modified Product Life Cycle and Eclectic theories provide a fairly powerful tool for understanding the FDIs of manufacturing firms based in NICs, much FDI of NICs came from nonmanufacturing sectors. Banks, engineering consultancies and construction firms are typical nonmanufacturing firms which engage in FDI. Their motivations are quite
similar to those which led to the internationalization of nonmanufacturing firms from the industrialized countries.

Banks established their foreign subsidiaries long ago to serve (i) their home firms (ii) foreign firms and (iii) their own needs. By following their customers into import and export production, serving foreign customers conducting business domestically and assisting their own operations by placing funds overseas (in foreign markets), banks from most of the NICs have representatives, branches or foreign subsidiaries throughout the world.

Engineering consultancies and construction firms fall into different categories. Although they are in service sectors, engineering and construction firms from NICs are actually exporting the factors of production, namely the technical skill and low-paid manual work forces. Their principle advantage is their ability to offer adequate human factors of production at a low cost to LDCs.

J. CONCLUSION

The formation of FDI by NICs can be explained by the Product Life Cycle theory and the Eclectic Theory of International Production with some modifications. MNCs from NICs usually have the general advantages of being small in production scale, more labor intensive, more flexible and more price competitive. Other special advantages may include geographical
or cultural similarities. These advantages provide MNCs of NICs competitive edges in serving both DCs and LDCs to a different extent.

Other characteristics that MNCs from NICs may have are: the physical proximity factor in choosing a foreign location; ownership structure in engaging in FDI, which has a greater tendency toward joint ventures; lower export and lower raw material import ratio for the FDI; lower capital/labor ratio and connections with local ethnic groups. Since most of these characteristics are found in MNCs serving the LDCs, whether these characteristics apply to MNCs from NICs serving the DCs is still unknown.

Next, the motivations for MNCs from NICs are studied. Due to the difference in nature of a DC and a LDC, motivations for NICs to invest in DCs versus LDCs are slightly different. Besides the common motivation for seeking new markets or protecting existing markets, NICs may also invest in LDCs to exploit local resources or local labor. Furthermore, NICs may invest in LDCs simply because of family or ethnic ties or for some other political or government regulatory reasons.

On the other hand, NICs invest in DCs for more strategic reasons: either to circumvent a trade barrier or to seek the newest technology. In addition, both a diversifying effect and better service of local market were also achieved by NICs when investing in DCs.

Finally, the advantages NICs have in serving the DCs and LDCs may be
different. Basically, NICs are able to exploit their advantages either in technology or the production process in the LDCs. In contrast, NICs provide the right product at a very competitive price when they enter the DCs. Since all the advantages are relative to the local firms, one feature of MNCs from NICs is their flexibility in reacting to different situations.

After this discussion of the general theory of FDI from NICs, the real life example of Taiwan will be examined. Does Taiwan have similar advantages when serving LDCs and DCs? Do most of the characteristics of MNCs from NICs hold true for the Taiwan case? What are its motivations for investing in both LDCs and DCs? All these questions will be examined in the following chapters. However, before looking into the general pattern and experience of Taiwan's outward FDI, its economic development and industrialization process will be presented. After all, the success story of the Taiwan economy is well known, but it will provide readers more insight into the process of its internationalization.
Chapter 1 Notes


2) Ibid., p. 10.


4) Ibid., p. 2.

5) Ibid., P. 3.

6) Ibid., p. 3.

7) Ibid., p. 3.

8) Ibid., p. 4.

A. INTRODUCTION

The economic development in the Republic of China (Taiwan) over the last three decades has been astonishing. Rapid growth has been accompanied by stable prices and a high employment rate, and improved income distribution. Before the Second World War, Taiwan was strictly an agricultural society under the Japanese Empire. Adopting a policy which uses agriculture to support industrialization, Taiwan has made a very smooth and fast transition from being an agricultural society to an industrialized country. In order to understand the economic development of Taiwan, it will be examined period by period with special emphasis on agricultural, industrial and governmental policy changes. Perhaps, the industrialization experience of Taiwan can explain the economic miracle it has achieved as well as serve as a model for other developing countries.

Five periods, namely the colonical, recovery and transition, import substitution, export orientation and prosperity will be looked at. At the conclusion, some suggestions on the outlook for the future will be made.

B. COLONIAL PERIOD 1895-1945

In 1895 when the Japanese annexation began, Taiwan's population was roughly 2.6 million, including a small proportion of aborigines. At
least 95% were Chinese immigrants and their descendants. During the colonial period, Taiwan was an important part of the agricultural sector for the Japanese economy. At the same time, Japan imported all the industrial goods, i.e., textiles, soaps and leather goods to Taiwan. Subsistence agriculture into a more productive sector. Substantial food surpluses would be produced and transferred to Japan to support its industrialization effort, while no attention was paid to the distribution of land and wealth among the tenants and landlords. During the colonial era, new agricultural techniques such as the widespread use of chemical fertilizer and irrigation plus a new variety of rice were introduced to increase agricultural output. Since rice, sweet potatoes and sugar accounted for about 85% of total agricultural production, there was not too much variety in crops. A number of rural institutions were established to formulate and implement agricultural technology, particularly in the domains of agricultural research, i.e., farmers' associations and rural credit extension.

In addition to agricultural improvements, the Japanese government built a systematic transportation infrastructure, i.e., railways and roads, in order to facilitate transportation. During the Second World War, when the Japanese sensed the importance of Taiwan's strategic location, some basic industries, including cement, chemicals, pulp and paper, fertilizer and petroleum refining, were more heavily invested. Nevertheless, Allied bombings had caused substantial destruction to both the industrial plant and physical infrastructure.
In summary, during the colonial period, Taiwan served as an agricul-
tural source by transferring resources, especially rice, sugar and
certain processed foods, to Japan. Some basic industries as well as a
simple transportation network were established but were left in bad con-
dition by the Japanese after World War Two. On the other hand, Taiwan's
agriculture in the pre- World War Two period was, however, characterized
by the facts that land was unequally distributed, and the majority of the
farmers were tenants rather than owner-cultivators.

C. RECOVERY and TRANSITION 1945-1949-1953

After the defeat of Japan in World War Two in 1945, about thirty
thousand Japanese technicians, administrators and professionals left
Taiwan. Major large-scale industries were left unattended and faced the
consequence of being destroyed. But more important than the question of
physical destruction was the time required to rebuild the remaining
industries and the shortage of expertise. Three additional major shocks
were the retrocession of Taiwan to China in 1945, followed shortly there-
after by civil war, and the evacuation of the Nationalist Chinese govern-
ment and its armed forces to Taiwan.

During the period 1945-1949, there was civil war between Nationalist
and Communist parties in Mainland China. Taiwan not only received no
support from the Chinese government but also immediately had to shift
its agricultural export support from the Japanese market to the internal
Chinese market. The rehabilitation of industries was very slow since no
experienced Taiwanese technicians were available and there was no systematic planning by the government. Nevertheless, some import substitution industries had started. Because of the rupture of its colonial links with Japan, Taiwan was forced to produce domestically such essential consumer items as textiles, leather goods, soaps and oils, which formerly had been imported from Japan. Consequently, agriculture and import substitution industries were the characteristic economic activities during 1945-1949.

Because of the relocation of the central government and its military forces and the flight of hundreds of thousands of mainlanders unwilling to remain under communist rule, Taiwan experienced a sudden population increase and an unstable economy with hyperinflation in the late 40s and early 50s. However, immediate policy planning and implementation for both the agricultural and industrial sectors were undertaken by the central government after the settlement. Their goal was to achieve both economic growth and improved income distribution. The main factors contributing to the growth and improved income distribution in the agricultural sector were (1) land reform, (2) reorganization of the institutional infrastructure, and (3) agricultural pricing policy.\(^3\)

(1) Land Reform

Although the Japanese had developed a substantial agricultural infrastructure in Taiwan, they had paid relatively little attention to the distribution of land. The record of landlord abuse and the need to
meet the great demands of postwar Taiwan—including hundreds of thousands of mainland Chinese, in addition to its own increased population—laid the groundwork for reform. Three packages of land reform: (i) the program to reduce farm rents, (ii) the sale of public lands and (iii) the "land to the tiller" program were implemented.

By reducing the farm rents, the tenant farmers' share of crop yields thus increased. With higher yield and low rents, the average income of tenant farmers rose by 81% between 1949 and 1952. These rising incomes enabled tenants to purchase land put up for sale by their landlords as well as by the government—about 25% of Taiwan's arable land had formerly been owned by the Japanese. The public land sale program gave priority in land purchases to cultivators of public land and landless tenants with reasonable prices and installment payments.

With the government setting the example of returning land to the tiller, the compulsory sale by landlords followed. Landlords who owned land in excess of specified amounts were forced to sell to the government which in turn resold it to tenants. "Landlords were compensated both in land bonds denominated in kind and in industrial stock of public enterprises previously owned by the Japanese." This in turn helped transfer the public enterprises' ownership to private owners. The "land to the tiller" program not only encouraged new owner-cultivators to work harder because they would benefit from any increases in agricultural output but also encouraged landlords to participate in the industrial development of Taiwan through ownership of formerly Japanese owned industrial enterprises.
(2) Reorganization of Industrial Infrastructure

The institutional infrastructure of Taiwan's agricultural sector was extensively reorganized and improved during the 1950s. The farmers' associations and credit cooperatives, set up by the Japanese, were top-down organizations dominated by landlords and nonfarmers. As a result, most farmers did not directly benefit from them. In 1952, the government reorganized these institutions to restrict them to farmers so as to serve their interests. A credit department was formed to accept deposits and make loans to farmers. The other major institutional reform was the establishment of the Joint Commission on Rural Reconstruction (JCRR) by the U.S. Congress in 1948. Its main functions "were to allocate U.S. aid; to provide technical assistance; and to help the government plan and coordinate programs for agricultural extension, research and experimentation." Thus, while the farmers' association provided the organizational structure at the local level and facilitated the flow of agricultural surpluses to the industrial sector, the JCRR funded and initiated many new farming techniques, and introduced new crops and new markets.

(3) Agricultural Pricing Policy

Three agricultural pricing policies were implemented during this period and remained effective thereafter. First, the government was able to stabilize the price of rice through compulsory rice collection and control of rice supply. Second, the "hidden rice tax" was collected by the government through the land tax, the rice fertilizer system and the
purchase and collection of rice at a price relatively lower than the market price. Third, by offering guaranteed prices for sugar cane, corn, mushrooms, asparagus and so on, the government encouraged the production of crops other than rice. As the result of the agricultural pricing policies, rice production underwent a relative decline and other higher-value agricultural production increased instead. This change of agricultural structure and intense agricultural diversification provided a basis for the development of food processing operations and export expansion later on in the 1960's.

D. IMPORT SUBSTITUTION 1953-1961

After the recovery and transition period of 1945-1953, most of the infrastructure for economic development, both agricultural and industrial, had geared up. Both the productivity and output of the agricultural sector grew at a satisfactory rate. As far as the industrial sector was concerned, food processing industries and import subsitution industries were of paramount importance.

With the continuing growth of the agricultural sector, Taiwan experienced an even more rapid growth in its industrial sector during 1953-1961. Agricultural output increased by 59% but had continually shifted its concentration from commodity crops, i.e., rice and sweet potatoes, toward higher value added and more labor intensive products, i.e., vegetables and fruits. In the meantime, even with the mechanization of agriculture, employment in the agricultural sector remained at a high
level. The importance of having both continuous growth and a stable employment rate in the agricultural sector was that this growth provided not only support for growth in the industrial sector but also kept the employment level stable. The stable employment level, in turn, kept the unskilled labor wage rate relatively low in comparison to that of other countries.

The industrial output tripled and the importance of industry in the GNP rose steadily by about 1% per year during this period. This was reflected in the increasing importance of such consumer goods industries as textiles, apparel, wood and leather products, and bicycles. As is typical for developing countries, Taiwan's initial industrial spurt in 1950 was largely based on primary import substitution. Taiwan was confronted by the need to focus attention and resources on the expansion of consumer goods industries to supply the domestic market. The pressure was even stronger due to the termination of its traditional primary and processed agricultural export market to Japan as well as its source of supply of imported industrial consumer goods from Japan, combined with the unusually heavy import requirements of military preparedness for the Nationalist party in Taiwan.

The policies employed to expedite import substitution during this period were the customary mix of exchange controls, import licensing, protective tariffs and multiple exchange rates. An unusual phenomenon was the substantial amount of industrial production issuing from the public sector, 57% in 1952. This pattern was mainly a consequence
of the Chinese takeover of Japanese assets at the end of World War Two. In addition, before the movement of the central government from the mainland, the Nationalist government dismantled and shipped industrial equipment and in some cases entire enterprises to Taiwan. Firms under public ownership, however, were inefficient, overstaffed, bureaucratic and operated under rigid pay structures.

The goal of the government was to transfer public enterprises to private ownership. Even though private buyers were difficult to find due to both the lack of accumulated wealth and entrepreneurial expertise, some ownership was transferred to landlords as partial payment under the land to tiller program. As the result of this transfer, the government-owned share of industrial production fell from 56.6% in 1952 to 48.2% in 1961. Industries remaining in the public sector included utilities, railroads, shipbuilding and iron and steel. Thus, despite the substantial drop in government ownership, public control of assets continued to be important and was especially concentrated in the most capital intensive industries.

Next, the composition of private industries during the import substitution period will be examined. Because of the lack of capital and technology common to every developing country, import substitution began with emphasis on the replacement of imported nondurable consumer goods by domestic production. Furthermore, with the availability of abundant unskilled labor, industrial growth took place in the more labor-intensive nondurable consumer goods industries. In addition, the intersectoral
balanced growth between the agricultural and nonagricultural sectors was observed through: (1) continuous agricultural growth provided on ample wage base to prevent industrial wages from rising prematurely. (2) A relatively strong domestic market for consumer goods was assured through the increased income from the agricultural sector. (3) The land reform program assured previous landlords of participation of industrial activities.

The agricultural sector had came to play a secondary role to Taiwan’s industrialization. In Chinese terminology, "developing agriculture by means of industry and fostering industry by virtue of agriculture". The percentage of food processing industries, i.e., sugar, pineapple, mushroom, and asparagus, decreased continuously while industries like textiles, rubber and leather goods, wood products and bicycles climbed steadily. Table 2.1 indicates the shifts in the direction of agriculture-related industry to nonagricultural and manufacturing industries.

Table 2.1: Annual Rate of Growth of the Industrial Sector (in %)

<table>
<thead>
<tr>
<th></th>
<th>manufacturing</th>
<th>food processing</th>
<th>textile and leather goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953-58</td>
<td>8.9</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>1958-63</td>
<td>12.6</td>
<td>3.7</td>
<td>13.4</td>
</tr>
<tr>
<td>1963-68</td>
<td>19.7</td>
<td>6.9</td>
<td>24.3</td>
</tr>
<tr>
<td>1968-72</td>
<td>23.1</td>
<td>6.9</td>
<td>26.4</td>
</tr>
</tbody>
</table>

Source: EPC, Executive Yuan, "Taiwan Economic Statistics," Industrial of Free China

In summary, Taiwan had achieved a smooth transition during 1953-1961,
moving from an agriculture-dominated economy to an industrial economy with emphasis on import substitution, particularly light nondurable consumer goods. When the domestic market for nondurable consumer goods became gradually saturated, Taiwan faced another stage in its economic development.

E. EXPORT ORIENTATION 1961-1972

Once the domestic market for nondurable consumer goods became saturated, the government faced two options: (1) continue the existing policy by moving into secondary import substitution, that is, increase domestic production of previously imported capital goods and durable consumer goods and the domestic processing of intermediate goods or (2) increase the relative concentration on the manufacture of nondurable consumer goods, but directed into international markets, that is, export oriented substitutions. The decision was made to penetrate the foreign market with products of Taiwan's labor-intensive consumer goods industry because of (1) the still abundant supply of unskilled labor and (2) the private sector's reluctance to move into industries that required large capital investment and that had a sluggish low rate of return. Thus, Taiwan had shifted its export composition from domestic raw-material based industries, i.e., sugar and mushroom processing, to market oriented imported raw material based industries, e.g., textile, leather and footwear.

Though the economy grew rapidly during the 1950s, the 1960s were characterized by an even more rapid growth rate. The per capita income
growth rate was 2.7% annually in the 50s and 5.8% in the 60s. The industrial annual growth rate was 10% in the 1950s and 20% in the 1960s. As a consequence, the relative position of industry was rapidly displacing that of agriculture in terms of relative quantitative importance over time.

As participation in world trade increased rapidly, the export substituting industries gained dramatically in importance. Between 1961 and 1972 exports of goods and services rose from 12.8% to nearly 42.7% of GDP and the share of industrial products—primarily nondurable consumer goods—in exports increased from 41% to 83%. (see Table 2.2)

Table 2.2: Industrial Growth and Changes in the Structure of Trade, 1961-1972

<table>
<thead>
<tr>
<th>Year</th>
<th>Share of Industry in NDP</th>
<th>Share of Consumption Goods in Imports</th>
<th>Share of Exports in GDP</th>
<th>Share of Industrial Products in Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>24.7</td>
<td>9.9</td>
<td>12.8</td>
<td>41.0</td>
</tr>
<tr>
<td>1962</td>
<td>25.5</td>
<td>8.2</td>
<td>13.0</td>
<td>50.5</td>
</tr>
<tr>
<td>1963</td>
<td>27.8</td>
<td>6.4</td>
<td>17.6</td>
<td>41.0</td>
</tr>
<tr>
<td>1964</td>
<td>28.0</td>
<td>6.1</td>
<td>18.7</td>
<td>42.5</td>
</tr>
<tr>
<td>1965</td>
<td>28.1</td>
<td>5.2</td>
<td>18.3</td>
<td>46.0</td>
</tr>
<tr>
<td>1966</td>
<td>28.4</td>
<td>5.0</td>
<td>20.6</td>
<td>55.0</td>
</tr>
<tr>
<td>1967</td>
<td>30.3</td>
<td>4.7</td>
<td>21.6</td>
<td>61.6</td>
</tr>
<tr>
<td>1968</td>
<td>31.9</td>
<td>4.7</td>
<td>23.6</td>
<td>68.5</td>
</tr>
<tr>
<td>1969</td>
<td>33.8</td>
<td>4.5</td>
<td>26.3</td>
<td>74.0</td>
</tr>
<tr>
<td>1970</td>
<td>34.1</td>
<td>4.9</td>
<td>29.5</td>
<td>78.7</td>
</tr>
<tr>
<td>1971</td>
<td>36.5</td>
<td>5.1</td>
<td>35.1</td>
<td>80.9</td>
</tr>
<tr>
<td>1972</td>
<td>38.9</td>
<td>5.7</td>
<td>42.7</td>
<td>83.3</td>
</tr>
</tbody>
</table>

Source: EPC, Taiwan Statistical Data Book, 1976
Besides this astonishingly high export ratio, the shift in the composition of exports was spectacular as well. The imported raw material based industries for substitution purposes increased in importance relative to domestic raw material based agriculture-related industries. The annual rate of growth for the textile industry was 13.4% in 1961 and 26.4% in 1972 while the rate for the food processing industry was 3.7% and 6.9% respectively.\(^\text{19}\) Besides the shifts in the direction of manufacturing growth over time, there was also a gradual shift from concentration on textiles to wood, leather and rubber products in terms of the changes in the imported portion of the total domestic supply in these industries. (see Table 2.3)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textiles</td>
<td>3.8</td>
<td>5.8</td>
<td>9.5</td>
</tr>
<tr>
<td>Wood and wood products</td>
<td>3.9</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>Paper, paper products, and printing</td>
<td>12.3</td>
<td>9.9</td>
<td>11.9</td>
</tr>
<tr>
<td>Leather and leather products</td>
<td>44.6</td>
<td>36.9</td>
<td>44.4</td>
</tr>
<tr>
<td>Rubber products</td>
<td>37.6</td>
<td>27.5</td>
<td>22.2</td>
</tr>
</tbody>
</table>

Source: Inspectorate General of Customs, The Trade of China.

Even though the government's policy was to reduce imports, export-oriented expansion reflected the need to increase imports, namely raw materials, to support the export markets. This policy of accelerated import of raw materials, combined with the use of unskilled labor, was at the heart of the drive for expanding labor-intensive industrial exports. However, this continued success in export-substitution performance was also based on “entrepreneurial efficiency and competitiveness in interna-
tional markets" as well as on the sustained contribution from the agricultural sector as mentioned above. Another factor that also contributed to the success of this export-oriented economy was the relatively dispersed rural character of Taiwan's industrialization.

The proportion of industrial establishments was fairly distributed among 5 big cities, 5 semiurban cities and many rural prefectures. This particular spatial characteristic was responsible in large part "for the maintenance of a fairly labor-intensive growth pattern while minimizing the inevitably high costs of urbanization." On the other hand, the relative dispersion of industries in Taiwan is largely due to the special topographical features of the island and the excellent road and rail network left by the Japanese and improved substantially afterward. Furthermore, the government's policy on maintaining equality between the urban and rural sectors regarding both power rates and fuel prices had helped firms be disinterested in whether their plants were located in urban or rural areas. The port location which facilitated both raw material import and output export also encouraged firms to locate in rural areas where most of the labor force from agricultural sector was available. The consequence of the dispersion of industry and the full utilization of labor from the agricultural sector was the availability of relatively cheap and abundant unskilled labor which, in turn, provided the export oriented industries with a competitive edge in the foreign market.

The government of Taiwan had various policies to open up the export
market: investment incentives, tax reduction and refunds, morminal rate of protection, special export loans available to encourage export-oriened industry. An unidied exchange rate and an avoidance of overvaluation of domestic currency were carefully implemented so as to promote export. Furthermore, Export Processing Zones were set up near the port cities to attract export-oriented investment by facilitating the application of various fiscal and investment incentives in "one stop". This Export Processing Zone was an innovation to attract foreign investment to export-oriented Taiwanese industry in order to replace the U.S. aid which terminated in 1965 ($56.5 million in 1965).

While the Taiwanese economy was stimulated by the export industries, the growth rate of industrial employment rose to a spectacular 10% annually, which was far ahead of the population growth in the 1960s. As a consequence, by the end of the 1960s, the economy had absorbed much of its surplus agricultural labor and unskilled real wages began to rise substantially. As unskilled labor became more expensive and scarce, the composition of export shifted again.

Export of more capital-intensive intermediate and producer goods showed the highest growth rate during the late 1960s though its recorded percentage of total industry output and share in total export remained small. The electronics and machinery industries were the best examples during this period. The electronics industry, based for the most part on imported intermediate goods, has been almost entirely export-oriented from the outset. Its percentage share in industrial production increased
from 0% in 1961 to 3.5% in 1971; its percentages have in total export increased from 1% in 1961 to 16.3% in 1972. The machinery industry serves as an example of secondary import substitution type of activity. Its percentage share in industrial production increased from 2.26% in 1961 to 3.1% in 1971; its percentage share in total export increased from 0.5% in 1961 to 3.2% in 1972.27

With the onset of a relative scarcity of unskilled labor, Taiwan's businessmen and planners have increasingly recognized the need to direct future growth toward these more capital-and-skill intensive industries serving both the domestic and foreign markets. In addition, with much unexpected external turbulence during the 70s, such as the oil crisis and increasing national trade protectionism, Taiwan thus moved into another stage of economic development.

F. PROSPERITY 1973-1983

While the electronic and machinery industries continued to grow rapidly during the 1970s, the expansion of other intermediate and more capital intensive industries, i.e., petroleum, chemical products, paper and pulp, received great attention.28 Foreign investment in these more skilled labor and capital intensive industries was an especial impetus for continuous export production. Foreign private investors were reluctant to invest in Taiwan during the 1950s because of its relatively narrow domestic market and its still precarious prospects. Once the policy was changed in the early 1960s and the economy was responding well
to the altered set of opportunities, foreign investment began to take up the slack left by the termination of U.S. aid.

In the late 60s, not only had Taiwan's political situation stabilized but its low inflation rate and the liberalization of its foreign exchange policy made participation in the industrial export drive look attractive to outside investors. At the same time, rapid wage increases in the United States, Europe and especially Japan induced manufacturers to take advantage of Taiwan's cheap and abundant labor that was virtually free of disputes and strikes. Good levels of health and education, adequate transportation, and cheap electric power were the other advantages noted by foreign investors.

As mentioned before, the establishment of the Kaohsiung Export Processing Zones in 1965 and the two other zones in Nantze and Taichung in 1969 were responsible for increasing exports by attracting foreign investment. Foreign investment continued to be the driving force for export orientation in the 1970s. As of August 1976, U.S.$195.4 million in investment was accumulated, of which $139.8 million, or 81.8% was in foreign hand. By the end of 1983, 3,123 foreign investments were approved with an aggregate of U.S. $3,899 million accumulations, of which $2,806 million or 72% was by foreign nationals and $1,093 million or 28% was by overseas Chinese. This aggregate included: 28.6% in the electronics and electric appliances industries, 13.5% in the services industry, 10.9% in the chemicals industry, 9.6% in the machinery equipment and instrument industry, and 9.0% in the nonmetallic minerals industry.
However, by examining the individual subgroups, namely foreign nationals and overseas Chinese, one could perceive a detailed inward foreign investment pattern toward Taiwan. Among the foreign nationals, 41% of dollars invested came from the United States, and 31% from Japan; 39% was in the electronics and electric appliances industries, 14% in the chemicals industry and 12% in the machinery equipment and instrument industry. A different pattern emerged with respect to the overseas Chinese investor. Among the overseas Chinese, 28% of invested dollars came from Hong Kong and 5% from Japan; 26% was in the nonmetallic minerals industry, 20% in the services industry, 8% in the construction industry and 6% in the textile industry.

To summarize, most foreign investment came from the United States and Japan, with emphasis more on capital and semiskilled labor intensive industries, i.e., the electronics, the electric appliance, and the chemical industries. On the other hand, foreign investment from overseas Chinese was more equally distributed, with a slight majority among overseas Chinese from Hong Kong and Japan and with emphasis more on labor intensive industries, i.e., nonmetallic and textile industries, trade and other service industries. Presumably, overseas Chinese, having a better knowledge of local market conditions, would invest more in the trade and service industries. On the other hand, both foreign nationals and overseas Chinese were attracted by the labor input factor in Taiwan. However, they invested in different industries, namely the more capital and semiskilled labor intensive industry by foreign nationals and the less capital and unskilled labor intensive industry by overseas Chinese.
Foreign investment had contributed significantly to the expansion of Taiwan's foreign trade. It not only brought about the import of raw materials and component parts and the export of the final output, but also contributed to overall employment. Most importantly, foreign investment brought contributions in the areas of linkage and learning processes—including purchases of locally made raw materials, introduction of new manufacturing and marketing techniques, training of local skilled labor and management staffs, and technology transfer. Later on when the overall pattern of Taiwan's outward foreign direct investment was examined for this thesis, the author found most of the leading firms in the respective industries engaging in FDI during the 70s and 80s are also the firms that accepted foreign firm's technology transfer during the 60s and 70s. Foreign investment, particularly the aspect of technology transfer, thus has made a significant contribution to promote Taiwan's later outward foreign investment.

As the policy of promoting both the primary export substitution industries, namely nondurable consumer products such as textiles and the secondary export substitution industries, namely the more capital intensive but still labor intensive industries such as the machinery and chemical industries was implemented successfully, the government faced two alternatives. Taiwan could either (1) move into high technology and high value added export industries, such as the computer, information and telecommunications industries in responding to the increasing shortage of unskilled labor and the availability of skilled labor or (2) move into
import substitution heavy industry to continue domestic industrialization and its policy of economic self-reliance. In order to strive for self-reliance, maintain economic growth, and promote a better living environment with higher living standards, the policy adopted was (1) to engage in major projects to improve domestic living standards, (2) to establish heavy industry to supply domestic industries' demand and (3) to promote the third stage of export substitution, namely high technology and high value added industries.

In the early 1970s, the government announced plans to invest U.S. $6 billion in ten major public sector projects. Six of these projects were addressed to Taiwan's major transportation infrastructure: (1) The North-South Freeway running from Keelung to Kaohsiung was intended to relieve chronic traffic tie-ups on existing highways as well as to ease the railroads' passenger and freight burdens; (2) Electrification of the mainline West Coast railroad was expected to save on fuel imports and to increase the carrying capacity of the railroad; (3) and (4) The new ports at Suau and Taichung would relieve the overcrowding at Keelung and Kaohsiung and further encourage regionally balanced growth; and (5) The Suao-Hualien railroad spur was intended to end the relative isolation of the Taiwan East Coast which had lagged behind in development.

Other infrastructure projects included: (6) a new international airport near Taipei and (7) several nuclear power plants. The three remaining projects involved direct productive activities (development of domestic heavy industries), namely (8) an integrated steel mill, (9) a
large shipyard and (10) several petrochemical plants.  

These ten public sector projects served many objectives. They not only improved the island's physical infrastructure but also created many jobs during the 70s which absorbed the excess labor supply during the recession caused by the two oil crises and thus smoothed their impact. They further developed the integration of the heavy industries which were formerly segmented and were operated inefficiently with low return in spite of high required capital investment.

During the two oil crises of 1973 and 1979 and the recessions in 1973–74 and 1980–82 respectively, the government of Taiwan had adopted different policies. Due to the lack of energy resources for the island economy, Taiwan had relied strongly on imported oil as raw material as well as for its energy supply. During the first oil crisis, in order to prevent high inflation which resulted from the oil price increase and to maintain the stable input price for domestic producers, the government absorbed most of the oil price increase through the government controlled petroleum company. Even though the domestic inflation rate during the first oil crisis was much lower than that for most of the oil importing countries, the Taiwan industries failed to adopt a more energy efficient production method after the crisis of 1973 and thus experienced an even greater shock during the second oil crisis.

During the second oil crisis, government liberalized oil price controls and allowed the private sector to absorb the price increases. The
process was painful, and shook up the structure of the entire economy. The private sector switch to more energy efficient production methods was the phenomenon in the industry during the later 70s and early 80s. On the other hand, the government fostered research on other energy alternatives and tried to secure its own energy supplies, seen in the nuclear power plant and petrochemical plant projects.36

Generally speaking, during the 10 year period of 1973-1983 when the world economy experienced two recessions and when national trade protectionism became stronger than ever, Taiwan proceeded with a steady pace and continuous growth. Domestically, many significant projects and self-supported heavy industries were established. Internationally, export orientation moved from a capital intensive to a technology-based industry through changing the foreign direct investment mix by many control incentives of the government.

G. THE PRESENT AND FUTURE DIRECTION 1984-

Export Substitution Industry

The government's export-oriented policy applied to the third stage of export substitution was to continuously attract foreign investment, especially in the high-tech industries, i.e., the computer, information processing and telecommunications industries. Hsingchu Science Industry Park was established to facilitate many high technology foreign investment projects. For the existing primary and secondary export substitution
industries, increasing productivity through automation, for instance, to keep up with the increase in real wages will be a step in this direction.

Agriculture

As far as the agricultural sector is concerned, productivity can be further increased through mechanization, land and water resources utilization and new technology. Diversification in crops production, livestock, fisheries and forestry should be continued. Although the share of agriculture in GNP will continue to decline, it remains as the basis for the country's economic development. Perhaps a protection policy on crop prices to protect the farmers' welfare and/or government programs to assist farmers to find jobs in other sectors should be implemented.

Energy

Energy policy will be to (1) conserve energy consumption through more efficient usage, (2) increase the share of low energy elasticity industries, i.e., the high-tech industry instead of the paper and pulp industry, and (3) develop and explore other energy alternatives. 37

Education/Manpower

In order to train skilled laborers to work in the growing high-tech industries, improvements and shifts in emphasis in vocational education, both in quality and quantity, must be made. Furthermore, education
should emphasize productivity improvement so as to keep up with the real wage increases and stay competitive in the foreign market.

Trade Structure Changes

A big trading company should be promoted to facilitate the export process and achieve economy of scale in information gathering and the marketing effort.

CONCLUSION

With 5 periods of economic development, Taiwan has made great economic strides in the past 30 years. At current prices, its GNP has grown from $429 million in 1952 to $49.9 billion in 1983, 116 times as large as it was in 1952; its GNP per capita grew from $50 in 1952 to $2,500 in 1983, 50 times as large as it was in 1952. For an export-oriented economy with imported oil accounting for 20% of GNP, Taiwan still achieved great success in both domestic market and foreign trade. In 1983, its real GNP growth rate was 7% (with 1.4% of inflation rate) and its trade surplus reached $4.8 billion.

Though Taiwan had achieved satisfactory economic growth and had accumulated a huge amount of foreign reserves, through foreign trade there are limitations on an open island economy. Resources are limited and its reliance on world trade creates vulnerability because of increasing trade protectionism and unstable market demand. The next step is
naturally an aggressive marketing strategy—Outward Foreign Direct Investment to secure resource supplies as well as to seek other markets. By using its excess foreign reserves, the government had approved much FDI starting in 1971 and promoted it even more strongly in the few years. The general pattern of Taiwan Outward Foreign Direct Investment will be discussed in the following chapter.
Chapter 2 Notes


2) Thorbecke, Erik "Agricultural Development" In Galenson eds., Eco. Growth and Structural Change in Taiwan. p. 144.


4) Ibid., p. 49 col. 34.
5) Ibid., p. 50 col. 21.
6) Ibid., p. 50 col. 29.
7) Ibid., p. 51 col. 13.
8) Ibid., p. 55 col. 32.
9) Ibid., p. 55 cols. 33-36.
10) Ibid., p. 56.
11) Ibid., p. 58.
12) Ranis, Gastav "Industrial Development". In Galenson eds., p. 228.
13) Ibid., p. 207 Table 3.1.
14) Fei, Kuo and Ranis, p. 60 Table 3.8.
15) Ranis, Gastav "Industrial Development". In Galenson eds., p. 221.
16) Ibid., p. 221 col. 13.
17) Ibid., p. 212.
18) GDP: Gross Domestic Product is Gross National Product substracts any foreign aid or foreign borrowing.
19) Ranis, Gastav "Industrial Development" p. 218. Table 3.5.
20) Ibid., p. 221 col. 38.
21) Ibid., p. 223 Table 3.7.
22) Ibid., p. 222 col. 140.
23) Fei, Kuo and Ranis, p. 77.
24) Ranis, "Industrial Development". In Galenson eds., p. 226 col. 2.
25) Ibid., p. 244 Table 3.25.
26) Ibid., p. 251.
27) Ibid., p. 240 Table 3.21.
28) Ibid., p. 246.
29) Ibid., p. 248 col 1.
30) Statistics on Oversea Chinese & Foreign Investment
31) Ibid., p.6.
32) Ibid., pp.9-10.
33) Ibid., pp. 28 and calculation.
34) Ranis, "Industrial Development" in Galenson eds., p. 255.
35) Ibid., p. 259.
    The International Commercial Bank of China (ICBC) May/June 1983.
37) Kuo, Shirley "Economic Outlook for Taiwan, R.O.C. Problems and
38) Calculation from Taiwan Statistics Data Book 1983
    Council for Economic Planning and Development Executive Yuan R.O.C.
39) Ibid. and Table of National Product & National Income, ICBC
41) Chinatime, April 19th 1984 p.2.
CHAPTER 3

TAIWAN'S OVERALL EXPERIENCE WITH OUTWARD FDI

A. INTRODUCTION

According to the Investment Commission of the ministry of Economic Affairs of R.O.C.'s statistics on outward foreign investment, a total of 174 cases which amounted to US$ 134 million was approved between 1959 to 1983 (see Exhibit 1). Taiwan's outward foreign direct investment has played an important role in stimulating domestic economic growth as well as in promoting the export substitution industries. In this chapter, the overall pattern of Taiwan's FDI will be studied very carefully.

First, the total approved cases up until 1983 will be examined. Next, the composition of outward FDI will be studied in terms of industry breakdown as well as geographical and country distribution. Third, the ownership structure of Taiwan FDI as well as its financing method will be studied. Fourth, the motivation for FDI will be analyzed considering the distinction between investment toward developed countries and that toward less developed countries and other Newly Industrialized Countries. Furthermore, the differences in motivation between investment versus in DCs in LDCs and other NICs will be pointed out.

Fifth, special characteristics of firms engaging in FDI will be studied. Sixth, the competitive ability of Taiwan firms will be analyzed by first identifying who the competitors are and then stating the differ-
ent competitive edges Taiwan firms have in entering the different markets, namely those of DCs as well as those of LDCs and other NICs. Finally, the contribution of Taiwan's foreign investment as well as the problems encountered by Taiwanese MNCs will be discussed briefly. In conclusion, with some additional suggestions, this chapter intends to give a brief but thorough description of Taiwan Outward Foreign Direct Investment to ascertain how much the general FDI theories apply to the case of Taiwan.

B. THE OVERALL APPROVED AND IMPLEMENTED FDI

As mentioned previously, there is an accumulation of 174 FDI cases with a total approved dollar amount of $134 million by the end of 1983. However, before 1971, no more than US$ 2 million was approved each year. The approved dollar amount has increased gradually ever since and reached its peak at US$ 42 million in 1980. In the last few years, approximately US$ 10 million was approved annually (see graph 1). Thus, the growth rate of outward foreign investment is striking and steady. The growing importance of FDI is even more astonishing, if one further observes the increasing dollar amount every year: 90% of the total dollar amount approved occurred in the last 10 years (1973-83) and 63% of the total dollar amount approved occurred in the last 5 years (1979-1983) (see Exhibit 1).

The approved dollar investment, however, does not have to equal the actual dollar amount applied and the approved number of cases does not have to equal the number of cases still in process. Until 1981, there
were 49 (out of 163, or 30%) cases, amounting to US$ 34.6 million, which were approved but were not actually implemented. The reasons were either (1) disagreement at the last stage of negotiation or (2) a change of investment environment between the application time and the implementation time. By studying a the region or country, the probability rate of implementation in terms of dollars approved is in the order of Singapore, Malaysia and, then United States. However, the dollar investment going to Malaysia is quite low and investment toward the United States has the highest implementation rate in terms of numbers of cases approved, which is roughly 93%. The probability of actual implementation of an approved investment is, thus, proportional to the host country's economic development as well as to its economic stability.

Among the 114 implemented cases coming from 54 private enterprises, only 79 cases (69%) are still operative while 35 cases withdrew after implementation. Before 1976, 14 cases withdrew. Out of these 14 cases, only 3 were due to the failure of total investment while 6 were due to sale of ownership to others and 5 were lost in the Vietnam War. After 1976, 21 cases withdrew: 12 were due to mismanagement in business and 9 were due to the transferal of ownership to others. The percentage of cases which withdrew due to failure of business was much higher than that of withdrawal of ownership after 1976. This perhaps can be explained by the increasing complexity in managing the FDI in the last decade. Normally, during the transferring or selling of ownerships, firms receive most of and sometimes greater than their original investment dollar while mismanagement always resulted in loss of most of their investment.
C. COMPOSITION OF OUTWARD FDI

(1) By Industry

As far as the composition of outward foreign investment is concerned, the greatest concentration of FDI is in manufacturing industries, including food and beverage processing, textiles, plastics and rubber products, chemicals, nonmetallic minerals, basic metals and metal products, and electronic and electric appliances industries. Among 174 approved cases up until 1983, 119 cases (68%) are in the manufacturing sectors. Among 134 million approved dollars, $114 million (85%) are in the manufacturing sectors (see also Exhibit 2). When compared to other countries in similar stages of development, i.e., South Korea, only 8% of their outward FDI cases (out of 243 cases) and 17% of their outward FDI dollar amount by 1981 were in manufacturing sectors. Obviously, the concentration pattern in the manufacturing sectors is a characteristic that is worth while of knowing when studying the general pattern of Taiwan's outward foreign direct investment.

However, if an individual industry is studied, a different pattern results. The trading and electronic and electric appliances industries have the most concentration of approved cases: 35 cases (20%) for trading and 25 cases (14%) for electronics and electric appliances industries. Food and beverage processing, textiles, plastics and rubber products and non metal products industries each has more than 10 approved cases. Besides there being no approved cases from the transportation, leather
and fur products, and mining industries, the rest of the industries have approved cases ranging from 1 to 7. The concentration of FDI cases by industry clearly falls in trade and electronic related industries.

As far as the dollar amount invested for each industry is concerned, there is another pattern. The chemical industry has the highest dollar amount invested, namely $38 million (roughly one third of the total dollar amount). Due to the nature of the industry, which is quite capital intensive, the average dollar amount invested per approved case for the chemical industry is still the highest, at $4.2 million per case, following paper and pulp products at $3.2 million per case, fishery and animal husbandry at $1.3 million per case, nonmetallic minerals at $1.2 million per case, and banking and insurance at $1.0 million per case.

Generally speaking, the average dollar amount per case for the food and beverage processing, textiles, lumber and bamboo products, plastic and rubber products and electronic and electric appliance industries is above $0.5 million while agriculture, forestry, garment and footwear, machinery equipment and instruments, construction, trade and service industries have range from $0.1 million to $0.4 million. However, the one approved investment case for the chemical industry in the United States is the highest among all the investments. The total approved dollar amount for these PVC and VCM factories is $24 million (18% of the total dollar investment), proposed by the Formosa Plastics Group, which will be discussed in a case study in a later chapter.
Because the difference in the numbers of firms involved in foreign direct investment as well as the difference in the firms' sizes, the direct comparison of the average dollar amount per investment case among different industries might be misleading. Some insight can be obtained by comparing the ratio between the amount of foreign investment and its domestic owner's equity for different industries.

The chemical industry has the highest ratio of 1.16%, after the completion of funding phase of the Formosa Plastics Group case, followed by the trading industry 0.7%, nonmetals industry 0.5%, electronic and electric appliance industry 0.4% and plastics and rubber products industry 0.32%. While the average ratio is 0.26% for the manufacturing sector and 0.28% for the overall industries, the importance of its outward FDI for its overall business performance is especially significant for the chemical, trading, nonmetal and plastics and rubber products industries (see Exhibit 3). These industries, including three from the manufacturing sector and the trading industry, are most active in outward foreign direct investment. On the other hand, the food and beverage processing, textiles, metals and machinery equipment industries have a lower percentage of foreign investment.

Another way of gaining insight into the nature of the development of one particular industry is by comparing its outward versus its inward foreign investment. By 1981, the nonmetal industry had the highest ratio, over 50%, in the manufacturing sector. The lumber and bamboo products industry, pulp and paper products industry, and plastics products
industry follow within the range of 13% to 28%. Food processing, textiles, garment, metal machinery equipment, and electronic and electric appliance industries have the lowest ratio ranging from 0.07% to 4.16% (see Exhibit 3). In general, the ratio of outward to inward foreign investment is higher for raw-material related manufacturing industries and the ratio is lower for more labor-intensive industry. This is also a phenomenon of Taiwan's island economy that lacks natural resources but has abundant labor.

By looking at the whole manufacturing sector, the outward/inward foreign investment ratio is roughly 7.44% (1:28). That is, for every dollar of outward foreign investment from the manufacturing sector, Taiwan receives eighteen dollars of inward foreign investment for the manufacturing sector. This means that Taiwan is an attractive foreign base for MNCs engaging in foreign activities, especially labor intensive ones, in both unskilled and skilled industries. It also means that as the economic development stage of Taiwan moves forward, the ratio will become larger and larger since more and more outward FDI will take place. When the ratio is greater than 100%, that is outward FDI is greater than inward FDI. This is net outward foreign investment and a case for the trading industry. The reasons why outward foreign investment for the trading industry is greater than inward foreign investment are: (1) the smaller and and fewer dollar amounts invested by foreigners in trade related industry inside of Taiwan and (2) the increasing importance of Taiwan's economic reliance on foreign trade, thus more trade related investment was undertaken to promote export trade.
Further study of the behavior of outward foreign investment with respect to an individual industry across a time series shows the following characteristics: before 1971, much of the outward foreign investment dollars was concentrated in cement, food and beverage processing, and the electric wire industry. Between 1972 and 1976, most of the foreign investment was concentrated in the textile, garment, and the trade-related industries. However, between 1977 and 1983, a few firms from the electronics and electric appliance, chemical and plastics industries became very aggressive in setting up foreign production subsidiaries in industrialized countries. The study of Formosa Plastics Group's and Tatung Corp.'s foreign investment in the later chapters are examples of the above aggressive strategies by MNCs from Taiwan.

During the period of 1977-1983, another interesting characteristic of foreign investment is that some construction companies started extending their operations toward the Middle East by setting up foreign subsidiaries. Export technicians and skilled construction laborers were moved to the Middle East as an important foreign policy strategy in replacing the official relationship with the Middle East after Taiwan left the United Nations and in securing oil supplies from the Middle East.

In summary, though Taiwan's outward foreign investment started in 1959, most growth occurred in the 70s. Starting in 1980, the growth rate is even more astonishing. This can be explained by the fact that outward FDI normally follows after export orientation as it is the case of Taiwan and the fact that Taiwan government started using FDI as a tool to esta-
blish unofficially relationship with many countries after it left the United Nation in the early 1970s. In general, about 30% of the approved cases and dollar amounts were never realized and 20% of cases or 8% of the dollar amounts are withdrawn after implementation. Most of the investment centered on electronics and appliances, chemicals, plastic products and trade-related industries. In the manufacturing sector, the nonmetal industry, in addition to the above three industries, is most active in seeking FDI opportunities, especially in the developed countries.

(2) BY REGION

Until 1981, there were still 79 effective foreign investment cases: 45 cases (57%) in less developed countries, especially in Southeast Asia (35/45 cases or 44% of total) and 34 cases (43%) in developed countries, especially the United States (26/34 or 33% of total) (see Exhibit 4). As far as the invested dollar amount is concerned, the United States has the highest investment. Until the end of 1981, the United States had over 50% of the total dollar investment followed by Hong Kong and Singapore, where the dollar amounts invested exceeds $5 million. The ratio between DCs versus LDCs and other NICs, in terms of amount invested, was 6:4 while the ratio was 4:6 in terms of number of the approved cases. That is, more foreign investment occurred lower on the ladder of the industrialization process and at a lesser magnitude while investments in developed countries were fewer but in greater magnitude.
As far as the composition of investment in terms of region is concerned, most of the investments, except those in electronics and trade-related industries, are toward LDCs and other NICs. For all industries, except electronics and trade-related industries, each industry has no more than one investment case in a DC, particularly the United States. It is logical for NICs wanting to invest in developed countries. By simply choosing one participant, perhaps the biggest firm from a particular industry, to enter into a DC's market, competition among that industry will be avoided and the chance of succeeding will increase.

Electronic and trade related industries, however, follow a different trend. Their investing locations include LDCs and other NICs as well as DCs, Southeast Asian as well as Europe. The spread of location choices is normally observed for trade-related investment. This is, however, an unusual phenomenon for the electronics industry. Nevertheless, the earlier investments by the cable and wire industry toward Southeast Asian countries were made to exploit their technology while the recent investments, after 1977, by the electronics and electric appliance industries toward developed countries were either for market seeking or to circumvent the trade barrier.

Among the countries, most of the investment centered around Thailand, Malaysia and Singapore before 1971 while there was only one case in the United States. However, during the 70s, except for maintaining roughly the same percentage of total dollar amount invested for Singapore and increasing the investment in Indonesia, most of the dollar investment
from Taiwan, both in terms of absolute amount and growth rate, were in United States. At the end of 1981, the approved dollar investment for the United States was $45.6 million which increased to $50.9 million at the end of 1983, 37.9% of the total approved dollar investment. This increase in growth rate of investment in the United States is an especially characteristic of the last 5 years.

In summary, Taiwan's FDI toward LDCs and other NICs though greater in numbers of case are smaller in total dollar amount in comparison with FDI toward DCs. Further, except the trading and electronic related industries that have investment in both DCs, NICs and LDCs, all other industries have investments throughout LDCs and other NICs but only one case in the DC, particularly the United States. Thus, when individual country is examined, U.S. has the most dollar amount of Taiwan's FDI, following by Singapore.

D. FDI: OWNERSHIP STRUCTURE AND TYPES OF FINANCING

According to the survey study at the end of 1982, most of the ownership structure of Taiwan's outward foreign investment is majority ownership (58% of the cases). Among the 58% majority ownership cases, only 30% of the cases have 100% ownership and 72% come from traderelated investment and 20% from the manufacturing sector. Compared to the ownership of foreign investment into Taiwan by 1982, that 64% of cases had majority ownership and 28% had 100% ownership, the ownership structure of Taiwan's foreign direct investment has a slight emphasis on minority
As regards the financing methods, cash financing is the most popular, accounting for 56% of total financing. Roughly 34% of the financing came from capital equipment and the remaining 11% of financing consisted of the provision of patents, technology, raw materials or ploughing back retained earning. The unusual weight of financing through capital equipment is worthwhile to know. The common argument for using capital equipment as part of foreign investment financing is to find a foreign country to use domestic replacement machinery (used or second hand machinery). This, however, is not exactly the case for Taiwan.

At an earlier time, exporting capital machinery as part of the financing for the textile, garment and food industries might have been exporting old retired machinery. The pulp and paper, chemical and metal products industries are, however, the most heavy users of capital equipment as a way of finances. They are the latest industries to move toward foreign investment. Thus, the capital equipment exported by these industries can not be the domestic retired old machinery but a new and complete set of factory equipment. As the development of Taiwan's machinery equipment industry is proceeding smoothly, using more advanced capital equipments as part of the financing will increase, especially the new machinery which also counts as part of the export of the machinery industry.

In summary, while Taiwan's FDI have a greater tendency toward mino-
rity ownership, most financing methods are through cash and capital equipment. Using capital equipment as a mean of financing, further, plays an increasingly important role in stimulating export of the advanced machinery industry.

E. THE MOTIVATION FOR OUTWARD FOREIGN DIRECT INVESTMENT

According to the 1980 and 1982 survey studies, 10 motivations for outward foreign investment are ranked by the participating MNCs. They are: (a) circumventing a trade barrier and protecting an existing market, (b) searching for a new market for existing products, (c) diversifying risks, (d) opening up markets for technology and machinery equipment, (e) promoting export to other countries, (f) obtaining cheaper labor, (g) increasing a company's reputation, (h) obtaining cheaper of supply raw materials, (i) action against its major competitors, (j) transferring new technology. Even though these motivations are not 100% inclusive, i.e., family and ethnic ties, government incentives and information gathering are not included, they represent fairly well the overall motivations for MNCs to engage in foreign direct investment.

(1) FDI Toward Developed Countries

The most important motivations for MNCs from Taiwan to invest in developed countries, ranked by the participants, are: searching for new markets for existing products, promoting exportation to other countries, circumventing trade barriers and protecting an existing market. The
three least important motivations for them to engage in FDI in developed countries are: obtaining cheaper labor, diversifying risks and opening up a new market for technology and machinery equipment. The other four semi-important motivations for FDI are the following, in order: action against competitors, increasing company's reputation, technology transfer and obtaining cheaper raw materials. If only the participating manufacturers are analyzed, their motivations more or less follow in the same order, except that technology transfer will move up to the fourth most important motivation.

In general, the survey results coincide closely with the motivations for FDI from a theoretical viewpoint. Either seeking for a new market or expanding an existing market, either for promoting new export opportunities or circumventing trade barriers, market factor is still the major motivation for FDI. In contrast, because the characteristics of a developed country are its expensive labor force and highly advanced technology, the least important of its motivations for FDI will be: cheaper labor and seeking new markets for exporting its less advanced technology and machinery equipment. However, the characteristics of a developed country can not explain the effect of diversifying risk in a more stable developed country. With the consideration of political and economic stability, investment in a developed country by a NIC, i.e., Taiwan inevitably provides the opportunity to diversify risks. On the other hand, firms will face more competition in the DCs; and, they might hesitate to invest in DCs. It, thus, could be a controversial factor in the estimation of firms and usually is a psychological motivation that would not be admitted
by the firms. Thus, Taiwan MNCs do not treat diversifying risk as their major concern in making the investment decision in DCs.

Due to the difference in the nature for individual industry, the importance of motivation may be different for firms investing in DCs, i.e., for the manufacturing sector, a technology search becomes a most important factor in FDI. The chemical and food processing industries are capital intensive, thus, having the opportunity to export their equipment and machinery as part of their financing for FDI becomes an important motivation. Furthermore, after the two oil crises, securing a petroleum-related raw material supply at a lower price became an important factor for both the chemical and plastics product industries to search for FDI. As far as more technology-oriented industry, i.e., the computer or certain sophisticated electronic appliance industries are concerned, FDI in a developed country is a way to be present in a dynamic market.

(2) FDI toward LDCs and NICs

The three most important motivations for MNCs from Taiwan to invest in LDCs and other NICs are: searching for a new market for existing products, promoting exportation to other countries and opening up markets for technology and machinery equipment. The three least important motivations for NICs to invest in less developed countries are: technology transfer, diversifying risk and obtaining cheaper labor. The four semi-important motivations for MNCs from Taiwan to engage in FDI in LDCs are, in the following order: protecting an existing market, increasing the
company's reputation, action against their competitors and obtaining cheaper raw materials. If the entire manufacturing sector is examined, their motivations more or less follow the same order, except the motivation for exporting technology and machinery equipment will be the most important factor.

Again, market seeking, especially for new markets and for places where firms from NICs can exploit their advantages in technology and machinery equipment, is the main thrust for outward foreign investment. On the other hand, the least attractive feature of investment in the less developed countries is their political and economic instability. Thus, NICs will not invest in LDCs to obtain the diversifying effect. Also, the nature of being a less developed country is that the domestic technology level is low and of poor quality. Thus, it can not provide the opportunity for technology transfer to NICs, which are higher on the industrialization ladder. The surprising result is that Taiwan's investment in LDCs and other NICs does not consider cheaper local labor to be a major factor in making their decision. Perhaps the abundant and efficient domestic labor can make the cheap but possibly inefficient labor in LDCs and other NICs unattractive, since the production cost will not necessarily decrease when productivity drop due to lower wages.

If an individual industry is studied, it will be found that different industries may have different characteristics. Industries such as food processing, wood products and paper and pulp depend heavily on obtaining cheaper raw materials from other less developed countries.
Opening up a market to exploit their technology and machinery equipment is an especially important motivation for the metal products industry to invest in less developed countries. Increasing a company's reputation is an important reason for the food processing, chemical and construction industries to have businesses in the LDCs.

(3) Comparison of Motivations For Investment in DCs versus investment in LDCs and NICs

Generally speaking, motivations valued more by firms investing in LDCs and other NICs are: opening up new markets to exploit their technology and machinery equipment, obtaining cheaper labor and cheaper raw materials. On the other hand, motivations valued more by the firms investing in DCs are: technology transferring and opening up new markets for existing products. This coincides with the characteristics of DCs as well as NICs and LDCs. That is, DCs have more advanced technology and larger domestic markets while NICs and LDCs lack technology and have cheaper labor and some natural resources, e.g., forests.

Further, the motivations for NICs to invest in DCs versus LDCs and other NICs, namely, circumventing trade barriers, protecting existing markets, promoting exportation to other countries, increasing company's reputation and action against firm's competitors, are stronger in degree. Perhaps investment in a country higher on the industrialization ladder is more competitive and harder to succeed at, so that stronger motivation is needed in order for investment to take place.
By examining 60 MNCs from Taiwan\textsuperscript{21}: it was found that 22 enterprises have more than 20 years of production experiences, 9 firms have 15–20 years of operation experiences, 17 companies have 10–15 years of experiences and only 6 firms have less than 5 years' experience. Among the 6 firms, 4 companies are, however, newly established big trading companies and the other two are a construction and a manufacturing company respectively.\textsuperscript{22} If only the 50 MNCs from the manufacturing sector are examined, 88% (44 firms) have more than 10 years of production experience.\textsuperscript{23} Thus, having been established in the industry long enough to have accumulated quite a lot of experience is the primary characteristic of MNCs from Taiwan.

From looking at the MNCs' ranking in 500 top domestic enterprises and at industry ranking lists, different characteristics appear. Among the 50 MNCs from the manufacturing sector, 38 firms (75%) are among the top 10 companies in their respective industries and 27 firms (53%) are the top 5 companies in their industries. Furthermore, 46 MNCs (75%) are among the top 500 companies list.\textsuperscript{24} Among the top 10 private enterprises, only 3 companies have no foreign investment. They are two automobile manufacturers targeting their markets domestically and one Japanese invested electronics company, which is already a foreign subsidiary. Thus, foreign investment by most of the leading companies either in their respective industry and/or among the top 500 companies' listed is another characteristic of FDI from Taiwan.
Next, the concentration of investment from conglomerates,\textsuperscript{25} instead of individual companies, will be examined. By the end of 1980, the top 10 conglomerates having investment overseas accounted for 60.3\% of overall approved investment dollars and 33.8\% of cases approved.\textsuperscript{26} Thus, Taiwan's foreign investment is quite concentrated and comes mostly from the leading conglomerates.

In summary, the major motivation for MNCs from Taiwan to invest in DCs are: opening up new markets for existing products and seeking technology. On the other hand, the motivation to invest in LDCs and other NICs is opening up new markets for their technology and machinery equipment. The outstanding characteristics of Taiwan's MNCs engaging in foreign investment are: long experience in their respective industries, their leading position in both the industry and the top 500 companies' list, and their belonging to a leading conglomerate which has the heaviest concentration in dollar investment.

G. THE COMPETITIVE ABILITY OF MNCs FROM TAIWAN

(1) The Competitors

According to the survey,\textsuperscript{27} firms participating in foreign investment believe competition comes from four different sources, namely, the local firms, MNCs from developed countries, MNCs from other NICs or LDCs, and other domestic firms. Firms investing in DCs believe their greatest competition comes first from both the local firms and MNCs from other
developed countries, second from other Taiwanese firms and third from other MNCs of NICs or LDCs. In contrast, firms investing in LDCs believe that their competition stems from both the local firms and other MNCs of DCs and also equally from other Taiwanese firms and MNCs of other LDCs.

Most of the competition perceived by Taiwan firms comes from local firms and MNCs from DCs. This is not a surprising result since local firms in either DCs, other NICs or LDCs have the advantages of operating in a close market and being familiar with the local market while MNCs from developed countries have the advantages of being more advanced in technology, marketing techniques, management skills and financial support. The explanation for potential competition coming from other domestic firms is that Taiwanese firms follow a "defensive strategy" and therefore will either follow or be followed by other Taiwanese firms in investing abroad. Finally, the potential threats coming from MNCs of other NICs or LDCs are less important in competing in the DCs from the Taiwanese firms' viewpoint. Perhaps, MNCs from different NICs have different advantages and they compete in different niches of market in DCs' markets. Also, before MNCs from NICs or LDCs enter DCs' markets, they contemplate the move longer and in great depth, as would be expected, due to their stronger degree of motivation. Also, they are more conservative.

(2) Competitive Ability in LDCs and other NICs

After the potential competitors have been identified, what the competitive advantages of MNCs from Taiwan will be considered. Firms believe
their most competitive advantages when competing in the LDCs and other
NICs are: the "appropriate" technology and products for the local market,
the competitive pricing policies and appropriate marketing skills. The
least important advantage in the estimation of these firms is the low
salary demanded by their foreign staffs. This coincides with an earlier
theoretical study which found that in serving LDCs and other NICs, NICs
usually provide "more suitable" technology, products and marketing skills
than MNCs from DCs will do. Furthermore, because of their small scale
and flexibility in production as well as their more labor intensive
nature and less emphasis on brand names and advertising, products or
technology provided by Taiwan MNCs can be priced competitively.

(3) Competitive Ability in DCs

As far as the investment by Taiwan MNCs in DCs is concerned, they
believe their most competitive advantages are: excellent adaptability to
the local environment, suitable products for the market and pricing
policy. On the other hand, the least important advantage in the estima-
tion of Taiwanese firms competing in the DC markets is still the lower
salary demanded by their foreign staffs. Offering suitable products at a
reasonable price is not surprisingly the marketing strategy for MNCs from
Taiwan, since MNCs from NICs are usually very successful in penetrating
DCs' low end of the market. Their excellent adaptability, however, is a
somehow surprising advantage claimed by Taiwanese firms as the most
important factor in succeeding in the DCs. This perhaps can be explained
by the fact that the Chinese are hard working, diligent, and flexible.
Looking back at the history of Taiwan, the Chinese in Taiwan have contributed greatly in achieving the current miraculous economic success. Through hard work and learning on the job, they enter a new market with great enthusiasm, which has grown due to the fact that they are now more experienced and have more financial support. Adaptability is always the best advantage a firm can have in a foreign country.

(4) Comparison of Advantages in the DCs Versus in the LDCs and other NICs

In addition to the fact that all firms try to offer the right product at a competitive price when competing both in DC, NIC and LDC markets, MNCs from Taiwan believe they have advantages in marketing skill as well as method of production, which are more suitable for other NICs and LDCs. They, however, all feel that the pressure of competition is much greater when competing in DCs. Finally, the advantage of lower salaries demanded by their foreign staffs is insignificant because the number of people sent from the parent company is limited, and because the cost of salaries for administration and management purposes is relatively low in percentage compared to other production costs.

One last point before the problems Taiwanese MNCs encountered in the foreign market as well as their contributions are discussed, the question of how Taiwanese MNCs' products can be priced competitively in both the DCs and LDCs will be explored further. Besides the potential savings from a lower salaried administrative staff, less elaborate on factory
production facilities and lower advertising expenses, the "appropriate" production method is another factor which contributes to cost efficient production.

Fifty Five percent of firms which invested in DCs adopted similar labor intensive production methods used by the local firms and 27% of firms adopted more capital intensive production techniques compared to local firms. Upon further examination of the parent companies, it was revealed that foreign subsidiaries are clearly using more capital intensive technology than their parent companies do. Moreover, 64% of MNCs investing in LDCs use the same level of labor intensive production methods that local producers do, while only 9% of firms use more labor intensive technology compared to local firms. However, in comparison with their parent companies, 45% of foreign subsidiaries use similar technology as their parent companies do, while 41% use more labor intensive technology.

It is clear that the cost of inputs is an important factor when a Taiwanese MNCs considering which production technology to adopt for their foreign subsidiaries. In order to be cost efficient, Taiwanese MNCs have adopted a more capital intensive production method than their parent companies when entering DCs where labor is relatively more expensive and use a more labor intensive method when entering LDCs where capital is relatively scarce and expensive.

In summary, MNCs from Taiwan succeed in foreign competition because
they can provide appropriate products at competitive prices to satisfy the local demand. Moreover, their flexibility in regard to the human factor and the diligent nature of the Chinese work forces have provide them additional advantage in the competitive DC markets. On the other hand, their more "appropriate" technology and production method have provided additional advantages in serving other NIC and LDC markets. As far as how Taiwan firms are able to price their products competitively is concerned, flexibility in reacting to the local input factor is the main reason.

(H) THE CONTRIBUTION AND PROBLEMS OF TAIWAN'S OUTWARD FDI

For most of the case, private MNCs invest abroad expecting to receive economic profit. Thus, in examining the contribution of foreign subsidiaries, three economic profit terms will be looked at, namely: (1) the remittance of operation profit, (2) the remittance of technical service royalties to parent companies, and (3) the export resulting from having foreign subsidiaries. Excluding trading companies, which invest abroad mainly to continue their exportation, 40 MNCs claimed that, in the 3 year period 1979-1981, their remittance of operation profit accounted or only 10% of their foreign investment during the same period. This, however, does not include the retained earnings plowed back or ready to be plowed back for reinvestment abroad. The remittance of royalties claimed by these 40 MNCs was 13.7% of their aggregated foreign investment assets during the same period.
However, the export amount due to the establishment of their foreign subsidiaries either through export of machinery and raw material from parents or export sales by their foreign subsidiaries are huge. The amount claimed by these 40 MNCs as contribution of related sales from or to their foreign subsidiaries is 5 times as much as the amount they invested abroad during the same period.\textsuperscript{34} One example is the investment in a fabric factory in Indonesia in 1982. This MNC exported nearly 7.2 times worth of approved investment amount of machinery to its foreign subsidiary.\textsuperscript{35} As a consequence, the contribution of FDI for Taiwan MNCs comes not just from the remittance of profit and royalties but mainly from the promoted exportation from the foreign subsidiary. The effect of FDI, however, should not be misleading since some machinery exportation in setting up a factory could be a one time contribution to the overall promoted export sales. The export sales of foreign subsidiaries, however, will increase in importance relative to machinery exports from parent companies as foreign subsidiaries begin operations.

Besides monetary returns, some nonmonetary contributions of FDI are also observed, i.e., absorbing new knowledge and learning by doing, which are especially easier in the DC environment. In developed countries, not only the labor relationship is more complex but the market structure is more advanced and sophisticated. By setting up production facilities, Taiwanese firms can actually have the experiences of dealing with labor in many settlements and negotiations. Furthermore, by being present in an advanced market environment, Taiwanese firms can gather market information more efficiently and learn sophisticated production and management
methods. These learning effects are the by-products of being involved in foreign production.

As every coin has two sides, FDI provides a parent company both monetary and nonmonetary returns as well as many headaches. Problems encountered by MNCs from Taiwan, which at the extreme resulted in failure of business, are: (1) local labor disputes, (2) misevaluation of local market potential and too much competition, (3) disagreement with the local partners, (4) hostility from local government, especially from Southeast Asian countries, (5) inappropriate business plans, and (6) disruption of local supply of raw material. Even for quite profitable FDI, management staffs also perceived problems resulting from severe market competition and labor relations.

In summary, the payoff from FDI comes largely from export sales promoted by foreign subsidiaries. Even though the payoff is large, firms engaging in foreign production also encounter labor relations and severe market competition problems. This shows that operating in an unfamiliar and distant environment is risky and will be compensated for by higher returns.

I. CONCLUSION

The overall Taiwan Foreign Direct Investment fits the general FDI theory studied in Chapter 1. Most of the firms engage in FDI for the purpose of expanding their market share. Moreover, Taiwan MNCs invest
in LDCs and other NICs to exploit their technology and machinery and they invest in DCs to seek new technology.

The general characteristics of Taiwan MNCs investing in LDCs and other NICs is that they does use the more labor intensive, smaller production scale method. This is, however, not true for MNCs investing in DCs. Generally speaking, Taiwan MNCs are very flexible in adapting to the environment and are very conscious of the local input factor. After all, it is the input factor that is important when deciding which production method to adopt. MNCs from Taiwan use more labor in serving LDCs and other NICs while they use more capital in serving DCs. In addition to their flexibility and cost effective production method, they also attribute their success to offering the "right" product at a competitive price.

Ethnic ties are a reason for investing abroad. However, this can not be studied quantitatively. Especially, these kinds of motivation are either unconscious or not admitted by the participating firms in the survey. Nevertheless, the many investment cases in Southeast Asian countries starting very early are a sign of the close ethnic connection with overseas Chinese. This reasoning can further be supported by the important role overseas Chinese played in inward FDI as discussed in Chapter 2.

As far as political motivation is concerned, because of the threat of being taken over by the People's Republic of China, many Taiwanese
would like to remove some of their assets from the island. Earlier, when there was restriction on capital outflow, most of the investments were through family ties or ethnic connection in Southeast Asian countries. Later, as the Nationalist government in Taiwan received unfavorable political recognition from most of the world, the restriction on the capital outflow was lessened. The government would like to use FDI, both inward and outward, as well as trade relationships to establish unofficial relationships with many countries. Private enterprises thus received the government's blessing in pursuing outward FDI, especially toward DCs as in the case of the United States.

It was found most of the characteristics or advantages generalized from previous theoretical study, including smaller scale, labor intensive, proximity of location, capital/labor ratio, and ethnic ties, are especially applicable to MNCs investing in LDCs and other NICs. On the other hand, the characteristics and advantages of flexibility, price sensitive market and low export/import ratio can be applied to the general case.

Finally, in order to promote further outward foreign direct investment to stimulate economic growth, a policy that facilitates and/or promotes FDI should be considered. Examples are:

(1) Incentives for FDI, i.e., tax exemption for the first five years of profit remittances.

(2) Avoidance of double taxation of foreign income.
(3) Coordination between FDI and portfolio investment.

(4) "One stop" method of approving FDI proposals as in the case of attracting forward investment.

(5) Establishment of a government organization to help private entities carry on market research and direct FDI into strategic industries.
### EXHIBIT 1

**STATISTICS ON OUTWARD INVESTMENT BY YEAR & BY AREA**

1959-1983  

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<th>Year</th>
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<td>1119,875</td>
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C: cases. A: amount  
* reinvestment for the old cases.  
Source: Statistics on outward invest of the Republic of China,  
Investment Commission, Ministry of Economic Affairs, Dec. 31st 1983
SATISTICS ON OUTWARD INVESTMENT BY YEAR

GRAPH 1
### EXHIBIT 2

**STATISTICS ON OUTWARD INVESTMENT BY INDUSTRY & BY AREA**

1959-1983

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<th>INDUSTRY</th>
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<td>Basic Metals &amp; Metal Products</td>
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<td>2 740</td>
<td>4 628</td>
<td>16 6,648</td>
<td></td>
</tr>
<tr>
<td>Machinery Equipment &amp; Instrument</td>
<td>1 122</td>
<td>1 250</td>
<td>7 250</td>
<td>3 372</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic &amp; Electric Appliances</td>
<td>3 333</td>
<td>42,048</td>
<td>350</td>
<td>6 8,608</td>
<td>5 4,583</td>
<td>25 16,782</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>1 65</td>
<td></td>
<td></td>
<td>5 1,914</td>
<td>6 1,979</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade</td>
<td>3 207</td>
<td>2 18</td>
<td>1 237</td>
<td>1 100</td>
<td>129,350</td>
<td>16 1,639</td>
<td>35 11,551</td>
<td></td>
</tr>
<tr>
<td>Banking &amp; Insurance</td>
<td>1 1,105</td>
<td>1 1,050</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>2 750</td>
<td>1 116</td>
<td>3 866</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>3 570</td>
<td>2 155</td>
<td>5 725</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>856,665</td>
<td>86,083</td>
<td>218,837</td>
<td>910,113</td>
<td>1119,875</td>
<td>134 134,324</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Statistics on Outward Investment of the Republic of China, Ministry of Economic Affairs, Dec. 31st, 1983*
### EXHIBIT 3

**SOME RATIO FOR FOREIGN DIRECT INVESTMENT**

- **unit %**

<table>
<thead>
<tr>
<th>Industry</th>
<th>FDI/Domestic Equity (%)</th>
<th>Owner's Equity (%)</th>
<th>Outward Investment/Inward Investment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food &amp; Beverage Processing</td>
<td>0.04</td>
<td></td>
<td>3.13</td>
</tr>
<tr>
<td>Textiles</td>
<td>0.01</td>
<td></td>
<td>0.43</td>
</tr>
<tr>
<td>Garment &amp; Footwear</td>
<td>0.06</td>
<td></td>
<td>1.17</td>
</tr>
<tr>
<td>Lumber &amp; Bamboo Products</td>
<td>0.22</td>
<td></td>
<td>18.12</td>
</tr>
<tr>
<td>Pulp Paper &amp; Paper</td>
<td>0.18</td>
<td></td>
<td>28.87</td>
</tr>
<tr>
<td>Plastic &amp; Rubber Products</td>
<td>0.32</td>
<td></td>
<td>19.34</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.16</td>
<td></td>
<td>13.10</td>
</tr>
<tr>
<td>Non-Metal</td>
<td>0.50</td>
<td></td>
<td>63.89</td>
</tr>
<tr>
<td>Metal</td>
<td>0.09</td>
<td></td>
<td>2.30</td>
</tr>
<tr>
<td>Machinery Equipment &amp; Instrument</td>
<td>0.01</td>
<td></td>
<td>0.07</td>
</tr>
<tr>
<td>Electronic &amp; Electric Appliances</td>
<td>0.41</td>
<td></td>
<td>4.16</td>
</tr>
<tr>
<td>Manufacturing Sector (subtotal)</td>
<td>0.26</td>
<td></td>
<td>7.44</td>
</tr>
<tr>
<td>Trade</td>
<td>0.70</td>
<td></td>
<td>125.81</td>
</tr>
<tr>
<td>Total</td>
<td>0.28</td>
<td></td>
<td>6.09</td>
</tr>
</tbody>
</table>

*Source: Investment Commission Ministry of Economic Affairs.*

*As for the year ends at Dec. 31st 1981*
### Exhibit 4

**Statistics on Implemented Outward Investment by Industry & Area**

**As for 1981**

<table>
<thead>
<tr>
<th>INDUSTRY</th>
<th>Developed Countries</th>
<th>Newly Industrialized and Less Developed Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S.</td>
<td>Japan</td>
</tr>
<tr>
<td>Food &amp; Beverage Processing</td>
<td>240</td>
<td>240</td>
</tr>
<tr>
<td>Textile</td>
<td>220</td>
<td>220</td>
</tr>
<tr>
<td>Garment &amp; Footwear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber &amp; Bamboo Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulp Paper &amp; Products</td>
<td>5,500</td>
<td></td>
</tr>
<tr>
<td>Plastic &amp; Rubber Products</td>
<td>7,600</td>
<td></td>
</tr>
<tr>
<td>Chemicals</td>
<td>461</td>
<td>461</td>
</tr>
<tr>
<td>Non-metallic Minerals</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Basic Metals &amp; Metal Products</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Machinery Equipment &amp; Instrument</td>
<td>6,485</td>
<td></td>
</tr>
<tr>
<td>Electronic &amp; Electric appliances</td>
<td>1,784</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>5,975</td>
<td></td>
</tr>
<tr>
<td>Trade</td>
<td>810</td>
<td></td>
</tr>
<tr>
<td>Banking &amp; Insurance</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Other</td>
<td>27,071</td>
<td>810</td>
</tr>
<tr>
<td>Total</td>
<td>27,071</td>
<td>810</td>
</tr>
</tbody>
</table>

CHAPTER 3 Notes


2) Ibid. p. 10, calculation from table 3.2.

3) Ibid. p. 10, table 3.3.

4) Calculation from Exhibit 2.


6) Exhibit 1.

7) Calculation from Exhibit 1.

8) Calculation from Exhibit 1.


10) Exhibit 3.


12) Ibid. p. 15 calculation from table 3.9.


14) Calculation from Exhibit 1.


16) Research Paper, p. 18, calculation from table 3.11.


20) Ibid. p. 21.

21) Ibid. p. 23.

22) Ibid. p. 23, col. 1-12.

23) Ibid. p. 23, col. 15.
24) Ibid. p. 23.

25) Conglomerate is a holding company which has at least 6 member companies.


27) Ibid. p. 32.

28) Ibid. pp. 33-34.

29) Ibid. pp. 33-34.

30) Ibid. p. 35.

31) Ibid. p. 37.

32) Ibid. p. 37 col. 7.


34) Ibid. p. 38 and calculation from p.38.

35) Ibid. p. 38 col. 17.

36) Ibid. p. 39.

37) Ibid. pp. 43-44.
CHAPTER 4
CASE STUDY--TATUNG CORPORATION

A. TATUNG CO. HISTORY/BACKGROUND

The origin of the Tatung Co. can be traced to the late Mr. Lin Shang Chih who opened the Hsieh Chih Store in 1918. The store was successful and, 10 years later, it became a company which is now the Tatung Co. and Tatung Group. By the end of 1983, the Tatung Company, on a consolidated basis, is the largest publicly owned corporation in the Republic of China, having more than 60,000 shareholders and the most distributed ownership. It has also been listed among the top 1,000 companies in the world by Fortune Magazine. Tatung is also the largest private sector employer, with more than 25,000 employees as of 1983.

Tatung is an international competitor with thirteen foreign subsidiaries and carries on marketing and manufacturing activities in most of the free world. Its sales at the end of 1982 were US$ 483 million accounting for 1.0% of Taiwan's GNP, and export sales accounting for US$ 119 million, 25% of its total sales. Its consolidated net income was US$ 7.3 million in 1982.

Its activities covers various business sectors which include: appliances, electronics, telecommunications, computers, heavy electric apparatus, wire and cables, construction and transportation, steel and machinery and chemicals. A list of the company's product lines by business sector
is provided in Exhibit 1. A chronology of Tatung's growth is as follows:5

1918 Chairman S.C. Lin founder of the Tatung Company set up the Hsiehchih Company, specializing in construction and civil engineering.

1939 The Tatung Company Incorporated became the first private steel and machinery manufacturer in Taiwan.

1942 Dr. T.S. Lin assumed the chairmanship of the Tatung Company.

1943 Tatung Vocational School was established.

1946 Taipei Industrial Co. was established.

1949 The beginning of electric fan production.

1951 Chairman S.C. Lin closes the Hsieh Chih Company, donating its assets to found the Shieh Chih Association for the Advancement of Industry.

1954 First electric fans exported to the Philippines. The Watthour Meter Factory was established.

1955 Publication of the Hsieh Chih Industrial Library.

1956 Tatung Institute of Technology inaugurated.

1958 Taiwan Telecommunication Industry Co. was formed.

1959 The Tatung Industrial Union was formed.

1960 Production of rice cookers. Inauguration of the Heavy Electric Apparatus Plant.

1961 Production of refrigerators.

1963 Tatung Institute of Technology upgraded

1965 Production of permanent magnets, electric pots, ovens, window air conditioners, cooling towers and counters begins.

1966 Profit Center System was established. Two new subsidiaries, Taiwan Telecommunication Company and the Tatung Electronics Company were formed.

1967 Production of table lamps and zero frost refrigerators.
Production of E-type motor and marine generators.

1968 Electric fans sold to Japan.
Production of 5,000 HP motors.
Central Computer Center Corp. was formed.

1969 Production of 10,000 HP motors.
Formation of new subsidiary, Tatung Wire and Cable Co.

Chunghwa Electronics Development Co., Ltd., was established.

1970 Tatung Paint Company was established.
Export of motors to Japan.
Establishment of Tatung office in Singapore and Tokyo.
Export of TV sets and refrigerators to Thailand and Vietnam.
Inauguration of the Forward Electronics Company and the Chunghwa Picture Tubes Company.

1971 Production of refrigerators and washing machines moved to new plant at Panchiao.
Electric fans exported to the United States.
Tatung Die Casting Co. and Hsiehchih Transportation Co. were established.

1972 Tatung Co. of America and Tatung Co. of Singapore were established.
Tatung Gardening Co. was formed.


1974 Tatung Co. of America's Los Angeles Plant was established to produce electric fans.
Tatung Co. of Singapore began production of black and white picture tubes.

1975 Inauguration of the Tatung Precious Metals Co. and Tatung Co. of Japan.

1976 Color TV sets bearing the Tatung trademark were exported to the U.S. and service stations established there.
The Tatung Precise Meter Co., the America Tatung Co. of Hong Kong and Peitou Audio Plant were established.
Graduate School of Business and Electrical Engineering instituted in Tatung Tech.

1977 The Solar Industries Co., a joint venture with Philippine Industries was formed.
Kuen Der Co., Ltd., was formed.

1978 The Sanchih Electronics Co. was inaugurated. The beginning of construction of the Taiwan Refractory Company's new picture tube plant in Yangmei.

1979 Formation of Tatung Quartz Co., Ltd. and Tatung Osaka Co. of Japan, Inc.

1980 Tung-Conair Corp., Tatung Coatings Co. and Color Tube Plant were established. Export to Middle East Region.


1982 Tatung International Corp., Austria Branch, was established. Production of VHR-1032 and 1042. Graduate School of Chemical Engineering and Computer Science instituted in Tatung Tech.

1983 Production of VHR-0329. Graduate School of Material Science was instituted.

B. TATUNG'S EARLIER STRATEGY

In order to obtain the newest technology so as to improve product quality and the manufacturing process, Tatung moved in three directions in its earlier strategy. The three directions are education and training, licensing and subcontracting, and research and development.6

(1) Education and Training

In 1943, Tatung Junior Vocational School was established to assist in the development of the labor skills required to support its business
goal. A single full-time teacher and several part-time teachers from the Tatung Co. taught mechanics in one classroom to the first class of 30 students. Tatung Senior Vocational School was added in 1948. This was the first example of close cooperation between education and industry in Taiwan. In 1956, Tatung Institute of Technology (TIT) was established. By 1963, TIT had achieved full accreditation as a four-year college and offered degrees in Electrical Engineering, Mechanical Engineering, and Business Management. Chemical Engineering was added in 1970 and Industrial Design in 1973.7

TIT had 900 students and pursued a policy of "quality first." Its compact size permitted greater faculty-student contact and the opportunity for the students to work directly with professors. "Industry, frugality, and discipline" were characteristics emphasized by TIT.8 Students wore uniforms and awards were given for perfect or excellent attendance. During the summer, students were required to gain actual work experience or to participate in academic projects at a factory or school. Though there was no obligation for graduates to work for the Tatung Co., preference was given to TIT graduates during the recruitment periods.

(2) Subcontracting and Licensing

In order to speed up acquisition of the latest technology and manufacturing processes, Tatung started very early to become the Taiwan marketing agent for leading manufacturers around the world as well as the licensee for many products manufactured in Taiwan. "In 1970, Tatung
began to export motors to Japan as a subcontractor and added additional components and finished products on a subcontracting and OEM basis."

Furthermore, due to the government's promotion of technology transfer, Tatung engaged in many joint ventures and/or technical assistance contracts with foreign counterparts. Though Tatung has only minority ownerships in most of the joint ventures, both joint venture and technical collaboration with foreign MNCs in Taiwan does provide opportunities for technology transfer as well as for upgrading Tatung's product quality and manufacturing processes. The current joint ventures and technical collaborations are shown in Exhibit 2.

(3) Research and Development

Research has been emphasized a great deal throughout the company and school. In fact, the technical department of TIT was an integral part of Tatung's research and development. Each profit center, also has its own R&D for product improvement. Sometimes R&D will be carried on in conjunction with the corporate R&D department and/or with various local and foreign universities. Thus, the importance of R&D has been recognized and emphasized by the management.

As the result of the three-pronged approach of education and training, research and development, and licensing and subcontracting, Tatung was able to become a cost-competitive manufacturer of high quality products incorporating the newest technological advances. An example of the
excellence of their product development was the 1977 Chicago Consumer Electronics Show award for "Outstanding Design and Engineering," given to the Tatung Audiocolor TV sets exported to the United State. Moreover, numerous awards were given to Tatung by the government for its excellence in export performance as well as in its product design and premium quality. Consequently, on the basis of product quality and manufacturing expertise, Tatung is strongly positioned for competition in the worldwide market place of the 1980s, which will be discussed in greater detail later on.

C. COMPANY PHILOSOPHY

(1) The Philosophy of "Tatung" (大同)

In Confucianism, the word "Tatung" means an ideal world where people of the four oceans are like brothers and sisters. Chairman Lin explained: "In the ROC, the Confucian philosophical principles of faithfulness, benevolence, industry, and frugality still continue to influence our way of life. According to Confucius, we have an obligation to share our knowledge and to assist in the achievement of the well-being of other nations and peoples." 

In its dedication to these Confucian principles, the Tatung Co. provided technical and managerial assistance to 18 countries in the developing world--the Philippines, Indonesia, Thailand, Malaysia, Singapore, Hong Kong, Ecuador, Colombia, Venezuela, Peru, Greece, Malta, Rhodesia,
Nigeria, New Zealand, St. Lucia and Guatemala.\textsuperscript{12} In providing such assistance, Tatung shared with these countries its achievements and experience in technology, services, and products. Countries that currently receive technical assistance from Tatung are:

<table>
<thead>
<tr>
<th>Technological Export</th>
<th>Recipient</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>Standard Electric</td>
<td>Fan, Coolers, Washing machines</td>
</tr>
<tr>
<td>Philippines</td>
<td>Sun industrial</td>
<td>Electric meters</td>
</tr>
<tr>
<td>Philippines</td>
<td>MVR</td>
<td>TV tubes</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Indomachine</td>
<td>B/W $ color TV sets</td>
</tr>
<tr>
<td>Indonesia</td>
<td>PTBD</td>
<td>Transformers</td>
</tr>
<tr>
<td>India</td>
<td>SAMTEL</td>
<td>B/W TV tubes</td>
</tr>
<tr>
<td>Thailand</td>
<td>Huei Lee Co.</td>
<td>B/W TV sets</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>TECHMATICS</td>
<td>B/W TV sets</td>
</tr>
<tr>
<td>Guatemala</td>
<td>TELEMUNDO</td>
<td>B/W TV sets</td>
</tr>
</tbody>
</table>

Source: Business Group in Taiwan '83 p. 667

China Credit Information Services.

(2) \textbf{Profit Sharing}

As mentioned before, Tatung Co. follows the word "TATUNG" as understood in Confusianism that the achievement of the company is obtained by all the employees and should be shared by all the employees. Since 1946, the Tatung Company has dedicated itself to encouraging all workers to become shareholders. Starting the same year, the company has been giving out stocks as part of the compensation for their employees. Tatung further provided interest free loans to their employees who want to purchase
the company's stock. Up until 1982, more than 30% of the stock is held by the employees, Tatung thus, achieved the goal of profit sharing among management staffs and workers.

The Tatung Company also wants to change from being a privately owned enterprise to a publicly owned-enterprise. Its ultimate goal is to let the whole society share its achievements. In 1957, in order to attract private investment for purchasing the stocks, the slogan given by the company was "A public company for everybody's savings." Starting 1958, the company's stocks have been available on the local stock exchange and there were more than 60,000 shareholders by the end of 1982. Among the 60,000 shareholders, roughly 75%, that is 40,000 shareholders, are individual owners. The distribution of the stockholders is shown in Exhibit 3. Tatung Company, thus, has the most shareholders and is the most distributed enterprise in Taiwan.

(3) Management Style

One precept of Tatung's management philosophy was to provide job security and thus employees were seldom fired. Exectives were held to a high standard of management performance and were expected to provide the example, the leadership, the training and the supervision to motivate employee performance.

In addition, dedication to education and training was an important part of management responsibility. Senior managers had regular teaching
assignments at TIT to provide managers with the impetus to keep up to
date on the latest management theories and advances in management thinking. Likewise, it afforded TIT's MBA students an opportunity to test classroom theory with the experience of Tatung managers.

Furthermore, many seminars are conducted by senior management throughout the year. Tatung also sponsored study abroad for its employees who were admitted to leading U.S. graduate schools. Thus, the belief, in continuous education and training is fostered by Tatung management.

Moreover, the principles of integrity, frugality and industry were a way of daily life for Tatung employees. Employees regularly worked six days a week from 8 a.m. until 5 p.m. and managers worked even longer hours, including many Sundays. There was a sincere and pervasive spirit of selfless service and responsibility combined with an unparalleled work ethic.

D. COMPANY ORGANIZATION

Tatung is functionally organized with corporate vice presidents responsible for Manufacturing and Engineering, Finance, Purchasing, Marketing and Overseas Operations, and Public Relations. An executive vice president was responsible for the activities of the president's office as well as having direct responsibility for the Electronics Business Division. The managers responsible for the Personnel Division and the Secretary Department also reported directly to Chairman Lin. A
Looking at an industry breakdown, the present Tatung Company consists of 4 divisions: Electric Home Appliances, Electronics Division, Industrial Machinery, and Sales & Overseas Subsidiary Division.

**Electric Home Appliances**: Refrigerators, air conditioners, washing machines, electric fans, coolers, electronic ovens, kitchen utensils, steel furniture, electric meters and various related companies.

**Electronics Division**: TV sets, video recorders, stereo sets, electronic parts & components, computer and peripheral equipment, instruments, semi-conductors, tuners, selectors, TV tubes, quartz, etc., and various related companies.

**Industrial Machinery**: Transformers, distributors, motors, generators, NC lathes, dies, capacitors, speed changers, machine tools, automatic control equipment, precision grinders, electric wire & cable, plastic parts, paints, etc., and various related companies.

**Sales & Overseas Subsidiary Division**: Sales and after-sales services are provided by 300 field service stations, 500 self-operated shops and 8 foreign subsidiaries. Also, there are some invested foreign companies.

Basically the divisions are divided according to industry. The three industries Tatung is involved in are: electronics, electric appliances and industrial equipment/heavy machinery industries. On the other hand, foreign subsidiaries and the sales division act as an independent entity to promote and serve the customers.

Within its functional and divisional structure, Tatung had approxi-
mately fifty profit centers as reflected in Exhibit 5. The profit center managers, who were generally promoted from the manufacturing disciplines, were responsible for production scheduling, manufacturing, cost control and pricing. Corporate Marketing was responsible for all marketing functions other than pricing, but did become deeply involved in pricing as well.

Profit centers included one or more related product groups which were produced on a few lines on one floor in a factory or might cover an entire floor or even an entire building. Some profit centers manufactured all of their components and also assembled, while others only assembled products or manufactured components.

During the early phases of Tatung's growth when the company sought to escalate its acquisition of manufacturing technology and expertise through licensing, OEM subcontracting, and making finished goods under a buyer's brand, profit center managers with manufacturing skills were highly valued. The skills required for success were manufacturing oriented.

However, as Tatung moved from this phase to one of expanding the penetration of its branded products into overseas markets, the role of the profit center manager became more and more that of a general manager. He had to weigh and balance the most effective trade offs between marketing, manufacturing, control and finance. The need for Tatung to be technologically superior and cost effective remained, but there was also a need for a strong marketing orientation. In recognition of this need,
marketing managers were assigned to the plants and had a dotted line relationship to with the General Manager in addition to their direct reporting relationship with the plant managers as depicted in Exhibit 6.

E. TATUNG'S GROWTH IN THE ROC MARKET

Until 1960, Tatung's products were sold through (1) independent stores which carried Tatung products exclusively under franchise contracts and (2) commission-based stores, which carried Tatung products nonexclusively. Around 1960, the company began to establish company-owned service centers for after-sale service activities. With the continuous introduction of new products, the number of these stores increased substantially. By the end of 1979, retail distribution of Tatung products was as follows:17

- independent stores............502
- commission-based stores........760
- owned service centers.........382

The service stores were classified by product category as home appliances, industrial products, steel furniture, air conditioners, and audio products specialties. In recent years, the activities of the owned service centers had been expanded to include showroom activities as well as sales under installment payment terms and sales of higher priced items on a cash basis. In this way, the company sought to avoid having owned stores directly compete with its exclusive independents or commission-based stores. In addition to retail store distribution, there was a direct sales department in the marketing division which handled sales to
the government, the military, and other institutions.

By 1980, electronics and home electric appliances accounted for 80% of total sales compared to 20% for industrial products. Exports were 17% of total sales compared to 83% of sales in the domestic market.\(^{18}\) In order to expand the business even further, Tatung has placed more emphasis on its export as well as its foreign subsidiary business in the last few years.

If groups involved in similar types of business are studied, the Tatung Company has been ranked #1 in the past 10 years in terms of total assets. If rankings of groups among the largest private manufacturing companies in Taiwan are looked at, Tatung ranked #2 in sales, #1 in assets and #4 in exports in 1983.\(^{19}\) It is also the #1 electronics company in Taiwan that manufactures most of the electronic home appliances for Taiwan consumers.\(^{20}\) If the individual company is looked at, Taiwan Telecommunication is also one of the 10 largest companies in the electronics industry.\(^{21}\) If telecommunication equipment alone is considered, Taiwan Telecommunication is the largest producer in Taiwan. Tatung's dominant market share in ROC thus results in its important role in serving the Taiwan domestic market.

F. TATUNG'S GROWTH WORLDWIDE

Tatung began exporting in 1954 when it shipped its first lot of electric fans to the Philippines. By 1980, it had sold over 300 products in more than 100 countries in Asia, Europe, and the Americas. Its export
growth from 1961 to 1977 outpaced the national growth rate of both the domestic market and the export market. 22

In the last couple of years as shown from the company's chronological growth, Tatung established foreign subsidiaries as sales representatives to provide after-sale services as well as to assemble some products locally. Its strategy of moving from export to foreign direct production is aimed at better serving the local markets. At the end of 1983, Tatung had foreign subsidiaries in the United States, Luxemburg, the United Kingdom, Austria, Korea, Singapore, Japan and Hong Kong. 23 All these foreign subsidiaries will be discussed in detail in the following section.

(1) Tatung Co. of America, Inc.

To penetrate American markets, Tatung Company of America was founded in Los Angeles in 1972. Half of the investment was made by American citizens; the other half by Tatung Company. The Company serves as a base for purchasing necessary raw materials and components as well as for providing Tatung products and services for American markets. By 1983, there were three production plants and three service stations, and a burgeoning growth of business.

(a) Electric Fan Plant—established in 1972. With rapid growth every year, the plant has the largest volume of electronic fan production in the United States with annual sales of more than 1 million units.
(b) **Audiocolor TV Set Plant**—established in 1978 in Long Beach, Ca. In February 1979, it began to produce Audiocolor TV sets. Aside from the impressive annual production of more than 60 thousand units, the Audiocolor TV also received the Consumer Electronic Show reward for "Outstanding Design and Engineering" at the 1977 Chicago Consumer Electronics Show.

(c) **Atlanta Plant**—established in 1980 in Georgia, manufacturing mainly electric fans and color TV sets. It acts as a base for Tatung to penetrate both Eastern and Central the United States.

(d) **Dallas Service Station**—established in 1983 to expand its market coverage, it serves mainly the South Central United States.

(e) **Sales and Service Network**—Tatung also has services and a distribution network throughout the United States. There are service stations located in Torrance, Long Beach and Artesia. In addition, there are more than 600 authorized service centers which provide similar services all over the United States. Chain sales agents are found in the leading department stores in California, Massachusetts, and Texas, etc. The number of agents, other than in stores, reaches as high as 800 in certain states.

Tatung Co. of America, Inc., had sales revenue of $50 million in 1981 and $44 million in 1982.24 The successful operations of Tatung Co. of America have "increased employment in America communities, offering
scientists, engineers, specialists, and technicians the opportunity to
develop their talents and capabilities and has increased tax revenue at
every government level."{25} It also has increased the volume of American
exports with directly contributed to the betterment of America's foreign
trade balance.

(2) Tatung Laboratory California, U.S.A.—based in Santa Clara. It
is responsible for the research and development of strategic electronic
software and components. It also helps Tatung Co. of America, Inc., to
expand its business inside of the United States.

(3) Algol Technology, Inc.—based in Redwood City, Ca. It was form-
ed in 1980 to design and innovate the technology electric and computer
products. It further transplants high technology into the parent company.

(4) Tai-Tatung Inc.—based in Braintree, Ma. It was established in
1981 to reasarch, develop, design, and transfer high-tech micro-wave
products of the utmost precision.

(5) Tatung International Corp., S.A.—based in Luxembourg. It was
established in 1981 as the European headquarter for Tatung Company. Its
overall responsibilities include: (1) the design of a strategy for produc-
tion and sales in the European area and the supervision of its implementa-
tion (2) introduction of high technology from Europe to the parent country.

(6) Tatung (U.K.) Ltd.—based in Shorpshire, England. It was form-
ed in 1981 to manufacture products and provide after-sale service to England and other European countries. It serves not only as a foreign subsidiary for its parent company but also as an agent to promote better trade relations as well as cultural, economic and social understand between England and ROC.

Its Bridgnorth color TV plant manufactured PAL color TVs, with an annual capacity of 90,000 units, to supply England and other EEC countries. The English's subsidiary's sales, in 1982, were 20,500,000 pounds, which was a growth rate of 300% compared to 1981. 26


(8) Tatung Liaison Office, ROK--based in Seoul, Korea. It was formed in 1979 to market Tatung products in Korea as well as to purchase raw materials and components from Korea for domestic production. It also acts as an agent for improve cultural, economic and educational understanding between the two countries.

(9) Tatung Eletronics (Singapore) PTE. Ltd.--based in Jurong Town, Singapore. It was formed in 1972 to sell primarily TV picture tubes,
electronic products and home appliances. Its picture tube plant produced 80,000 units of B/W tubes monthly, supplying both the local TV manufacturers and those in other countries. As far as the distribution network is concerned, the Hung-Mao Chiao service station, along with 150 retail stores, make up a sales network in Singapore.

(10) Tatung Co. of Japan, Inc.--based in Tokyo, Japan. It was established in 1975 to promote direct sales to Japanese customers. Products for sale are home appliances, heavy electrical apparatus and electronic products. At the same time, Tatung Co. of Japan, Inc., also purchases equipment, instruments and raw materials from Japan for domestic usage. The monthly trade figures are as high as $2.65 million in 1982, with 25% growth rate compared to that in 1981.27 In order to render better and speedier service to its Japanese customers, a direct service station was established in Ginza, Tokyo in 1979.

(11) Tatung Tokyo Engineering Center--based in Tokyo, Japan. It is established in 1980 to attract local technicians and engineers to help headquarters develop new products to serve both the domestic and foreign markets.

(12) Tatung Osaka Co. of Japan, Inc.--based in Osaka, Japan. It was formed in 1979 with responsibilities for (1) seeking local partners for joint ventures to develop and improve existing products, (2) importing updated equipment, production facility and raw materials to improve domestic productivity so as to strengthen competitiveness in the domestic
and overseas markets, (3) providing high quality products with prompt delivery to local customers. The sales revenue achieved by the Osaka subsidiary in 1982 was 2 billion yen.

(13) America Tatung Co. of Hong Kong Ltd.--based in Hong Kong. It was formed in 1976 to serve local Hong Kong customers. It also has responsibility for purchasing and locating new sources of supply for the Taipei parent company and other invested companies.

G. PLANT TOUR TO TATUNG CO. OF AMERICA, INC.

On Jan. 9, 1984, a tour of the Tatung plant at Long Beach, Ca. was conducted. The following information is based mostly upon interviews with various personnel and marketing officers.

(1) Sales Forces

Tatung Co. of America, Inc., markets its products mainly through manufacturer's representatives. It believes that manufacturer's representatives are the ones who know their buyers best. Further, marketing through manufacturer's representatives on a commission basis facilitates the company's staying within its budget, since the 3% commission is treated as a fixed cost. In contrast, retail stores with salesmen salaries, store expenses, promotion, etc., have an operating cost that may reach 13-14%. It also believes that the manufacturer's representatives are aggressive salesmen because their only income is from sales commissions. Tatung adopted this distribu-
tion channel in entering the U.S. market, with which it does not have much experience as yet.

(2) **Product Division**

At present in Tatung Co. of America, Inc, there are various divisions. The electronics division sells products such as TVs, stereos, radios and VCR. The computer division sells monitors and the electronic division sells many different types of motors. With the expectation of a growing market demand for its monitors and motors, Tatung Co. of America expects these two divisions to expand rapidly. The home appliance division sells products such as rice cooker/steamers, refrigerators, electric fans and other kitchen appliances. In addition, Tatung is also introducing a small vacuum cleaner and a push-tone telephone to the U.S. market.

(3) **Competitors and Competitiveness**

According to one of the marketing managers, Tatung perceives that its major competitors in the U.S. market are other U.S. electronic manufacturers, some Japanese importers, such as Panasonic, and other Taiwanese importers. It, however, believe that it has a certain competitive edge from offering products with superior features at a competitive price. Although Tatung does not price its products in the lowest range, their good quality and superior features provide customers with the best values. One of the marketing managers said that as the consumers become more sophisticated, they
will look for high value products instead of cheap products and Tautung product does provide consumers with the best value they can get.

Tautung also wants to expand its product lines in its penetration of the U.S. market. It believes that as consumers use more and more Tautung products, Tautung will become more and more important to consumers and its reliability and good quality will become known. By establishing the service stations and local manufacturing facilities, Tautung will further react to local market demand sooner and provide better after-sale services, which is a feature which most of the Taiwanese that export to the United States, do not provided.

(4) Discription and Strategy of A Few Successful Products Introduced in the U.S.

(a) Electric Fans: As American consumers are becoming conscious of energy saving, Tautung fans are very popular. Tatung Co. of America sold one million fans in 1979, ranking first in the U.S. market. Most of the motors for the electric fans are imported from Taiwan, with some other parts manufactured in the United States while other specific electric fans are imported directly from Taiwan. Two types of electric fans are very popular in the United States namely the oscillating fan and the ceiling fan.

(i) Oscillating fan—It is the least expensive way to cool down
in the summer. As energy resources become scarce and the electricity bill is rising, the oscillating fan is the most economical way to reduce the electric bill in the summer. Even with air conditioning, the oscillating fan can provide the most efficient way to reduce the temperature by circulating the air.

(ii) Ceiling fan—Most of the ceiling fans are sold in the mountain states, such as Colorado. Ceiling fan not only has the function of an electric fan but also acts as interior decoration. Tatung further improved the product with the most updated design and added a lighting kit so that it serves multifunctional purposes. During the summer, the ceiling fan can be used to circulate the air; during the winter, when the warm air rises, it can be used to circulate the warm air.

The market demand for oscillating and ceiling fans had doubled in 1982, tripled in 1983 and another big increase is expected in 1984. The electric fan thus is the most promising product Tatung has yet brought into the U.S. market.

(b) Color TVs: The quality of Tatung's color TV compares favorable with other major TVs. Although its TV is not the least expensive, it provides more of the most modern features. Tatung's audiocolor TV provides a stereo sound effect; it received an award at the Chicago Consumers Electronic Show.
(c) **Rice cooker/steamer**: Due to the increase in the oriental population in the United States as well as the popularity of Chinese food, the demand for rice cookers has increased. Unlike most its the Japanese competitors, Tatung's rice cooker provides an indirect way of cooking the rice. This indirect way of cooking not only provides a different rice texture but also can be used to cook other foods. Product differentiation thus is the main strategy for Tatung's rice cooker in the U.S. market. In addition, the Tatung rice cooker also has many different versions, designs and sizes.

(d) **Refrigerators**: Only compact size refrigerator are sold in the United States since Tatung knows it is competitive only in the compact size market. Compact size refrigerators are sold mostly for use in small apartments, mobil homes and hotels. Further, Tatung sells to students and offices for a group use. The marketing strategy adopted for Tatung's refrigerator thus focuses on particular market segments.

(e) **Other products**: Other products, such as industrial products, are well known by the industrial users and thus require less marketing effort. For new products for the U.S. market, i.e., vacuum cleaners and telephones, Tatung also employs product differentiation and focusing strategies. In summary, Tatung does not believe in a strategy of providing cheap products at a cheap price but focuses its attention on product innovation and providing the best value for consumers.
(5) **Summary**

As was indicated in an interview, Tatung's policy in entering the U.S. market so far has been very successful. It first carefully picks and chooses products for the U.S. market and then does a feasibility study. Next, it adopts a product differentiation or focusing strategy. One of the market managers, however, stated that Tatung still must overcome for the negative image of low cost and poor quality that is so long has been associated—fairly or unfairly—with imports from Southeast Asian countries. This perhaps can be offset by more institutional advertising stressing Tatung's history and the quality of its products. When consumers know the Tatung name and the quality of its products, the company image will be upgraded.

H. ANALYSIS OF TATUNG'S DOMESTIC AND INTERNATIONAL GROWTH

So far most of this case has been a description of the company resulting from both research and interviews. Next, Tatung's pattern, strategy, and process in its overall growth will be analized.

(1) **Tatung's pattern of growth**—Tatung has concentrated its growth on electrical related industries by domestic market penetration, international expansion and concentrated research and development.

(a) **Domestic market penetration**—Since the beginning of Tatung
company, the management philosophy of sharing profits with customers and emphasizing quality control have been known to the public. Its numerous awards for quality control, product design and engineering of various products have further increased Tatung's credibility among consumers. Both Tatung's management philosophy and high quality standards thus act as the basis for consumer acceptance and market penetration in ROC.

In ROC, Tatung consistently advertises through every form of mass media. The "Tatung Song" was so popular that almost every child sings it. Further, it's slogan of, "Using Our Own Product," aims at attracting patriotic consumers. High quality and competitive price are also important consumer attractions. As a result, Tatung products are very popular in ROC.

Finally, the extent of the Tatung distribution network in Taiwan was very large. In 1979, its number of owned service centers was greater than the number of gasoline stations in ROC and the total distribution outlets, including independent stores, commission-based stores and owned service centers, exceeded the number of post offices. The distribution outlets are responsible for providing after-sale service, increasing customers' satisfaction levels and engaging in promotional activities. Tatung's extensive distribution network plays an important role in its successful market penetration strategy.
(b) **International expansion**—As mentioned before, Tatung started exporting its electric fans to the Philippines in 1954. Later on, Tatung exported various products, including refrigerators, air conditioners, TVs, radios, picture tubes, cable and wire, etc., to various countries, including Japan, Canada, Southeast Asian countries, America, Middle East countries and Europe. Its product coverage thus has been worldwide.

Tatung exports its technology to other LDCs and its capital assets to DCs. Tatung set up either sales representatives, service stations or manufacturing facilities in Singapore, America, Japan, Hong Kong, United Kingdom, and Austria, etc. Tatung also provides technical assistance to various LDCs, i.e., the Philippines, Thailand, Indonesia, and some South American countries. Its international commitment thus is moving worldwide.

Finally, besides all its foreign subsidaries, Tatung has representatives in Europe, Africa, Austria and the Central America countries. Its international strategy thus is to build up a worldwide network so as to achieve a worldwide reputation.

(c) **Heavy research and development**—In the R&D department, there is technical staff in charge of all the technical, manufacturing and research processes for the entire Tatung group. Its responsibilities are to improve production technology, upgrade product quality, increase product varieties and innovate product features. Heavy
research, development and innovation of product design, quality, and variety as well as product features are characteristic of Tatung's continuous growth.

(2) Tatung's strategy of growth—Most of Tatung's strategy of growth has emphasized vertical integration and diversification.

(a) Vertical integration

(i) backward vertical integration: Many examples show Tatung adopted the strategy of backward vertical integration. In 1969, Tatung acquired most of the shares of the Hwan Cho Cable and Wire Companies. After the reorganization, it not only produced cable and wire for the domestic market but also acted as the main raw material resource for Tatung Co., Tatung Electronic Co. and Taiwan Telecommunication Co. In 1973, Sanchih Chemical Co. was established to produce ABS plastic raw material to supply the home appliance division in making exterior casings for its home appliances.

(ii) forward vertical integration: Two examples of forward vertical integration follow. Hsieh Chih Transportation Co., provides transportation for the Tatung group. It owns various kinds of vehicles that are able to transport all the raw materials from different seaports and airports to the factories as well as transport all the final products from warehouses to different distribution locations. San Chih Container Co. also provides transportation services in
facilitating the export of Tatung products. It acts as an import/export agent taking care of all Tatung's import/export procedures.

Another kind of forward vertical integration which Tatung adopted is the building up of the distribution network. Not only in ROC but also in most parts of the world Tatung has sales representatives, service stations and similar entities. Its goal is to establish a extensive distribution and service network so that wherever there is a Tatung product, there is a Tatung service station. The final result will be immediate control of the retail market and close contact with its customers.

(b) Diversification-- The Tatung group started in the construction business when the Hsieh Chih Co. was set up in 1918. Later on, the Tatung Co. was established mainly to provide mechanical and industrial equipment services to Hsieh Chih Co. In 1949, the Tatung Co. produced its first electric fan and has been producing home electric appliances ever since. Next, Tatung moved into the electronic, communication and computer businesses. As its variety of products increased, its business has been diversified into many industry sectors. Its activities at the end of 1983 includes: appliances, electronics, telecommunications, computers, heavy electric apparatus, wire and cables, construction and transportation, steel and machinery, and the chemicals industry. (See also Exhibit 1)

(3) Tatung's growth process--This can be subdivided into two pro-
cesses, namely, internal and external growth.

(a) Internal growth—The internal growth was achieved through investment within the original Tatung Co. Examples of internal growth are (i) inauguration of an electric steel plant in 1942, (ii) establishment of a motor plant in 1955, (iii) inauguration of TV and air conditioner plants in 1964, (iv) establishment of the Panchiao factory for producing refrigerators and washing machines in 1971, (v) inauguration of a stereo and radio plant in 1974. In addition, there are San Hsia Factory, Taoyuan Factory No. 1 and No. 2, etc. As a result of its internal growth, Tatung by the end of 1983 is a typical headquarter company that has many manufacturing factories.

(b) External growth—The external growth was achieved through establishing a new subsidiary company by the parent Tatung Company. The increase in the number of subsidiaries Tatung Co. owns is astonishing. Starting with one Hsieh Chih Co. in 1918, the Tatung group had 33 subsidiary companies, two schools and one trust fund group by the end of 1983. This increase in number of subsidiaries has been the main force in Tatung's growth.

In summary, Tatung's pattern of growth has been concentrated on domestic growth with the support of heavy R&D. Furthermore, as the domestic market has been satisfied, Tatung began to expand interna-
tionally. By exporting first, Tatung next engaged in the manufacturing process and/or marketing efforts in foreign markets. The goal is to become a global electronic and electric appliances producer serving customers from all over the world. In achieving this high degree of growth in the last 60 years, Tatung adopted vertical integration as well as a diversification strategy. Finally, most of the growth Tatung achieved resulted from external growth, that is, investing in subsidiaries, instead of internal growth.

I. ANALYSIS OF TATUNG'S FDI

It is clear from the case that Tatung is a typical example of a company that adapts FDI as a continuation of the export process. In order to better serve the local market by providing after-sale services and marketing forces as well as by reacting faster to the changes in local demand, both manufacturing and marketing facility were set up in many foreign countries, i.e., America, Singapore and United Kingdom. This strong need or urgency in setting up local subsidiaries in the early stage to handle after-sale services and the marketing function is due to the nature of the electronics and appliance industries. Because of the consumer-oriented and market-oriented nature of the business, Tatung is one of the pioneers of the Taiwanese MNCs in entering the foreign market. It is also the first Taiwanese electronics and appliance producer which set up foreign subsidiaries when entering many countries, i.e., the United States in 1972, Japan in 1975. The motivations for Tatung to engage in FDI, are thus a combination if market seeking, supporting its
existing export facilities, and protecting the existing export market.

It nevertheless is an interesting finding that all of Tatung's foreign subsidiaries are located in DCs and other NICs. Tatung has foreign subsidiaries in DCs such as the United States, Japan, Luxemburg, the United Kingdom and Vienna. Tatung further has local representatives in NICs such as Hong Kong, Singapore and Korea. Perhaps this can be explained either by the fact that DCs as well as some NICs are the major market for consumer electronics and appliances or the fact that countries higher on the ladder of industrialization demand more services.

Either way can be used to explain Tatung's action taken for foreign expansion, namely exporting to the closeby countries first, next exporting to the far away but large market such as the United States, thirdly setting up foreign subsidiaries in the major foreign markets, fourthly entering unfamiliar but potential markets such as the Middle East and lastly covering the whole world. Right now, Tatung has representation in the United States, Japan and major parts of the Southeast Asian countries starting in the 70s and in Europe starting in the 80s. While serving some LDCs by exporting to, i.e., to Indonesia and Malaysia, Tatung's current direction is toward the uncovered part of the market such as South America and Africa.

A different set of motivations for Tatung to set up foreign subsidiaries such as Algol Technology Inc. and Tai-Tatung, Inc. in the United States and Engineering Center in Tokyo is to keep up with the current
technology developing in the major DCs. Technology seeking or simply market information gathering is the major motivation for Tatung to set up research or some sort of technology company. These foreign subsidiaries not only play a role in technology transfer to the parent company but also act as an agency to recruit outstanding local engineers.

As just mentioned, market seeking in many different ways and technology seeking are the major motivation, for Tatung to engage in FDI. Other motivations, such as resource seeking and more efficient production methods, are not strong. This can be explained by the fact that most raw materials for electronics and appliances are abundant and by the fact that Taiwan labor is still relatively efficient and cheap. Many of Tatung's raw materials and services are supplied through its member companies, such as Chunghwa Picture Tubes company and Tatung Die Casting Co. Tatung further reacts to local labor conditions. For example: where labor is expensive, such as the United States, Tatung has only the far less labor intensive last few stages of assembly in its Los Angeles plant.

As far as ethnic ties and political reasons are concerned, Tatung's earlier presence in most parts of the Southeast Asian countries is attributed to the ethnic tie which further results in culture similarities. Tatung's rice cookers are very popular among the rice-growing Southeast Asian countries. On the other hand, the political reason for taking out some of its capital is less strong in Tatung's case. Since Tatung's philosophy has been "let all the consumers share our achievement" and includes profit sharing with its employees, it is hardly likely for Ta-
Tung to invest abroad simply as a means to take out some of its capital. Nevertheless, with so many different kinds of products and a presence in so many countries, Tatung automatically receives some diversifying effects in terms of country risk.

Other characteristics, such as smaller scale, being more labor intensive and having low export and import raw material ratio are not strong for Tatung but are typical for its industry. With Tatung's production scale which in turn serves the greater part of the Taiwan market and a large segment of the foreign market, its production scale is no longer small and its import ratio of raw materials for its foreign subsidiaries from the Tatung Co. is relatively high. Because of the nature of the business, labor intensity is unavoidable both for the Tatung Co. and its foreign subsidiaries. Furthermore, Tatung's foreign subsidiaries are aiming to serve the local market, thus its export ratio from its foreign subsidiaries is very low.

Finally, the flexibility and role as an intermediary for technology transfering will be discussed. Tatung's success both domestically and internationally is due to its super quality at a competitive price. Super quality comes from continuous learning and innovation. As mentioned in the earlier case, Tatung continuously engaged in many technical contracts and/or joint ventures with major electronics and appliance companies in DCs to absorb the new technology. With its own R&D and support form its Technical Institute, Tatung can innovate and improve so much technology that it can extend its hands to other NICs and LDCs. Technical assist-
ance provided by Tatung to many countries not only helps in its further innovation but also establishes a good reputation for the company.

As far as how Tatung can price competitively is concerned, being flexible is the main reason. Due to the labor intensity of the business, it is common for the workers to work long hours during the peak demand. Further, the characteristics of Chinese workers, both management staff and low level, are hard working, diligent and dedicated. Thus the flexible human factor further contributes to the reduction of production cost or increased productivity. Another sign of flexibility observed in Tatung's foreign staffs in their willingness and commitment in adapting to the local environment. This, of course, contributes to its success overseas.

K. CONCLUSION

Tatung is a good example of how a NIC's MNC can be successful in DCs as well as in LDCs and other NICs. Its best service in LDCs and other NICs is attributed to its "appropriate technology," "suitable products at a reasonable price," and "its willingness to help the local economy." On the other hand, its success in DCs is due to its "premium quality product at a competitive price" and "local staffs' flexibility." Nevertheless, as the electronics field becomes increasingly competitive and as the DC's market becomes increasingly sophisticated, Tatung has to continuously innovate its products. In addition, more sophisticated marketing skills, such as advertising and promotion as suggested by an U.S. divisional sales manager should be implemented.
**EXHIBIT 1**

**TATUNG CO.**

Tatung's 9 Business Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Products/Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPLIANCES</strong></td>
<td>Kitchenwares, automatic steamers, fans, cold-storage show-cases, refrigerators,</td>
</tr>
<tr>
<td></td>
<td>freezers, air conditioners, washing machines, gas stoves, kitchen sets, office</td>
</tr>
<tr>
<td></td>
<td>furniture, medical beds, household wardrobes, chests, watthour meters, BS meters,</td>
</tr>
<tr>
<td></td>
<td>NEMA meters, Socket meters, speedometers for motorcycles and automobiles.</td>
</tr>
<tr>
<td><strong>ELECTRONICS</strong></td>
<td>Black &amp; white TVs, color TVs, radios, tape recorders, stereos, car stereos,</td>
</tr>
<tr>
<td></td>
<td>cassette recorders, electronic components, quartz crystal units and filters.</td>
</tr>
<tr>
<td><strong>TELECOMMUNICATIONS</strong></td>
<td>Electronic exchanges, carrier transmission equipment, telephones, crossbar</td>
</tr>
<tr>
<td></td>
<td>exchanges.</td>
</tr>
<tr>
<td><strong>COMPUTERS</strong></td>
<td>Business computers, Chinese character computers, disk drives, printers,</td>
</tr>
<tr>
<td></td>
<td>magnetic tape units, punched cards.</td>
</tr>
<tr>
<td><strong>HEAVY ELECTRIC APPARATUS</strong></td>
<td>Speed reducers, oil pumps, electric power control and switching systems,</td>
</tr>
<tr>
<td></td>
<td>gasoline generators, marine generators, power transformers, power substations,</td>
</tr>
<tr>
<td></td>
<td>diesel generators, ventilators.</td>
</tr>
<tr>
<td><strong>WIRES AND CABLES</strong></td>
<td>Power cables, telecommunications cables, electronic wires.</td>
</tr>
<tr>
<td><strong>CONSTRUCTION AND TRANSPORTATION</strong></td>
<td>Hauling goods with fleets of trucks, tractors and trailers;</td>
</tr>
<tr>
<td></td>
<td>containerization and ship loading at container terminals; premixed cement and</td>
</tr>
<tr>
<td></td>
<td>gravel production.</td>
</tr>
<tr>
<td><strong>STEEL AND MACHINERY</strong></td>
<td>Cast iron products, ductile iron castings, permanent magnets, aluminum</td>
</tr>
<tr>
<td></td>
<td>castings, grinding machines, high speed lathes, NC lathes, NC horning machines,</td>
</tr>
<tr>
<td></td>
<td>heat processors, steel alloys, jigs, fixtures, guages, pins, hydraulic presses,</td>
</tr>
<tr>
<td></td>
<td>electric arc furnaces, automatic rolling mills, precision presses.</td>
</tr>
<tr>
<td><strong>CHEMICALS</strong></td>
<td>ABS (synthetic compound of acrylonitrile, butadiene, and styrene) in 50 different</td>
</tr>
<tr>
<td></td>
<td>grades, coatings for industrial use, paints, isolating varnish, solventless</td>
</tr>
<tr>
<td></td>
<td>varnish, copper clad laminate board.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Member Co. of Tatung Group</th>
<th>Products or Services</th>
<th>Technical Collaborator or Partner of Joint Venture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taiwan Telecommunication Industry Co.</td>
<td>Communication equipment</td>
<td>NEC, Japan</td>
</tr>
<tr>
<td>Forward Electronics Co., Ltd.</td>
<td>Electronic components &amp; parts</td>
<td>ALPS electric, Japan</td>
</tr>
<tr>
<td>Tatung Diecasting Co.</td>
<td>Die Casting products</td>
<td>Mitsui Metal, Japan</td>
</tr>
<tr>
<td>Central Computer Center Corp.</td>
<td>Data processing</td>
<td>NEC, Japan</td>
</tr>
<tr>
<td>Tatung Chinese Character Processing Computer Co.</td>
<td>Computer leasing</td>
<td>Showa, Japan</td>
</tr>
<tr>
<td>Tatung Precise Meter Co.</td>
<td>Speedometers</td>
<td>Nippon Precision, Japan</td>
</tr>
<tr>
<td>Alogol Technology Inc.</td>
<td>TV components</td>
<td>Algal Technolog USA</td>
</tr>
<tr>
<td>Tatung Coatings Co.</td>
<td>Coating materials</td>
<td>PPG Ind. USA</td>
</tr>
<tr>
<td>Tatung Precious Metals Co., Ltd.</td>
<td>Precious metals</td>
<td>Chugai Kikinzokudenki, Japan</td>
</tr>
<tr>
<td>Tung-Conair Corp.</td>
<td>Shaver, etc.</td>
<td>Conair, USA</td>
</tr>
<tr>
<td>Tatung Quartz Co., Ltd.</td>
<td>Quartz</td>
<td>Tokyo Denpa Co., Japan</td>
</tr>
<tr>
<td>Ta Wei Electric Machinery Co.</td>
<td>Circuit breaker, etc.</td>
<td>Westinghouse, USA</td>
</tr>
</tbody>
</table>

## EXHIBIT 3

### Distribution of Share Holders as of May 30th, 1982

<table>
<thead>
<tr>
<th>Share Holders</th>
<th>domestic</th>
<th>domestic</th>
<th>foreign</th>
<th>foreign</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>individual</td>
<td>corporation</td>
<td>individual</td>
<td>corporation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>62,892</td>
<td>46</td>
<td>4</td>
<td>20</td>
<td>62,962</td>
</tr>
<tr>
<td># of stocks</td>
<td>313,775,211</td>
<td>75,883,571</td>
<td>23,956,407</td>
<td>134,811</td>
<td>411,750,000</td>
</tr>
<tr>
<td>percentage</td>
<td>75.84%</td>
<td>18.34%</td>
<td>5.79%</td>
<td>0.03%</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># of shareholders</th>
<th># of shares</th>
<th>total $ amount</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>21,148</td>
<td>1,000 below</td>
<td>7,008,576</td>
<td>1.69%</td>
</tr>
<tr>
<td>29,458</td>
<td>1,000-5,000</td>
<td>64,960,965</td>
<td>15.70%</td>
</tr>
<tr>
<td>6,239</td>
<td>5,001-10,000</td>
<td>44,026,141</td>
<td>10.64%</td>
</tr>
<tr>
<td>3,549</td>
<td>10,001-20,000</td>
<td>48,558,848</td>
<td>11.74%</td>
</tr>
<tr>
<td>1,055</td>
<td>20,001-30,000</td>
<td>25,603,596</td>
<td>6.19%</td>
</tr>
<tr>
<td>746</td>
<td>30,001-50,000</td>
<td>28,584,425</td>
<td>6.91%</td>
</tr>
<tr>
<td>687</td>
<td>50,001 above</td>
<td>95,032,660</td>
<td>22.97%</td>
</tr>
<tr>
<td>20</td>
<td>foreign individual</td>
<td>134,811</td>
<td>0.03%</td>
</tr>
<tr>
<td>62,912</td>
<td>total of individuals</td>
<td>313,910,022</td>
<td>75.87%</td>
</tr>
<tr>
<td>2</td>
<td>school trust</td>
<td>45,727,779</td>
<td>11.05%</td>
</tr>
<tr>
<td>6</td>
<td>corporation trust</td>
<td>17,742,096</td>
<td>4.29%</td>
</tr>
<tr>
<td>4</td>
<td>foreign trust</td>
<td>23,956,407</td>
<td>5.79%</td>
</tr>
<tr>
<td>38</td>
<td>other trust</td>
<td>12,413,696</td>
<td>3.00%</td>
</tr>
<tr>
<td>50</td>
<td>total of trust (corp.)</td>
<td>99,839,978</td>
<td>24.13%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>413,750.000</td>
<td>100%</td>
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</tbody>
</table>

EXHIBIT 4
TATUNG CO.

BOARD OF DIRECTORS

CHAIRMAN T.S. LIN

PRESIDENT W.S. LIN—SECRETARY DEPT.

VPs

MARKETING ELECTRONICS INDUSTRIAL HOME
AND BUSINESS MACHINERY APPLIANCE
OVERSEAS DIVISION BUSINESS BUSINESS
DIVISION DIVISION DIVISION

PERSONNEL FINANCE TREASURER'S PURCHASING ENGINEERING R&D
DIVISION DEPT. DEPT. DEPT. DEPT. DEPT.

OVERSEAS DOMESTIC HQ Cs FACTORY HQ Cs FACTORY HQ Cs FACTORY
OPERATIONS MARKETING

HQ CENTERS HQ CENTERS HQ CENTERS

Source: '82 Annual Report, p.5.
EXHIBIT 5

TATUNG CO.

Manufacturing Facilities Under Immediate Operation by Head Office:
- Electric Fan Works
- Tool Factory
- Machine Manufacturing Center
- Instrument Installation Center
- Instrument Manufacturing Center
- Electro-Plating Center
- Construction Works

Panchiao Factory:
- Refrigerator Center
- Compressor Center
- Washing Machine Assembly Plant
- Furniture Center
- Iron Platform Center
- Machine Manufacturing Center
- Plastics Center
- Steel Material Center
- Plastic Die Center
- Electric Cooker Center

Keelung Factory:
- Shangchi Container
- Taoyuan Factory No.1:
  - Larger Freezer Center
  - Small Freezer Center
- Taoyuan Factory No.2:
  - Machine Mfg. Center
- Tung-Conair Corp.
- Tatung Precious Metal Co.
- Tatung Coatings Co.
- Tatung Precise Meter Co.
- Kuen Der Co., Ltd.

San Hsia Factory:
- Motor Center
- Machine Tool Center
- Milling Center
- Foundry Center
- Magnetic Center
- Taoyuan Factory No.1:
  - Heavy Electric Center
  - Distributor Center
  - Chemical Supplies Center
- Taoyuan Factory No.2:
  - Cable & Wire Center
- Tatung Construction Co., Ltd.
- Taipei Industrial Co.
- Hsieh Chih Industrial Library
- Publishing Co.
- Tatung Diecasting Co.
- Tatung Gardening Co.
- Shang Chih Chemical Industry Co.

Source: Business Group in Taiwan p. 664.
China Credit Information Service, Limited.
Source: Harvard Business School Tatung Co. (a) Case, Exhibit 7.
Chapter 4 Notes


4) Tatung Annual Report '82.

5) '83 An Introduction to Tatung Co. p. 17.


7) '83 An Introduction to Tatung Co. p. 17.


9) Ibid., p. 5.

10) '83 An Introduction to Tatung Co. p. 17.


14) '82 and '83 Annual Report.

15) '82 An Introduction to Tatung Co. p. 28.

16) Business Group in Taiwan p.667.


18) Harvard Case p. 11.

19) Ibid., p. 9 and Top 500 pp. 42, 16.

20) Top 500. p. 51.

21) Business Group in Taiwan. p. 669.


24) Annual Report Tatung USA '81 and '82.


26) '82 An Introduction to Tatung p. 16.

27) Ibid., p. 16.

28) '82 An Introduction to Tatung p. 16 and Interview.


30) Strategy in Industrial Merges of Taiwan Corp. Chain Credit Information Services, p. 114-115.


A. COMPANY BACKGROUND

The leading private enterprise in Taiwan—Formosa Plastics Group has experienced an astonishing growth: its assets increased from $0.5 million in 1954 due to the production of PVC resin, that is, Polyvinyl Chloride, to roughly $2 trillion in 1983.\textsuperscript{1} The sales revenue of the whole group was $1.7 billion in 1982, 3.8% of Taiwan's GNP.\textsuperscript{2} While ranking as the #1 private enterprise,\textsuperscript{3} Formosa Plastics Group's three key member companies--Formosa Plastics Corp., Nan Ya Plastics Corp., and Formosa Chemicals & Fiber Corp.--are also ranked #1 in their respective industries. Other companies such as Cyma Plywood, Sunrise Plywood and Yue-Chi Industry Co., Ltd. are also in the leading position in their industries (see Exhibit 1). The ranks held by these member companies among the largest private manufacturing companies in Taiwan are shown in Exhibit 2.

In 1954, Formosa Plastics was the smallest PVC manufacturer in the world with daily production of 4 metric tons. After almost 30 years, a span that is considered to be relatively short for multinational companies, Formosa Plastics today produces 530,000 metric tons of PVC annually in Taiwan and is counted as one of the largest PVC producers in the world. If the production capacity of 340,000 metric tons in the United States is added to the above figure, the total PVC production is rated as 870,000 metric tons—the world's largest.\textsuperscript{4}
B. COMPANY HISTORY

During the early 1950s, the Taiwan government's policy greatly emphasized building up the basic industries. Mr. Wang Yung-Ching (Y.C. Wang) pioneered the local plastics industry in 1954 by setting up the Formosa Plastics Corp. in cooperation with other businessmen, such as Ho Chuan, Chen Chi-Ching and Chao Ting-Chen, to produce PVC. Although the corporation experienced great difficulties in its early stage due to the unfavorable times. With low financing from the government the company started production of PVC compound in 1957 and has expanded rapidly since then.

Mr. Y.C. Wang, nevertheless, encountered the problem of no market demand for PVC since there were not enough downstream plastics processing factories and there was doubt concerning Formosa Plastics Group's PVC quality by the few existing plastics processing manufacturers. With a PVC inventory piling up, Nan Ya Plastics Corp. was then founded in 1958 mainly as a processor of PVC. This forward vertical integration set Formosa Plastics Group onto the "fast track."

While having a strong foundation for his plastics business, Mr. Wang drew on his earlier experience in the lumber industry and established Cyma Plywood & Lumber Co., Ltd. located in the northern part of Taiwan as a plywood manufacturer and exporter to countries like the United States.
In 1963, in order to provide skilled workers and trained employees for the growing basic industries, the Ming-Chi Institute of Technology was founded. In the past twenty years, the Ming-Chi Institute not only has trained numerous professional technicians but also provided quality middle management employees for Formosa Plastic Group, which in turn became the most precious intangible asset of the Formosa Plastic Group.

In 1964, in order to exploit the waste from local lumber and log production, Wangs brothers founded Formosa Chemicals and Fiber Corp. to produce rayon fiber, adding a nylon plant in 1973 to keep pace with the local petrochemical industry. Tairay Garments, a downstream industry of the chemical and fiber industry, was founded in early 1968 to manufacture garments for export. Tairay was able to reduce its production cost by purchasing raw materials directly from Formosa Chemical & Fiber so as to compete in the overseas market.

In 1968, Sunrise Plywood Corp. was created in the southern part of Kaohsiung to provide plywood and lumber as well as to be a second processor of plywood for users in the southern part of Taiwan. Tai Shih Textile Industry Corp. was founded in the same year as a joint venture with Japan's Asahi Kasei Co. so as to exploit the synthetic fiber production from Formosa Plastics Corp. by using Asahi Kasei Co.'s technology.

In 1971, Formosa Dyeing & Finishing Co. was formed to provide dyeing and finishing services to Formosa Chemical & Fiber and the Fiber Division of Nan Ya Plastics Corp. The company, however, was merged with Nan Ya
Plastics in 1980.

Yue-Chi Industry, originally a workshop for training students of the Ming-Chi Institute of Technology, was created in 1963. Since the products (zippers) of the workshop enjoyed popularity among consumers, the workshop was incorporated in 1972 to manufacture different types of zippers on an expanded scale.

While the Formosa Plastics Group was growing rapidly in the domestic market, Y.C. Wang decided to expand his investment internationally. In 1974, because of the tax incentive for foreign investment and physical proximity to the United States which was a large potential market, the Formosa Plastic Group invested $300 million in a PVC factory in Puerto Rico. The plant started to produce in 1975 but was closed down in 1980 due to Formosa Plastics Group's inexperience in foreign direct investment.

In 1980, Nan Ya Plastics Corp., U.S.A. was established to serve the U.S. domestic market directly. During 1980-1982, Mr. Y.C. Wang further expanded Formosa Plastic Group's investment overseas by purchasing a VCM (a substance to make PVC) factory from ICI, British Imperial Chemical Industries, in Louisiana, by purchasing a PVC factory from Stauffer Co. in Delaware and by establishing a new factory in Texas. Currently, Nan Ya Plastics Corp. U.S.A. is undertaking a project which upon completion will process PVC raw material from both the Delaware and Texas plants and serve the U.S. market directly.
In addition to the key companies listed above, the Group is comprised of many other member companies. These include: subsidiaries in Delaware, Louisiana and Texas, USA Formosa Plastics Transport, Formosa Plastics Leasing Co., Tah Shin Spinning Corp, Toulin Fiber Co., Mit-Opti Industries Co., Federal Textile Industrial Corp., Pei Jen Trading Co. and Wen Gang Industrial Co. Though the size of all these member companies is not large, they are set up to serve the parent company in one way or the other. Date of establishment, capital and number of employees of the companies of Formosa Plastics Group are shown in Exhibit 3.

The success of Formosa Plastics Group is not accidental. Mr. Y.C. Wang not only started the right business at the right time but also received strong help from his subordinates. Mr. Wang's management style and strategy are the main factors of Formosa Plastics Group's success. The following sections will discuss the above items in detail.

C. COMPANY PHILOSOPHY

Since the main shareholders of the Formosa Plastics Group are the Wang brothers, their family members, relatives and friends and since Wang brothers are the chairman or president of most of the companies in the group, the corporate philosophy is strongly influenced by Mr. Y.C. Wang's background and management philosophy. Mr. Wang thus becomes the core character of the whole business.

(1) The Entrepreneur's Background

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Mr. Wang, a native of Taiwan with a primary school education, was born in 1917 in a small village in the northern part of Taiwan. The village had hundreds of families, but only a handful of people were literate. During that time, the villagers had a very hard time earning their living--the men went to the mountains and worked as laborers and the women remained at home, hoping their husbands would soon send some money home. Mr. Wang's family was no exception. Working day and night, 365 days a year, barely kept them warm in the winter and with sufficient food all the year round.

Since there was no future in the village, Mr. Wang, at the age of 15, left home alone for a far away place in the south where he found a menial job in a rice merchant's store. After a year's work, Mr. Wang's father borrowed a total of 200 dollars from everyone he knew for Mr. Wang to start his own shop. In order to sell his rice to customers who already had regular suppliers, Mr. Wang had to visit the customers and solicit their business individually. Further, he knew he had to provide better service than the other merchants to keep customers. Thus, he spent many hours thinking about what additional services he could provide to hold on to the existing customers and get more business.

Through his efforts in improving the purity of the rice and his diligence in prompt delivery, Mr. Wang was able to have many regular customers. Nevertheless, he came to realize that he could not earn his living by delivering a better quality of rice for the rest of his life. Mr. Wang thus decided to move on to become a manufacturer, rather than
just a merchant. He bought machinery and opened his own rice mill the following year and became a semi-industrialist, i.e., a rice merchant with his own rice mill.

In order to compete with Japanese owned rice mills, which were well equipped and adequately staffed, Mr. Wang had to work from morning until 10:30 pm every day for a couple of years. Due to his persistence and hard work, Wang's business volume and profit finally surpassed his Japanese counterparts. This rice mill later on provided Mr. Wang financial support in exploiting his experience in the lumber business and finally the plastics business.

Due to the poverty of his childhood, Mr. Wang had to surmount many difficulties in achieving whatever he wanted. Thus, his hard work and persistence were known to everybody. He worked his way up from scratch (of course with some luck) and is the most successful entrepreneur in Taiwan. Because of his lack of education, Mr. Wang is humble and commits himself to learning from new experiences and about new technology whenever he can. His determination to improve himself perhaps can be shown by the daily schedule he keeps. Mr. Wang gets up at 4:00 am every morning and jogs for 6-10 miles, and has done so for the past 30 years. Being born poor and overcoming many hardships in building up his own enterprise during his youth, have left Mr. Wang with a deep conviction that the key to success is solely dependent on one's own efforts.

(2) The Entrepreneur's Philosophy of Management
Besides emphasizing hard work, making the impossible into possible, self-reliance and persistence, Mr. Wang further recognizes the importance of effective management. He knows that Taiwan's economy is largely export-oriented. In order to be competitive in the world market, high quality and low cost are essential. Moreover, all the industries the Formosa Plastics Group is involved in, such as plastics, fiber and plywood, are consumer-oriented basic industries. The competitive edge of the mass production consumer industry is nothing but quality and cost. As a result, he has devoted himself in the last 10 years in trying to improve and achieve a better, rational and effective management system in every aspect of the production process and daily operation.

An effective management system includes reevaluating the process of purchasing, production, selling, accounting and other components of the value added chain as well as other administrative functions. For example, by making purchasing more effective, inventory storage cost will be reduced. By making production more efficient, the unit cost of production will decrease. By making selling more effective, selling expense will be reduced. By making accounting more efficient, the accounts receivable problem will be detected earlier and the losses will decrease. Consequently, through a serious continuous improvement program, Formosa Plastics Group was able to operate and produce efficiently. Its profitability was maintained even during the world recession (see Exhibit 4). According to Mr. Y.C. Wang, Formosa Plastics Group's profits in 1982 came largely from the saving which resulted from the effective management program, which would otherwise have become operating expenses.
(3) **Social Responsibility**

Mr. Wang also believes in creating wealth for society and serving society. Through his Formosa Plastics Group, he has already produced much wealth for society by offering the daily necessities, i.e., fibers for clothes and plastics for many other usages at low prices. He engaged in two additional social services: Ming-Chi Institute of Technology and Chang-Gung Memorial Hospital, in addition to his many donations.

(a) **Ming-Chi Institution of Technology**—established in 1964, 10 years after Formosa Plastics Group. The Institute's purpose was to educate youth to meet society's needs during the early stage of industrialization of Taiwan and to provide Formosa Plastics Group with skilled technicians. Students in Ming-Chi Institute are "free of tuition" but are obligated to work in one of Formosa Plastics Group's factories during their school years. The school year is a tri-semester system and students have to work every other semester. This is the so-called, "learning by doing" method. The salaries earned in turn went to pay for tuition and personal allowances. It was Mr. Wang's intention that the school would provide students from poor families a chance to study and support themselves. Mr. Wang's aim was to imbue them with knowledge, train them in new skills and provide them with "a way of life," "the art of earning a living" and, finally, "the ability to resolve doubts."

(b) **Chang-Gung Memorial Hospital**—Mr. Wang had seen that the unequal distribution of medical care between urban and rural areas was a problem
for Taiwan society. The expensive medical fees further were a threat for rural low income people. In order to provide better access to medical facilities at a lower price, Chang-Gung Memorial Hospital was established in 1976, mainly by Formosa Plastics holding Company. The hospital, having a total of 1,800 beds and 3,000 staff, is a nonprofit organization. Its ultimate goal is to expand medical services to all parts of Taiwan. Currently, expansion of the hospital and a proposal of setting up a medical school are being undertaken. By the end of 1986, a total of 5,200 beds will be provided and both a medical school and a college of nursing will be established. 7

(4) People in the Formosa Plastics Group

The Formosa Plastics Group by the end of 1983 had hired more than 30,000 employees. 8 Its large size as well as its achievement in all its respective industries add up to the super image of Formosa Plastics Group. Consequently, employees are able to and are willing to identify with the company. Moreover, due to its rapid growth in the last 30 years, promotional opportunities for those people who have ability and who work hard are tremendous. On the other hand, people who do not have the ability or do not work hard will be asked to leave the company. Working in the Formosa Plastics Group thus demands a great deal of commitment and Mr. Wang would like to see employees treat their jobs as their first priorities.

Inside the company, the upper strata of the company are those people
who graduated from Ming-Chi Institute of Technology as well as other major universities in Taiwan. They are closely related to each other both because of the working relationship and their former classmate and/or alumni relationship. People work 8 hours a day, 5.5 days a week. However, overtime has been very frequent and managers work even longer hours, including many Sundays. There are many pressures coming from top management for improving, innovating, working hard, meeting deadlines, and making the impossible possible as reflected in Mr. Wang's management philosophy. Nevertheless, the entire Formosa Plastics Group, under Mr. Wang's leadership, was in a harmonious atmosphere.

D. COMPANY ORGANIZATION

Because the main shareholders of the Formosa Plastics Group are the Wang brothers, their family members, relatives and friends, because some of the later-founded companies are owned mainly within the group and because inter-company investment exists among Formosa Plastics, Nan Ya Plastics and Formosa Chemicals (see Exhibit 5), the various companies are under the uniform control of a group headquarters consisting of three divisions, namely the plastics materials and processing, man-made fiber and processing and plywood. The headquarters is headed by General Administration, under which there are the President's Office, Legal Affairs Office, Construction and Engineering Dept., Secretariats, Building Management, Finance Dept., and Material Dept. Under the President's Office there are 10 management sections to check and coordinate functions, such as personnel, operations and employee welfare, among the member compa-
Besides serving as a headquarters to handle corporate operations that have a synergy effect and need to be handled as a whole, i.e., recruiting, and standardizing the report system, etc., the President's Office also serves as a vehicle to check and coordinate the individual member company's functional areas. This matrix organization structure was to give greater responsibilities to each member company as well as to provide more freedom for the individual company to react to its own problems and needs. Providing more flexibility without losing control over its member companies is thus the advantage of this matrix reporting system (see Exhibit 7). The purpose of General Administration is to check and coordinate individual units across the companies while the decentralization structure gives each company and division full authority and direct responsibility for its own operation and profit. The Formosa Plastics Group is also the first enterprise in Taiwan to implement this kind of organization structure.

Because of the size of the Group and its fast growth pace, Formosa Plastics Group is organized and divided into different member companies. Each company is an independent entity and is further divided into divisions in terms of their respective business, i.e., Na Ya Plastics Corp. has Plastic Divisions I, II, III, IV, Fiber Division and Formosa Dyeing & Finishing Division. Each division is a profit center and is responsible for its own profits. Some divisions may even have many subdivisions, i.e., manufacturing plants. Each plant will also be a profit center.
The profit center concept was first introduced in 1969 in the Formosa Chemical & Fibre Corp. At that time, there was one series of production from cutting the wood to making the textiles in Formosa Chemicals. While the profit level was very low, roughly $300 per month, the management staff could not identify which section of production was not profitable. By dividing up the work done by each plant into a profit center, it became very easy to detect which stage of production was inefficient and had to be remedied. The profit due to the process later shot up to $2,000 per month. This is also the best example of effective management.

At each profit center, most of the division heads or plant managers were promoted from the bottom. Having a lot of experience either through working for Formosa Plastics Group or through technical training is a necessary asset to become a division head or plant manager. The manufacturing-oriented aspects of the business, even up to the present are still the most crucial elements in the plastics and fiber-related industries.

E. DOMESTIC GROWTH AND OPERATION

As mentioned before, Mr. Y.C. Wang started as a rice mill merchant and had much experience in forest work from his youth. In 1954, 5 years after the Nationalist government's settlement in Taiwan, the government strongly promoted import substitution industries, such as rubber, cement and plastics for making consumer products. A few of the richer merchants were asked to develop these base industries. Since nobody had experience in the plastics industry, the project was thought to be very risky and
undesirable. Coupled with the other merchants' financial support, Mr. Wang decided to take on the project by establishing Taiwan's first PVC plant. Mr. Wang's share of Formosa Plastics Corp. was only 40-50%.10

The plant started production of PVC in 1957. However, the existing downstream factories for processing PVC were few. Formosa Plastics Corp. further suffered from being perceived as having lower quality than Japanese imports. With PVC piling up, Mr. Wang received a low interest rate loan from the government and kept on innovating and producing PVC. Finally, Mr. Wang realized that in order to survive, he had to create a demand for the PVC himself. His self-reliance policy was to establish the processing facilities himself. Nan Ya Plastics Corp. was thus established. Mr. Wang's share in Nan Ya Corp. increased to 70-80%.11 Ever since then, Formosa Plastics Corp. was set onto a fast track of growth.

Numerous companies were established later as part of the continuous growth of the group. The major companies are two plywood corporations Mr. Wang set up to exploit his earlier experience in forestry; Formosa Chemical & Fibre Corp. to exploit the waste from lumber and log production; Tai Shih Textile to exploit synthetic fiber production from the Formosa Plastics Corp.; Formosa Dyeing & Finishing Co. to provide dyeing and finishing services for Nan Ya Plastics Corp. and Formosa Chemicals Corp.; Yu-Chi Industry to expand the workshops for the Ming Chih Institute; and Tairay Garments Mfg. Co., Ltd. to process textile raw materials produced by Nan Ya Plastics Corp. Other companies were also established to provide services for the major companies.
Generally speaking, the Formosa Plastics Group has focused its business on three areas, namely the production and processing of PVC, the different kinds of fibre business and the plywood business. Most of the companies are set up either to absorb the raw material produced by the upstream factories or to provide additional services for the existing business. Furthermore, many of the ideas generated by Mr. Wang are to improve business or make good use of waste. A more detailed examination of key member companies will be provided in the following section.

(1) FORMOSA PLASTICS CORP.\textsuperscript{12}

Formosa Plastics Corp. with corporate revenue reached US$ 421.7 MM in 1982, has 7 divisions, namely the Plastics Division, Tairylan division, Fiber Fabrication Division Carbide Division, Machinery Division, Engineering & Construction Division and the HDPE Project in Lin-Yuan Industrial Zone. Their profit situations at the end of 1982, and their primary efforts in the coming years are as follows:

**Plastics Division:** Sales reached US$ 242.7MM accounting for 58% of total corporate sales with profits jumped to US$ 11.9 MM, 47% of corporate profits. The PVC industry all over the world was in recession in 1982. Manufacturers in Europe, the United States and Japan maintained an average production rate of only 50-60% of capacity while Formosa Plastics Division, bolstered by are 85% production rate, shows its competitive edge in the world market. The divisional efforts for the coming year are to promote support cus-
tomers of better quality for PVC and develop new applications of PVC, to upgrade energy conservation for producing PVC, etc.

**Tairylan Division:** Sales leaped to US $129.3 MM, 31% of total corporate sales while profits were boosted to US$ 8.9 MM, 35% of corporate profits. Customers' orders for general purpose and specialty products were fully met by this division. Thus, the volumes of production and sales in 1982 were the highest in its history. The upcoming effort will concentrate on securing raw material supplies.

**Fiber Fabrication Division:** Sales reached US$ 32.8 MM, 8% of total corporate sales, while profits were US$ 1.8 MM, 7% of corporate profit. High sales in Southeast Asian and Middle East areas as well as equipment renovation for bulky yarn were vital to its achievement in 1982. Main efforts for the coming year will be in the areas such as blended yarns, new pattern carpets, knitted yarn and cloth.

**Carbide Division:** Sales reached US$ 20.7 MM, 5% of total corporate sales, while profits were US$ 0.68% MM, 3% of corporate profits. The main effort for the coming year will be expanding their market capability to support production capacity.

**Machinery Division:** Sales were US$ 14.4 MM, with a loss of US$ 3.5MM. The main job of this division in 1982 was constructing HDPE, AE, PP units and related utilities. Efforts will be concentrated on
the best coordination with group-wide expansion projects and obtaining orders from the local public sector and overseas customers.

The Machinery Division was set up originally to perform machinery maintenance for the PVC plants. As the scale became larger and the skills better, it became an independent division having a good reputation among the machinery industry. One good example is its super machinery made for Formosa Plastics Group's Texas plant which received an U-1 U-2 quality rating from the U.S. environmental agency for its air pollution control.

**Engineering & Construction Division:** Sales reached US$ 75.4 MM, 17% of total corporate sales with a profit of US$ 2.1 MM, 8% of corporate profit. Its main functions are to be in charge of a power and a water plant and to design and construct plants for the corporation. First on the list will be maintaining an ample supply of low cost power. The export of plants after the construction will be next.

**HDPE Project:** This project will be completed in late 1983 or early 1984. It is a thorough preparation for the manufacturing process, rationalization of human resources, sound energy conservation and top quality with lower cost, and can bring about an escalation of corporate sales and profits.

(2) **NAN YA PLASTICS CORP.**
Nan Ya Plastics Corp. with corporate revenue totaled US$ 597.6 MM in 1982, has 7 divisions: Plastics I Division, Plastics II Division, Plastics III Division, Plastics IV Division, Fiber Division, Formosa Dyeing & Finishing Division and the Engineering Division. The following indicates the status and prospects of affiliated divisions:

**Plastics I Division:** Sales reached US$ 212.3 MM with a profit of US$ 9 MM. Major products are flexible vinyl sheeting and PVC leather. The sheeting exports to the U.S. market in 1982 were affected by new tariffs of 5.3%. Domestic sales were affected because of the low demand of the processor who in turn was affected by the devaluation of the Deutsche Mark, Japanese Yen, etc.

**Plastics II Division:** Sales reached US$ 54.1 MM with a profit of US$ 1.2 MM. PVC rigid film is its main product. Direct export constitutes 70% of total sales. Many processes firms were implemented to increase productivity and improve quality, i.e., the automation system, flocked rigid film for packaging, and injector packaging.

**Plastics III Division:** Sales reached US$ 92.5 MM with a profit of US$ 1.1 MM. Main products are PVC pipes, building and decorating materials. Items topping the development list are new SBR adhesives for floor coverings, a new series of building materials and higher value-added products. It will focus mainly on automation of its pipe production line.
Plastics IV Division: Sales reached US$ 42.2 MM with a profit of US$ 0.08 MM. Main products are floorings, wall coverings, dry-process PU leather, micro-porous PU leather, glass-fiber mats, etc. Flooring and wall coverings were affected by the slump in the housing industry, while sales of glass fiber mats soared through quality improvement and development of many applications in 1982.

Fiber Division: Sales reached US$ 162.4 MM, with a profit of US$ 11.5 MM. The polyester glut combined with the depressed economy slashed selling prices 15-20%. Development of high value added goods and cost reduction through energy conservation will be stressed.

Formosa Dyeing & Finishing Division: Sales reached US$ 36 MM with a profit of US$ 4.2 MM. New developments were: silkized finish of gingham, finish of stretch yarn fabric, and absorbent finish of polyester fabric. One continuous dyeing range and two sets of resin finish stenter baskets were renovated to increase production capability.

Engineering Division: Sales reached US$ 7 MM with a profit of US$ 0.15 MM. Major business lines are supporting plans, designs and installations of other sister divisions' expansion projects as well as equipment repairs, manufacture of roller dies and vinyl processing equipment.

(3) FORMOSA CHEMICALS & FIBRE CORP.
Corporate revenues totaled US$ 411.5 MM showing an increase from 1981 but corporate profit decreased to US$ 25.5 MM. The depressed world economy and a good harvest of U.S. cotton in recent years pushed sales of man-made fibers into the doldrums. However, the corporation survived the difficulties through increased automation, energy conservation, and development of high value-added products, etc. The corporation is currently taking on many new expansion projects.

(4) TAI SHIH TEXTILE INDUSTRY CORP.\[15\]

Tai Shih Textile Industry Corp. is a joint venture with Japan Asahi Kasei Co. This is one of the examples of Mr. Wang's policy of engaging in foreign technology transfer. The sales reached US$ 33.4 MM with a profit reached of US$ 0.38 MM. Main products are acrylic yarn and other blended yarns like Acrylic/Wool, Acrylic/Nylon, Acrylic/Rayon and Acrylic/Ramie. For higher production efficiency, two-for-one twisters, double winders, high speed hank reeling machines and mach-automatic coners will be added in the near future.

(5) CYMA PLYWOOD & LUMBER Co., LTD.\[16\]

Mr. Wang formed Cyma to exploit his early experiences in forestry. In the early years, Cyma imported wood from Indonesia and processed it into plywood. After the Indonesia government imposed
restrictions on exporting wood, Cyma reinvested in producing high quality furniture and still achieved a high degree of profitability. In 1982, sales reached US$ 19.3 MM with profits of US$ 0.7 MM. With high quality furniture, the company is expanding on melamin resin impregnated paper for the lamination of particle board.

(6) SUNRISE PLYWOOD CORP.\textsuperscript{17}

Sunrise Plywood Corp. was set up to supply the demand in the southern part of Taiwan. It, however, outgrew Cyma Plywood Corp. in both sales and revenue in the last 10 years. Sales reached US$ 48.3 MM with profit of US$ 1.5 MM in 1982. Since following in the same direction as Cyma, Sunrise Plywood Corp. is expanding a furniture plant in Tai-Chung to increase capacity for high quality furniture.

(7) YUE CHI INDUSTRY CO., LTD.\textsuperscript{18}

Yue Chi industry was originally established to be a workshop for Ming-Chi Institute. Nevertheless, students' products namely zippers, are very popular and of a good quality. The workshop later expanded into Yue Chi Industry Co., Ltd. Since the raw material for zippers could be plastics, nylon or metal, Yue Chi used Formosa Plastics Group's plastics and nylon to make plastic zippers and purchased metal from outside suppliers to make metal zippers. Sales reached US$ 13 MM with US$ 0.13 MM profit in 1982. In order to achieve higher quality, Yue Chi currently cooperates with a foreign
firm to produce nyguard zippers and ushering in process for manufacturing Y-type metal zipper.

(8) TAIRAY GARMENTS MFG. CO. LTD. 19

Tairay was formed as a third stage process to absorb Nan Ya Plastics Corp. productions. It later specialized in development and promotion of the following categories: (1) Garments—nylon and blended jackets, coats with a newly developed insulation of bonded padding. (2) Rainware—of electronic/supersonic high frequency heat-sealed, and stitch-sewed, PVC material. (3) Hand Bags—of fabric material and PVC/PU organized. Sales reached US$ 14.4 MM with a profit of US$ 0.86 MM in 1982.

(9) OTHERS 20

In addition to the above 8 affiliations, the group also co-sponsors 6 other firms, namely the Tah Shin Spinning Corp. Federal Textile Industrial Corp., Formosa Taffeta Co., Ltd., MIT-OPTI Industrial Co., Ltd., Taiwan Plasticizer Corp. and Wen Fung Industrial Co., Ltd.

They were established to manufacture, and distribute a variety of products such as rayon staple yarns, polyester yarns, nylon taffeta, nylon zippers, plasticizer and such PVC tertiarily processed goods as garments, rainwear, handbags and vacuum foamed goods.
Three major companies of the group supply most of the raw materials to these firms. Consolidated sales reached US$ 173.9 MM with a profit of US$ 12.5 MM.

F. INTERNATIONAL GROWTH AND OPERATION

Formosa Plastics Group's overseas relationships can be categorized into three subgroups with emphasis on the last group. The three groups are (1) foreign technology contract as a way to transfer technology (2) earlier involvement in the Southeast Asia countries and (3) FDI in the United States.

(1) Foreign Technology Transfer: When the sophistication degree of Taiwan technology was still low, Mr. Wang engaged in many foreign technology cooperation agreements with several foreign companies in the United States, France and Japan. Formosa Plastics Corp. and Formosa Chemicals & Fibre Corp. are good examples of absorbing foreign technology in their early stage. Mr. Wang's philosophy was to catch up as soon as possible by learning the existing technology. However, later improvements, he believes, depend on staffs' continuous innovation and development. Mr. Wang sees every country as well as every plant as having its own special needs and characteristics. Foreign technology thus can only be purchased to meet initial requirements but have to be adjusted to suit the country's as well as the plants' needs and characteristics.

Another example of Mr. Wang's attitude toward foreign technology can
be seen in Formosa Plastics Group's computerization process. Only hardware computers were purchased from outside vendors while all the software was developed through continuous trial and error by the internal staff. This perhaps is another way of the self-reliance in which Mr. Wang has always believed.

(2) Earlier involvement in Southeast Asia countries: Due to ethnic ties, Mr. Wang has many friends in Southeast Asia. The Formosa Plastics Group thus engaged in some foreign direct investment in Southeast Asia during the late 60s and earlier 70s.

When the Indonesian government set restrictions on exporting wood to other countries, Formosa Plastics Group established a local manufacturing plant to circumvent the trade barriers and continue exploiting Cyma Plywood expertise. After Nan Ya Plastics Corp. was formed, Mr. Wang was looking for downstream factories to process Nan Ya products even further for consumer usage. Through ethnic relationships, he invested in some processing factories in Singapore and Thailand. Nevertheless, most of the Formosa Plastics Group's investment in Southeast Asia were relatively small. Mr. Wang either sold his ownership or became less involved later on so as to concentrate on expanding his domestical business.

(3) FDI in the U.S.: After the domestic operation had progressed in a satisfactory manner, it was natural for Mr. Wang to look for opportunities abroad. Most of the Formosa Plastics Group's foreign business up to now was chanelled through exporting services. Formosa Plastics
Corp., Nan Ya Platics Corp., Formosa Chemicals & Fibre Corp. and Sunrise Plywood Corp. are the major exporting companies in ROC. Nevertheless, since Formosa Plastics Group's raw materials came mainly from the state-owned China Petroleum Corp., Mr. Wang was very serious in looking for other sources of raw material supply after the first oil crisis in 1973. Both the potential fluctuation of oil prices and the threat of the oil supply being cut off by the oil exporting countries had convinced Mr. Wang of the importance of having a second raw materials supply. The process of the plastics industry is shown in Exhibit 8. As the Formosa Plastics Group expanded its operation worldwide, a long-term development of the PVC industry and a steady supply of PVC at a reasonable cost and of satisfactory quality have turned out to be an absolutely crucial task for the Group to perform.

America, a country that has a steady oil supply in comparison with other countries and a large domestic market, thus is Formosa Plastics Group's focus. The following information was obtained mostly from an interview with Vincent Lin, the controller of Formosa Plastics Corp. USA, located in Florham Park, New Jersey on Nov. 23th 1983.

In 1974, Mr. Wang invested US$ 3 million in one of the PVC plants in Puerto Rico. He was attracted by the fact that there was 15 years of tax incentive, that an American VCM plant was near by and that the distance between Puerto Rico and the United States—the potential market—was relatively short. The plant started production in Aug. 1975. It, however, was closed down in 1980 due to (i) the termination of VCM supply from the
near by factory, (ii) the high transportation cost of moving PVC to the domestic U.S. market, and (iii) the inexperience of Formosa Plastics Group with foreign direct investment.

**Formosa Plastics Corp. USA**

In 1981, Formosa Plastics Corp. USA (FPC USA) was established. Three plants were either purchased or built in the following year: the Louisiana, Delaware and Texas plants. The operational situation of FPC USA will be discussed in the following section.23

**Louisiana Plant:** Purchased from British Imperial Chemical Industries, in Jan. 1981, the plant is located in Baton Rouge, Louisiana. This site, operated by Formosa Plastics Corporation Louisiana, serves as the company's source of raw materials for its PVC operations and additionally provides co-produced caustic soda for the merchant market. A US$ 25 million rehabilitation and rebuilding program was carried out to improve the operation to the level of efficiency and cost effectiveness required by the very competitive market conditions. The total number of employees was also reduced from 526 to 227 with a 20% productivity increase.24

With a daily capacity of 750 tons EDC, 450 tons VCM and 607 tons Chloralkali, the VCM plant supplies all of the Delaware PVC plant's needs. The additional VCM, EDC and Chloralkali produced is sent to the Texas VCM plant and a wide range of customers in the chemical, refinery, pulp and paper, and alumina industries. Right now the sales revenue for

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this plant is between US$ 7 million to 9.5 million.

**Delaware Plant:** Purchased from Stauffer Co. in May 1981, the plant is located in Delaware City, Delaware. In addition to manufacturing a range of PVC suspension homopolymers, this plant, operated by Formosa Plastics Corp. Delaware, is the company's dispersion, copolymer and specialty resin production site. A 10 million dollar capital improvement program has been completed to increase the ability of the company to serve the growing needs of its customers. The total number of employees was reduced from 500 to 200 while the productivity increased by 50%.

With its monthly capacity of 10,500 tons of PVC, the plant serves mostly a wide range of customers in Delaware City in film, wire and cable, pipe and general purpose suspension homopolymer fabricators. The plant site includes the company's PVC resins applications laboratory from which expert technical assistance is provided to customers. Currently (Spring 1984) the monthly sales revenue is between US$ 7 to 9 million.

**Texas Plant:** Built in Dec. 1982, it is located in Point Comfort, Texas. The plant was built from scratch by the parent Formosa Plastics Corp. Having all the machinery designed and built by the parent company, the plant facilities were also designed and engineered by the parent company's architects and engineers and was built by local construction firms. The plant was literally "exported" from Taiwan by the parent company. The primary features of this plant are its competitive production base and emphasis on quality and service designed to meet the needs
of the very competitive U.S. PVC market.

With its monthly capacity of 22,000 tons of specialized PVC, the plant is designed to serve the needs of PVC pipe manufacturers and general purpose resin customers. Service to customers is further supported by a large fleet of hopper cars. The plant has the parent company's own technology and utilizes the latest production techniques. The sales revenue at the end of 1983 was between US$ 12 to 15 million.

New Jersey Headquarters: Formosa Plastics Corp. USA is headquartered in Florham Park, New Jersey with total assets of US$ 3.9 million. The FPC USA company is one of the United States's largest producers of PVC resins which it manufactures and sells from plants located in Texas and Delaware. Raw materials for the integrated production process are made in the company's Louisiana plant as mentioned before. The company has monthly revenue of roughly US$ 30 million. The organization chart is also included in Exhibit 9.

According to Mr. Lin, the controller of FPC USA, the company has been running at a loss for the last 3 years due to the economic recession and the difficulties of operation at the beginning stage. However, with the economic recovery, with the strong financial support of the parent company and with millions dollars spent on rehabilitation, FPC USA became profitable in the last few of months of 1983. With the consideration that FPC USA's investment is a long-term project and that the financial situation of both Louisiana and Delaware had improved tremen-
dously after the change of ownership, FPC USA's achievement again proves Mr. Wang's dictum of making the impossible possible.

**Nan Ya Plastics Corp. USA**

In Aug. 1980, NPC USA was set up by Nan Ya Plastics Corp. as a trading agency for selling the products of the parent Nan Ya Plastics Corp. It is a facility for continuous export services. Even with zero capital assets, it has generated sales revenue of roughly US$ 3 million per month.

Besides acting as a trading agency for NPC, NPC USA also performs the same role as its parent company does in absorbing products produced by FPC USA. Two manufacturing companies namely the JM Manufacturing Co. and the Wharton Project were taken over by the NPC USA.

**JM Manufacturing Company:** Purchased in Dec. 1982 and started production in Jan. 1983, the company has 8 manufacturing plants throughout the United States making plastic pipes. After the takeover by NPC USA, JM Manufacturing Company has reversed its losses of US$ 20 million in 1982 to run at a profit of a few million dollars in 1983.

**Wharton Project:** With total capital of US$ 5.5 million, the Wharton project is scheduled to produce rigid film starting in March 1984. The plant is located in Texas so as to absorb the production of specialized PVC from the Texas plant.
In summary, FPC USA and NPC USA have followed the pattern of Formosa Plastics Group. By producing the raw material in an efficient way through an effective management system and manufacturing process and by establishing the downstream processing factories to take advantage of forward integration, FPC USA and NPC USA have proven to be another success.

However, many problems do pose great challenges for Formosa Plastics Group's staff in the United States. Communication between foreign management staff and local workers has been a problem. Both FPC USA and NPC USA managers decided to approach the problem from the workers' viewpoint and hire a local American to manager the local workers. Negotiations with the union for employees' benefits has been management's policy. An interesting fact is that after the purchase of the Louisiana and Delaware plants, workers in both plants joined the United Paper Workers and Teamsters Unions. Texas plant workers, however, choose not to join any union and accepted down with the FPC USA employee benefit plan.26

Another problem encountered by the FPC USA is the general attitude of the employees. Most of the employees do not want to work overtime and managers do not want to work during weekends while many employees in Taiwan want to work overtime and management staffs attend meetings during weekends. This conflict, however, was overcome by adopting the concept of the "American way of working" by the expatriates.

Both the FPC USA and NPC USA management staff as well as Mr. Wang
know that they are just beginning a new era and a beginning is always difficult and needs consistent input and even greater effort. Whether FPC USA and NPC USA will be successful in the competitive U.S. market as their parent companies were in the ROC market is a challenge for the management of Formosa Plastics Group, as well as, for Mr. Wang.

Formosa Plastics Group has been very famous in Taiwan as well as in the PVC industry throughout the world. Its reputation in Taiwan has resulted not only from its record of the largest sales ever achieved by a privately owned enterprise but also from its management philosophy and strategy and pattern of growth. Since Mr. Wang's management philosophy has been examined in the previous section, the following section will attempted to analyze its growth strategy and pattern.

G. THE STRATEGY AND PATTERN OF FORMOSA PLASTICS GROUP'S GROWTH

Formosa Plastics Group's pattern and strategy of growth can be classified into three categories: vertical integration, horizontal integration and diversification.27

(1) Vertical Integration: After Formosa Plastics Corp. was formed and started producing PVC in 1957, Nan Ya Plastics was established as a downstream processor and was an example of forward vertical integration. When Tai Shih Textile Industry Corp. was formed to exploit other raw material produced by Formosa Plastics Corp., this was another major step of forward vertical integration. Both Formosa Dyeing & Finishing Corp. and
Tairay Garment Mfg., Co., Ltd. were set up to either provide downstream service or absorb production for Nan Ya Plastics Corp. These are also examples of forward vertical integration.

(2) **Horizontal Integration:** Sunrise Plywood Corp. was established to serve southern Taiwan customers after the establishment of Cyma Plywood Corp. This is an example of horizontal integration. Formosa Plastics Group's later investment in the United States can also be explained as an example of horizontal integration by duplicating the same operation in another location.

(3) **Diversification:** After setting up the business in plastics and plastics processing, Mr. Wang further used his early experiences in the plywood industry by importing raw material and processing it into plywood to export. This is an example of diversification. Later on, Mr. Wang further established Formosa Chemicals & Fibre Corp. to exploit the waste of lumber and logs. This is an other example of diversification.

Basically the Formosa Plastics Group has adopted a vertical integration while investing in other businesses when the opportunities were good and/or in response to customers' demands or the business environment. This pattern and strategy of growth will be used to explain Formosa Plastics Group's later involvement in other investment, as shall be discussed later on.

Another characteristic of Formosa Plastics Group is their integrated
operation. This has characterized Mr. Wang's strong belief in self-reliance. Though the Group started as a chemical company, it has its own design and engineering groups which not only engineer and fabricate the equipment and machinery needed for their production facilities but also install the equipment and construct the plant itself. This integrated operation was also shown in its implementation of the manufacturing process starting from producing the raw material, to the first and second phases of processing, to sell the product. It however does not involve the third phase of processing which usually requires a lot of labor input and has less value added. Formosa Plastics Group's direction thus is expanding its business in an integrated fashion but maintaining efficiency from both management and economic view points.

In applying this unique feature whenever and wherever it is economically beneficial, the Group has achieved the most cost effective method of producing the product and constructing the plant themselves. This further contributes to their integrated quality controls of the manufacturing process and its consistency in improving the management system.

H. ANALYSIS OF FORMOSA PLASTICS GROUP'S FDI

Looking back at Formosa Plastics' overseas FDI process, it can be generalized into two categories, namely, FDI in LDCs and in DCs.

(1) FDI in LDCs: Formosa Plastics Group's early foreign direct investment centered around LDCs, namely other Southeast Asia countries. First
is the investment in Indonesia, which was to circumvent the restriction on obtaining local raw materials. Next is the investment in processing plastics and PVC in other Southeast countries through ethnic ties to better serve the markets. The motivation for the former investment is to secure the raw material supply while those for the latter are to act as a continuation of the export process, to exploit the local cheap labor supply and to exploit its technical expertise in processing the PVC raw material.

Most characteristics of being a MNC from a NIC are observed in Formosa Plastics Group's early investment in other LDCs. The production scale is smaller and more labor intensive. The investment resulted from either ethnic ties or resource seeking. Most of the investment in PVC processing was further aimed at serving the local market, thus, the export ratio was low. Nevertheless, the import raw material ratio was very high since a foreign subsidiary was supposed to use its parent's raw material. And the effect of diversification or political reasons for investment were not strong.

(2) FDI in DCs: Establishment of Formosa Plastics Corp. overseas subsidiaries in the United States is not only to pursue their own business profit but also to assist with supply adjustment or supplement of raw materials required by parent companies in Taiwan in case of emergency so that their feedstock sources of more than 1500 PVC downstream processors can be safeguarded. The motivation is first seeking a second raw material source and next seeking a larger market demand. In contrast, the motiva-
tions for Nan Ya Plastics Corp. to invest in the United States are more for the purpose of supporting the export services and protecting or even opening up the new market.

Most characteristics of a MNC from a NIC are not observed in this case. The production scale is either similar to or more capital intensive than other MNCs operating in the United States in order to be competitive. There are no ethnic ties but strictly business purposes. The entire output is used either to serve its downstream factories as in the case of the Louisiana plant or to serve the local market. In case of another oil crisis in the future, the output will be used to supply domestic needs first.

However, some characteristics of a MNC from a NIC are observed. Formosa Plastics Group's U.S. investment does provide the opportunities for diversification in the sense of securing a raw material supply and a larger market base. Raw material crude oil is purchased from Exxon, Texaco and Amoco locally so the import raw material ratio is very low. As far as political motivation is concerned, this is a very good example. With the Nationalist party government's policy emphasized income distribution. There is a potential threat to Mr. Wang to restrict his accumulation of wealth by the government. Mr. Wang thus treats investment abroad as his opportunity for further growth in his business regime as well as acts as a mean taking some of his assets abroad. Further with the crude oil supply controlled by the state-owned China Petroleum Corp., Mr. Wang has long been for self-reliances in raw material supplies. This also can
be counted as one of the political reasons to invest abroad.

One last thing worthwhile knowing is the level of commitment by those expatriates of Formosa Plastics Group in the United States. In order to become a global PVC supplier, Mr. Wang has focused all his attention on this U.S. investment. In a way, how to operate in a very competitive environment and how to be efficient in the foreign market become another challenge to Mr. Wang. As he frequently always said "people can only improve in an unfavorable environment. And it is the drive to stay survive that is pushing the progress". The level of dedication and the great efforts in adapting to the new environment which in turn result greater flexibility of FPC USA and NPC USA's staffs have been strongly influenced by Mr. Wang's determination.

I. OUTLOOK FOR FORMOSA PLASTICS GROUP

As the world economy has been in recession in the last few years and as the petrochemical industry (the plastics industry is part of it) continued to be damaged greatly by the recession, many people started to wonder whether Formosa Plastics Group is becoming a "sunset industry." Mr. Wang however believes the future of Formosa Plastics Group is promising. His reason is that the petrochemical industry will continue to provide the raw material for a major part of our daily necessities, no matter how the industry is changing. The percentage of GNP the petrochemical industry accounts for may be shrinking but it will never be a minimal category in the total GNP. When other petrochemical related
companies are closing down, it is the best opportunities for the survivors. In order to survive in a highly competitive environment, a firm has to keep up with the newest technology and has to manufacture very efficiently. That is exactly the direction of Formosa Plastics Group, which is to say, how to survive and improve continuously in an unfavorable environment.

With more and more wealth accumulation, Mr. Wang has been looking for other investment opportunities. Following Formosa Plastics Group's traditional vertical integration and horizontal diversification strategy, Mr. Wang has decided to move into the other two categories of petrochemical products, besides the traditional PVC. The two categories of raw materials are HDPE and PP (see the product relationship and their usages in Exhibit 8).

Again, Mr. Wang has followed his old strategy by mass producing the raw material in trying to achieve economy of scale. By that is meant that Formosa Plastics Group has set up plants to produce both HDPE and PP at a quantity far more than the market can absorb at this time, also in the next 5 years. Mr. Wang, however, plans to expand his existing downstream factories to absorb most of the raw material produced. Furthermore by providing product development and low cost raw materials, he is hoping to stimulate more downstream demands to absorb the excess supply.

Other investment opportunities Mr. Wang has looked into are the high-tech and auto industries. With strong encouragement from the govern-
ment towards the high technology and information processing industries, Mr. Wang has started to invest in these fields. As far as investment in the auto industry is concerned, Mr. Wang is the main private shareholder in the recent joint venture of the government's project with Toyoto Auto Manufacturing Company.

J. CONCLUSION

In summary, Formosa Plastics Group's development has been a very successful part of Taiwan's history. Its success was not only contributed to by the government's economic policy but also by Mr. Wang's long term vision as well as by his determination and many other people's dedication and commitment. More importantly, its FDI experiences have served as an excellent example for this study since it provided two different kinds of FDI patterns. And it also provides as an example of how a MNC from a NIC can behave like MNCs from DCs and be very successful in the world market.

Formosa Plastics Group's FDI into other LDCs has carried many of the traditional characteristics of MNCs from NICs such as smaller scale, ethnic tie and its process technology advantage. On the other hand, its FDI into DCs, particularly the U.S., has shown the typical characteristics of MNCs from DCs such as larger scale and capital intensive production. Finally, the level of commitment of Formosa Plastics Group's expatriates have, in other words, their dedication and flexibility, is further the unseen forces hinted behind FPC USA and NPC USA in marching for future success.
## EXHIBIT 1

Rank held by key member companies of Formosa Plastics Group in their respective industry in 1982

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>FORMOSA PLASTICS CORP.</th>
<th>NAN YA PLASTICS CORP.</th>
<th>FORMOSA CHEMICAL &amp; FIBR CORP.</th>
<th>SUNRISE PLAYWOOD CORP.</th>
<th>CYMA PLAYWOOD CORP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDUSTRY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAN-MADE FIBERS</td>
<td>113.9 (4)</td>
<td>162.4 (1)</td>
<td>939.7 (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAN-MADE FIBERS TEXTILES</td>
<td>32.8 (7)</td>
<td></td>
<td>302.4 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYEING &amp; FINISHING</td>
<td></td>
<td>36.0 (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLASTICS</td>
<td>242.7 (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLASTICS PROCESSING</td>
<td></td>
<td></td>
<td>399 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEMICALS</td>
<td>20.7 (8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MACHINERY</td>
<td>11.7 (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLYWOODS</td>
<td></td>
<td></td>
<td></td>
<td>31.3 (3)</td>
<td>19.3 (6)</td>
</tr>
</tbody>
</table>

$ million (rank) in 1982

Source: Business Group in Taiwan p. 245 and Top 500 Corp. in ROC pp. 16, 49, 50-52.
EXHIBIT 2

RANK HELD KEY MEMBER COMPANIES OF FORMOSA PLASTICS GROUP AMONG THE LARGEST PRIVATE MANUFACTURING COMPANIES IN 1982

<table>
<thead>
<tr>
<th>COMPANY ITEM</th>
<th>FORMOSA PLASTICS CORP.</th>
<th>NAN YA PLASTICS CORP.</th>
<th>FORMOSA CHEMICAL &amp; FIBRE CORP.</th>
<th>SUNRISE PLYWOOD CORP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY ASSET</td>
<td>0.41 (5)</td>
<td>0.54 (2)</td>
<td>0.51 (3)</td>
<td>0.025 (166)</td>
</tr>
<tr>
<td>BY SALES</td>
<td>411.6 (3)</td>
<td>597.6 (1)</td>
<td>411.5 (4)</td>
<td>48.3 (71)</td>
</tr>
<tr>
<td>BY EXPORT</td>
<td>85.3 (7)</td>
<td>147.2 (2)</td>
<td>141.1 (3)</td>
<td></td>
</tr>
<tr>
<td>BY DOMESTIC SALES</td>
<td>336.5 (4)</td>
<td>450.5 (1)</td>
<td>270.5 (5)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Business Group in Taiwan p. 245.  
Top 500 Corp. in ROC. pp. 16, 42.
## EXHIBIT 3

### DATE OF ESTABLISHMENT, CAPITAL AND NUMBER
### OF THE COMPANIES OF FORMOSA PLASTICS GROUP

<table>
<thead>
<tr>
<th>NAME</th>
<th>ESTABLISHED IN</th>
<th>INITIAL CAPITAL</th>
<th>AS OF END 1982 CAPITAL</th>
<th>NO. OF EML.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formosa Plastics Corp.</td>
<td>Oct. 1954</td>
<td>$0.25M</td>
<td>$108.3M</td>
<td>4,738</td>
</tr>
<tr>
<td>Nan Ya Plastics Corp.</td>
<td>Aug. 1958</td>
<td>$0.1M</td>
<td>$116.2M</td>
<td>9,623</td>
</tr>
<tr>
<td>Cyma Plywood &amp; Lumber Co., Ltd.</td>
<td>July 1962</td>
<td>$0.3M</td>
<td>$4.25M</td>
<td>853</td>
</tr>
<tr>
<td>Ming-Chi Institute of Technology</td>
<td>July 1963</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formosa Chemicals &amp; Fiber Corp.</td>
<td>March 1965</td>
<td>$2.5M</td>
<td>$153.4M</td>
<td>9,169</td>
</tr>
<tr>
<td>Sunrise Plywood Corp.</td>
<td>April 1966</td>
<td>$0.8M</td>
<td>$6.25M</td>
<td>1,412</td>
</tr>
<tr>
<td>Tairay Garments Mfg. Co., Ltd.</td>
<td>Feb. 1968</td>
<td>$0.25M</td>
<td>$1.5M</td>
<td>1,158</td>
</tr>
<tr>
<td>Tai Shih Textile Industry Corp.</td>
<td>April 1968</td>
<td>$2M</td>
<td>$7.0M</td>
<td>1,108</td>
</tr>
<tr>
<td>Yue-Chi Industry Co., Ltd. and Others</td>
<td>April 1972</td>
<td>$0.45M</td>
<td>27.9M</td>
<td>800</td>
</tr>
<tr>
<td>Chang Gung Memorial Hospital</td>
<td>Dec. 1976</td>
<td></td>
<td></td>
<td>2,350</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1982</strong></td>
<td><strong>$6.65M</strong></td>
<td><strong>$452.60M</strong></td>
<td><strong>31,211</strong></td>
</tr>
</tbody>
</table>

Source: Business Group in Taiwan p. 241.
'82 Annual Report.
EXHIBIT 4

FORMOSA PLASTICS GROUP

PERFORMANCE AND FINANCIAL CONDITION

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SALES GROWTH (%)</td>
<td>28.61</td>
<td>21.21</td>
<td>7.94</td>
<td>5.51</td>
</tr>
<tr>
<td>NET PROFIT (%)</td>
<td>10.39</td>
<td>7.13</td>
<td>4.78</td>
<td></td>
</tr>
<tr>
<td>RETURN ON NETWORTH (%)</td>
<td>25.91</td>
<td>18.66</td>
<td>12.62</td>
<td>14.5</td>
</tr>
<tr>
<td>SELF PROVIDED CAPITAL (%)</td>
<td>39.25</td>
<td>36.20</td>
<td>35.46</td>
<td></td>
</tr>
</tbody>
</table>

Source: '82 Annual Report and Business Group in Taiwan p. 244.
FORMOSA PLASTICS GROUP
INTER-COMPANY RELATIONS OF FORMOSA PLASTICS

Chang Gung Memorial Hospital

Formosa Chemical & Fibre Corp.

Tairay Garments Mfg. - Yue-Chi Industry Co., Ltd.

Source: Business Group in Taiwan p. 242.
Source: Annual report and Business Group in Taiwan p. 243.
EXHIBIT 7

FORMOSA PLASTICS GROUP

MATRIX STRUCTURE

<table>
<thead>
<tr>
<th>Personnel Section (1)</th>
<th>Bsuiness Section (2)</th>
<th>Production Section (3)</th>
<th>Operation Analysis Section (4)</th>
<th>Controller Section (5)</th>
<th>Task Force Section (6)</th>
<th>Welfare Section (7)</th>
<th>Property Section (8)</th>
<th>EDP Section (9)</th>
<th>Staff Section (10)</th>
</tr>
</thead>
</table>

Source: Interview.
EXHIBIT 8

THE PROCESS OF THE PLASTICS INDUSTRY AND
THE PRODUCTS RELATIONSHIP

CRUDE OIL

POLYETHYLENE

POLYPROPYLENE

(HDPE)

VCM

PVC

SUSPENSION PVC RESIN

DISPERSION PVC RESIN

FILM

WIRE AND CABLE

PIPE

GENERAL SUSPENSION HOMOPOLYMER

FABRICATORS

OTHER PVC PROCESSORS

UPSTREAM INDUSTRY

MIDDLE STREAM INDUSTRY

DOWN STREAM INDUSTRY

CHINA PETROLEUM CORP. (CPC)

FORMOSA PLASTICS CORP. (FPC)

OTHER PROCESSORS

Introduction to Formosa Plastics Corp. USA.
Source: Interview.
Chapter 5 Notes


2) '82 Annual Report and calculation.

3) Business Group in Taiwan p. 18


5) Interview & Wharton Speech.

6) Wharton Speech.

7) An Introduction to Formosa Plastics Group.


9) Interview.

10) Interview.

11) Interview.

12) An Introduction to Formosa Plastics Group & Company Description.

13) Ibid. p. 10.


15) Ibid. p. 16.

16) Ibid. p. 17.

17) Ibid. p. 18.

18) Ibid. p. 19.

19) Ibid. p. 20.

20) Ibid. p. 20.

21) Interview.

22) Interview.

23) An Introduction to Formosa Plastics Group.


27) *Strategy in Industrial Merges of Taiwan Corp.* China Credit Information Services, pp. 119-121.

28) Wharton Speech.
CONCLUSION

By reviewing the existing FDI literature, especially looking at the Product Life Cycle Theory and the Eclectic Theory of International Production, one is able to generalize a FDI theory for MNCs from NICs. The MNCs from NICs, however, exhibit certain characteristics, especially in serving the LDCs and other NICs. Characteristics such as smaller production scale and more labor intensive techniques are used to their advantage in competing with MNCs from DCs. Other characteristics such as proximity of location, minority ownership, low export ratio for the manufactured product, low ratio of imported raw materials and ethnic ties are also observed among the MNCs from NICs in serving LDCs and other NICs. Characteristics such as flexibility and price competitiveness however are observed in serving the LDCs and other NICs as well as DCs.

As far as motivations for becoming involved in FDI are concerned, different patterns resulted when NICs' MNCs invest in LDCs and other NICs versus NICs' MNCs investing in DCs. Market seeking, either defending the existing market or opening up a new market, is the common motivation for both serving the LDCs, NICs and DCs. MNCs from NICs, however, tend to invest in DCs to acquire the newest technology and support their export services, while they are more likely to invest in LDCs and other NICs to exploit their technological know-how and to exploit the local input factors such as cheaper labor and raw material.

The motivation for foreign direct investment, nevertheless, is not
strictly a right or wrong, yes or no matter. Some motivations for investing in DCs as well as LDCs and other NICs could overlap depending on investing countries endowments as well as the nature of the industries. For example, Tatung has set up many service stations for the purpose of supporting its export markets in DCs as well as in other NICs. This is due to the fact that after-sales services are extremely important in the consumer electronics business. Another example is Formosa Plastics Group’s investment in the United States, a developed country, mainly to secure its raw material supply since having a stable supply of raw material, namely crude oil, at a reasonable price is crucial for the Group to survive. Finally, trade barriers have been imposed by DCs, NICs as well as LDCs with differences in degree and specification. Thus, it is common for NICs to invest in DCs, other NICs, as well as LDCs to bypass trade restrictions.

Certain other motivations for serving DCs, LDCs and other NICs, however, might be contradictory. Diversification effect and political reasons sometimes mean the same thing and sometimes not. When a MNC invests abroad, it diversifies its business operations into many different locations. It, however, faces a greater risk if the host country is politically unstable and may have to face the possibility of expropriation by the host government. On the other hand, when a MNC invests in a stable DC, its political risk is reduced but its overall risk may be increased simply because it is functioning in a more competitive market. The generalized pattern of FDI coming from NICs has to be very carefully applied. The explanation can be different when circumstances change.
In the middle part of the paper, Taiwan is used as a real life example to test its applicability of the theory. Before the general pattern of Taiwan's FDI is studied, it is important to understand its economic development process. Not only does the insight provided by its economic history help in better understanding the experiences and significance of Taiwan FDI but also the appreciation of how a country can achieve such a giant step forward in its economy within three decades will teach certain lessons about competition coming from the NICs in the future.

Taiwan's economic success is largely attributed to the government's economic policies and to the entrepreneurship of thousands of individuals in Taiwan as well as 18 million people's hard work. Going through periods of a colonial era, recovery and transition, import substitution, export orientation, and prosperity, Taiwan as a country has speeded up its industrialized process due to certain circumstances, i.e., the flee of the Nationalist government from Mainland China, special endowments i.e. the abundance of labor, and the unusual economic situation, i.e., the boom in international trade starting in the 60s. Moreover, the international involvement of Taiwan started when many DCs began to invest in Taiwan in the 60s, and was fueled later on by entrepreneurs actively searching for overseas markets in the 70s. Taiwan's success story thus is not just a miracle but is a well-planned course taken seriously by 18 million Chinese and Taiwanese in Taiwan.

The overall experiences of Taiwan's outward foreign direct invest-
ment indicate that there are basically two paths for NICs to follow when invest in abroad. They can invest in LDCs and other NICs or they can investing DCs. Investments toward LDCs and other NICs have similar motivations as mentioned in the theory except for the fact that Taiwan's MNCs do not invest in LDCs and other NICs to take advantage of cheaper local labor, and the fact that the motivation based on political reasons is not important or at least is not admitted by the MNCs. Providing the appropriate technology and the right products are the main reasons for success claimed by the MNCs from Taiwan in serving LDCs and other NICs.

On the other hand, investments toward DCs have similar motivations mentioned in the theory except for the fact that Taiwan's MNCs do not consider the diversification effect to be an important factor in determining their FDI. Furthermore, the advantages claimed by the MNCs from Taiwan to be necessary for success in DCs are the right product at a competitive price, and more importantly the flexibility (or adaptability) of their foreign staffs, their management philosophy and production techniques.

Looking at trend of Taiwan Foreign Direct Investment it was found that most of the investment occurred in the last 10 years, particularly in the last 5 years. This can be explained by two facts. (1) Taiwan's continuous success in international trade and attraction for inward foreign investment in 60s and 70s has been used to support its outward foreign investment. (2) The nationalist government starting in the 70s has used outward foreign investment or outward technical cooperation as a
means to built up unofficial relationships with many countries which do not have diplomatic relations with Taiwan.

The investments in LDCs and other NICs, e.g., Southeast Asia countries, are larger in number of cases but smaller in magnitude and are well distributed among the industries. Investments in DCs, particularly the United States, are smaller in number of cases but larger in magnitude and concentrated in mostly high-tech, chemical, and trade-related industries. In general, most of the foreign direct investment has been satisfactory and the pay off is quite high in various forms, i.e., the remittances of profit and its promotion export sales. It is foreseen that foreign direct investment will increase at an even faster rate in order for Taiwan to sustain its real growth.

Finally, two cases are presented to demonstrate the applicability of theory to an individual company. In the Tatung case the distinction between investment in LDCs and other NICs versus DCs is less clear. This is due to the nature of consumer-oriented industries such as electronic and electric home appliances, so that most of the differentiations a company can provide are in its distribution channels, marketing strategies, sales services and reputation in addition to good quality and reasonable competitive prices. Tatung's other investments in the United States and Japan, i.e., Algol Technology Inc. and Engineering Center at Tokyo are for transferal of the newest technology. In general, Tatung serves as a good example for the process of internationalization of its core business, namely electronics and home appliances.
Regarding the case of Formosa Plastics Group, the investment pattern in LDCs and other NICs versus in DCs is clearer. Formosa Plastics Group followed the "generalized theory" in servicing LDCs and other NICs, it, however, acts like MNCs from DCs when competing in the DCs' markets. Its motivations for entering Southeast Asian countries are (1) to circumvent trade barriers and exploit local resources for its plywood industry and (2) to better serve the local market and defend its export market through the ethnic connection. Formosa Plastics Group's motivations in entering the U. S. market, however, are (1) to secure a supply of raw material at a reasonable price and (2) to expand its business outside of Taiwan by seeking a large potential market. Formosa Plastic Group case is a good example of a MNC from NICs having different motivations in serving DCs versus LDCs and other NICs. Its success in the DC market, especially the U.S. market, however states a fact that MNCs from NICs can be as competitive as any MNC from DCs.

Lastly, as mentioned earlier, the experiences of each country may be different due to the differences in either natural resources or historical background. This thesis is not a generalization about the whole FDI process for all the NICs but serves as an example of the success and potential threat, particularly to the outward FDI, in the international market that many NICs can achieve now and in the near future.
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