The employment effects of manufacturing multinational enterprises in Thailand

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THE EMPLOYMENT EFFECTS OF MANUFACTURING MULTINATIONAL ENTERPRISES IN THAILAND

1. Introduction

In recent years, the Thai Government has been increasingly concerned with the problem of unemployment. The slowdown in the growth of the agricultural sector has meant that it can no longer create jobs fast enough to absorb the new workers entering the labour force. Migration to the urban areas has resulted in significant increases in urban unemployment and problems of congestion. As a result, more attention is being paid to the ability of other sectors such as manufacturing and services to generate employment opportunities for the growing labour force, both in the urban and rural areas.

The Government has also traditionally taken a favourable attitude towards the participation of multinational enterprises (MNEs) or foreign firms in the Thai economy. Efforts have been made through the provision of investment incentives to promote the kinds of firms that will contribute to meeting policy goals and enhance the country's development. However, little attention has been paid by policy-makers to evaluating the impacts of the MNEs that have established subsidiaries in Thailand, especially with regard to their employment impact. No recent study has made a significant attempt to examine the employment effects of MNEs in Thailand, either in terms of direct or indirect effects. This is surprising in view of frequent international concern regarding the extent to which MNEs make efforts to assist developing countries to develop more rapidly (see Watanabe, 1981).

Accordingly, this paper represents a preliminary effort to fill the gap by providing a comprehensive picture of the role of manufacturing MNEs in generating employment in Thailand. Lack of information at the present time precludes the examination of foreign firms in other sectors which are not likely to be significant employment generators in any case. The study will carefully examine the direct employment effects using a comprehensive data set on manufacturing foreign firms operations as well as more detailed data on the operations of firms promoted by the Thai Government's Board of Investment. The important but less easily measured indirect effects of MNEs on employment will be examined using a mixture of quantitative and qualitative information. Some thoughts on the likely future impact will be presented based on an examination of information on firms receiving approval for promoted firm status from the BOI in 1987. It is hoped that the results will provide some additional insights into the ways in which MNEs will be able to contribute towards the Government's efforts to address the employment problems presently facing the country.

The paper is organised as follows:

- section 2 provides an overview of employment and FDI in Thailand, and examines the major government policies relating to the two issues. Both overall trends and the specific experience of the manufacturing sector will be dealt with;

- section 3 briefly describes the nature of the data that forms the core of the analysis in the study;

- section 4 blends the results from previous studies and the new data sets to consider the general characteristics of MNEs currently operating in Thailand in order to provide a better understanding of the nature of foreign firms in Thailand before proceeding to consider the employment effects;

- sections 5 and 6 assess the direct and indirect employment effects of MNEs in Thailand's manufacturing sector respectively;

- section 7 examines the likely impact of new MNEs in the future and section 8 contains the summary and conclusions.
2. Overview of the employment situation and foreign direct investment in Thailand

2.1 Employment in Thailand

During the past 25 years, Thailand has experienced a large increase in population which virtually doubled from 26.3 million in 1960 to 52.2 million in 1986 (see Table 1). This represented an annual growth rate over the entire period in excess of 2.7 per cent. As a result, the labour force grew rapidly from almost 14 million in 1960 to 27.8 million in 1986. Although population growth has declined in recent years, the fact that a large percentage of the population is under the age of 20 (48 per cent in 1986) leads to the expectation that the labour force will continue to expand rapidly during the remainder of the 1980s, increasing by over 800,000 people per year. This will certainly place severe strains on the economy's capacity to absorb these new workers.

Tables 1 and 2 show the sector distribution of the Gross Domestic Product (GDP) at 1972 prices and employment of Thailand over the period 1960-86. It can be seen that, although the manufacturing sector has expanded substantially in terms of its share of GDP and has been one of the main forces behind Thailand's rapid growth experience, its contribution to employment has been less impressive. While its share in GDP was 21.4 per cent in 1986, ranking second only after the service sector (24.8 per cent), its share in total employment was only 7.8 per cent, placing it after agriculture (66.7 per cent), services (10.2 per cent) and commerce (10.1 per cent) in terms of employment absorption. Of particular interest is the fact that, while manufacturing employment in the 1970s essentially grew as fast as output, growth rates of manufacturing employment have fallen far below those of manufacturing GDP in the 1980s. Although implying increasing labour productivity, this result is worrying to those expecting the manufacturing sector to absorb the new workers entering the labour force. By 1986, total employment in the manufacturing sector amounted to only just over 2 million persons.

In the manufacturing sector itself, the major industries which have generated jobs include food, beverages and tobacco, textiles, garments, wood products, transport equipment and other manufacturing (see Table 3). Together they accounted for over 75 per cent of total employment in the manufacturing sector in 1985.

In terms of regional distribution, Table 4 clearly confirms the fact that manufacturing activities have been heavily concentrated in Bangkok and the central region. In 1986, these two regions accounted for almost 70 per cent of total employment in the manufacturing sector with Bangkok alone, although accounting for only 12 per cent of total population, absorbing almost one-third of manufacturing employment. On the other hand the north-east containing more than one-third of total population, only accounted for 10 per cent of manufacturing employment.

Thailand's major employment problems at the present time can be summarised as follows, many of them resulting to some extent from the country's agricultural heritage and from the manufacturing sector's inability to absorb labour in the urban areas:

1. open unemployment, which amounted to 1.1 million persons or 4.1 per cent of total labour force in 1986, of which 349,500 were earnestly seeking employment (see Table 4). By the end of the Sixth Economic and Social Development Plan in 1991, the latter category is expected to reach between 700,000 and 800,000 persons;

2. unemployment among moderately and highly educated people, i.e. those graduating from vocational and upper secondary level to tertiary level institutions. This category of unemployment has grown rapidly from 37,700 persons in 1977 to 238,400 in 1986, accounting for about 25 per cent of total unemployment. The problem is generally caused by a combination of factors including mismatches between skills learned in schools and skills required by the productive sector, high expectations of jobseekers, and imperfect and fragmented labour markets. The first factor results in the simultaneous existence of highly trained unemployed workers and a shortage of technical manpower in many industrial sectors;
seasonal unemployment during the dry season in the agricultural sector which continues to rely largely on one-season rain-fed crops. It was estimated by Sussangkarn (1987) that the total number of seasonal unemployed amounted to about 4.2 million in 1985 or 20 per cent of total labour force. The regions most severely affected by this phenomenon are the north and the northeast which together accounted for almost 90 per cent of the total. A large number of the seasonally unemployed would like to find work, but are constrained by a lack of jobs in their locality and by the lack of information on employment availability elsewhere;

underemployment, which includes: those who are fully employed but earn a meagre income; those who are employed part-time or work only for a few hours per week; and those who are not fully utilising their capabilities. In 1986 for instance it was found that 14.8 million employed persons or about half of the total labour force earned less than 750 baht (US$28) a month, with the majority of them in the agricultural sector;

migration of workers, which includes seasonal movements within rural areas, migration to urban areas, and temporary migration abroad, especially to the Middle East. There is no doubt that these migration activities have helped to raise the overall incomes of people in the rural poor areas. However, there are also problems relating to labour migration itself, particularly congestion problems in the urban areas surrounding greater Bangkok, and to the sustainability of certain types of migration, as characterised by the recent decline of job opportunities in the Middle East.5

2.2 Patterns of FDI in Thailand

FDI in Thailand can be traced back to the 17th century. However in the early years the amount of investment was not significant and prior to the Second World War, FDI was dominated by European firms, especially British ones. As expected, such FDI was heavily concentrated in activities designed to exploit and export natural resources, such as tin, timber and rubber. Foreign investors also established banking houses, public utilities and trading houses. The manufacturing sector at this time was of little importance to the economy and was mainly controlled by Chinese and foreign capitalists.

The end of the Second World War in the mid-1940s was followed by a period in which the Thai Government adopted nationalist policies. The Chinese were suppressed, certain foreign firms were nationalised and a large number of state-owned enterprises were established with the intention of raising revenues and developing Thai entrepreneurship. In the early 1950s the Government was involved in a range of industrial activities but the operation of public sector enterprises was generally inefficient and unprofitable as a result of poor planning and widespread corruption.

A World Bank mission which visited Thailand in 1957-58 strongly recommended that the Government rely upon and encourage private enterprise for industrial development and that it focus on the development of infrastructure. Partly as a result of this recommendation and following a change in political leadership in 1958, the Government’s efforts shifted towards the promotion of private sector investment, both Thai and foreign. The Board of Investment (BOI) was established in 1959 to implement an investment promotion act which was promulgated in 1960 and subsequently amended several times. The BOI has promoted private investment in priority sectors with both tax and non-tax incentives and inflows of foreign investment have since been welcomed and have played an important role in the development of Thai industries.

Based on Bank of Thailand (BOT) data, it can be seen that the volume of FDI (defined as equity and loans from parent or related enterprises) inflows substantially increased from 72 million baht in 1959 to 10.5 billion baht in 1986. They amounted to over 120 billion baht in total during the period 1959 to 1986. FDI outflows also grew rapidly and consequently, the net inflow of FDI totalled about 66 billion baht over this period.
The contribution of FDI to domestic capital formation has been relatively small as the share of net FDI inflows in Gross Domestic Investment averaged less than 3 per cent over the 1970-86 period (see Table 5). However, this should not be interpreted as implying that the involvement of MNEs in Thailand is negligible. For instance, a study by Tambunlertchai and McGovern (1984) found that among Thailand's top 1,000 companies ranked by sales in 1980, there were 278 foreign companies which accounted for 51 per cent of the total sales by the top 1,000 companies.

As far as the sources of FDI in Thailand are concerned, developed countries (DCs) have always been very active as investing countries. As shown in Table 5, nine DCs together were responsible for about 83 per cent of total net inflows of FDI over the period 1970-79. Among these countries, the United States and Japan were easily the most important, together accounting for 67 per cent of the total net FDI inflow during the 1970s period. However, volumes of FDI from the United States sharply declined in the 1980-86 period, causing the share of these two countries to fall to 59 per cent.

Several developing countries and areas, especially Hong Kong and Singapore, have been significant sources of FDI in Thailand. However, the share of Singapore in total FDI net inflows has declined markedly due to large FDI outflows in the period 1980-86. Despite its small share, Taiwan, China has begun to play a more important role in recent years, with net FDI inflows increasing rapidly from 17 million baht in the seventies to 391 million baht in the 1980-86 period.

As shown in Table 6 about one-third of FDI net inflows went into the manufacturing sector from 1970 to 1986. Other important sectors were trade, construction and mining (involving mainly oil and natural gas exploration) while agriculture was the least significant, accounting for less than 1 per cent of net FDI inflows. The drastic decline of FDI in the finance sector in the 1980s probably resulted from restrictions on foreign ownership in commercial banks and finance and credit companies that have been imposed since 1979.

Within the manufacturing sector, textiles, metal and non-metallic products, electrical appliances, chemicals and petroleum products were the major recipients of FDI. However, the relative significance of these sectors has changed over time. For instance, the share of textiles declined from 12.7 per cent of total net inflows from 1970-79 to 2.2 per cent from 1980-86, while the share of petroleum products drastically increased from 1.3 per cent to 4.7 per cent respectively. Overall there would appear to have been a healthy diversification of FDI activities in the manufacturing sector in recent years.

The types of manufacturing activities undertaken by different countries are shown in Table 7. It can be seen that the shares of total investment from the United States, the United Kingdom and Singapore going into the manufacturing sector were relatively small when compared to those of Japan, the Federal Republic of Germany, and the area of Hong Kong. Within the manufacturing sector itself, American FDI has been mainly involved in the electrical appliances and petroleum products sectors, while Japanese FDI has been focussed in the textiles, metal and non-metallic products and electrical appliances industries. The third most important foreign investor in the manufacturing sector, the area of Hong Kong, has been mainly involved in the textiles, electrical appliances and chemicals sectors. The British have been active in textiles and petroleum products, the Federal Republic of Germany in food, metals, non-metallic products and chemical products, and Singapore in machinery and transport equipment.

The importance of FDI in BOI-promoted firms is demonstrated in Table 8. About half of the 1,782 firms receiving promotion certificates from 1960-86 has some direct foreign participation and foreign investors accounted for about 28 per cent of the total registered capital of promoted firms during the same period, with Japan being the most important source, followed by the United States, Taiwan (China), the United Kingdom, Singapore and the area of Hong Kong. BOI-promoted FDI has been primarily concentrated in the manufacturing sector, although there has been significant foreign participation in the service sector. Very few promoted firms have been involved in the agriculture and mining sectors.
The significance of FDI under BOI promotion as compared to that without BOI promotion has been estimated by Pongpisansupichit (1985), based on data of firms registered at the Department of Commercial Registration. He found that from 1915-77, 67 per cent of FDI in the manufacturing sector was in promoted firms. Considering that the BOI was established in 1959, it is likely that the share of promoted FDI would have been higher if figures of the same period had been compared. Pongpisansupichit (1986) also observed that promoted FDI has been growing in importance in recent years.

2.3 Employment policies and regulations

The Thai Government has long recognised the importance of establishing mechanisms to address employment problems. Indeed, in 1965 the Labour Department was established in the Ministry of Interior with specific responsibility for labour administration. In the second Development Plan (1967-71) the Government indicated that it would promote employment generation by encouraging the use of labour-intensive production techniques in small-scale industries and cottage industries and the fuller utilisation of industrial capacity.

Due to balance of payments problems at the end of the second Plan period, the third Plan (1972-76) shifted the emphasis from the promotion of import substitution of final products towards the promotion of manufactured exports and increased import substitution of intermediate goods and raw materials. The Government also continued to stress its desire to promote export industries, to encourage linkages between industry and agriculture, to promote small-scale and labour-intensive industries, and to disperse industries into the rural areas. All these policies were adopted in successive Plans including the current sixth Plan (1987-91) with the aim to alleviate perceived employment and income distribution problems.

Among the measures adopted by the Government to promote employment along the lines discussed in the previous paragraph are incentives offered by the BOI. The Board is presently chaired by the Prime Minister and has key economic ministers as members. The main task of the BOI is to encourage private investment in priority areas. Projects to be given special consideration by the Board include those which: significantly strengthen the balance of payments position especially through production for export; support the development of domestic resources; substantially increase employment; locate operations in the provinces; conserve energy or replace imported energy supplies; and develop basic industries (see the BOI Announcement No. 1/1983). The BOI's desire to promote regional investment in order to generate employment in the rural areas is reflected in the new criteria for granting tax incentives which were issued in September 1987 (the BOI Announcement No. 2/1987). The new criteria substantially increased the levels of incentives given to promoted projects locating outside Bangkok and five neighbouring provinces relative to those locating in these areas.

Under the current Investment Promotion Act 1977, the BOI may grant tax privileges such as exemption from or reduction of import duties and business taxes on imported machinery and raw materials, and exemption from corporate income taxes for three to eight years. Additional incentives are also given to enterprises in the BOI-designated Investment Promotion Zones and export enterprises. Non-tax incentives include guarantees against nationalisation, competition from new state enterprises, state monopolisation, competing imports by government agencies and price controls; and permission to export, to bring in foreign technicians, to own land, and to remit abroad foreign currency.

While there is no doubt that the BOI puts emphasis on encouraging employment, it has often been commented that the import tax exemption on machinery tends to bias the choice of technology towards capital intensive techniques and thus reduce labour absorption. This tendency is frequently said to be exacerbated by the simultaneous imposition of a minimum wage requirement. It should also be noted that although the BOI's policy is to encourage technology transfer from FDI, it has in practice no strict guide-lines or regulations on the period in which each foreign firm should replace foreign technicians.
or experts by Thai personnel. The BOI's general attitude on this matter is very flexible in order to allow foreign firms to operate smoothly although this may in fact discourage foreign firms from training local employees.

Another related government agency which actively provides managerial and technical assistance to encourage the growth of small-scale industries is the Department of Industrial Promotion in the Ministry of Industry. It was set up in 1941 and its primary activities involve extension and training through its various divisions and centres in both Bangkok and the regions. The objective is to assist small-scale firms, especially those in the rural areas, to keep pace with new technologies, to upgrade their skills, products and production techniques and to tackle their problems relating to management and organisation.

Other employment-related measures adopted by the Government include:

1. a limitation on the employment of foreign nationals in certain activities which it is felt should be reserved for Thais (the Alien Employment Act 1978);

2. protection of labour with regulations on working conditions, compensation and welfare (the National Executive Council Announcement No. 103);

3. the imposition of minimum wage requirements which at the present time are: 73 baht per day for nine provinces (Bangkok, Nonthaburi, Pathum Thani, Samut Prakan, Samut Sakorn, Nakhon Pathom, Ranong, Phangnga and Phuket), 67 baht for four provinces (Chon Buri, Saraburi, Nakhon Ratchasima and Chiang Mai), and 61 baht elsewhere;

4. the adoption of regulations on labour relations (the Labour Relations Act 1975) and the establishment of labour courts (the Labour Court and Labour Court Procedure Act 1979).

All these measures have been adopted with the intention of benefiting Thai labour. However some measures, especially the imposition of a minimum legal wage, may well have an adverse impact on employment. Considering that labour supply in Thailand is relatively abundant, it is likely that the minimum wage rates have been higher than economic shadow wage rates. Firms facing high wage bills, especially small Thai ones, may decide to reduce the number of workers and/or to adopt more capital-intensive techniques, thereby aggravating unemployment problems. Indeed, many firms simply break the law by paying their workers less than the minimum wage rates.

2.4 FDI policies and regulations

As already mentioned in section 1.2, the Thai Government has pursued a favourable policy stance towards FDI since the late 1950s. There are no major distinctions between domestic and foreign investment under the law and no restrictive screening mechanisms for FDI or technology transfers by foreign firms except for projects applying for BOI promotion status.

Apart from BOI incentives mentioned above other major incentive measures which are currently offered to foreign investors include:

1. the BOI's facility to enable the easy remittance of foreign capital and incomes generated from FDI;

2. a wide range of international agreements on investment protection and the avoidance of double taxation; and

On the other hand, the Government has also exhibited at times a certain degree of nationalism as reflected in several national development plans in which the intentions were expressed to promote the joint venture type of FDI and to diversify sources of FDI. The major restrictions on FDI involve the limitation of foreign ownership in certain activities as specified by the BOI (which prefers Thai majority ownership in domestic market-oriented and resource-based activities) and the Alien Business Law of 1972, and limitations on the employment of foreign nationals (the Alien Employment Act 1978) and the use of land by foreign firms (the Land Code 1954).

However, the effectiveness of these measures is frequently undermined by numerous exemptions and exceptions. For instance, alien businesses which are owned by Americans are not subjected to the Alien Business Law due to the provisions of the Treaty of Amity and Economic Relations between Thailand and the United States. Moreover, BOI promoted-firms are exempted from the conditions of this law and most manufacturing activities in which FDI tends to be concentrated are not included in the list of restricted activities. Consequently foreign investors are generally free to carry out business activities in Thailand.

3. Sources of data

Information on the activities of foreign firms in Thailand are very scattered and incomplete. For example, the BOI collects only data on inflows and outflows of foreign capital, the Commercial Registration Department of the Ministry of Commerce has data on registered capital of foreign firms while the BOI obtains information on various aspects of foreign-promoted firms from their project proposals and questionnaires which are distributed annually to all promoted firms. The response rates to the BOI questionnaire is generally less than 20 per cent and little effort is made to check or follow up on the information that is gathered. Attempts to acquire information directly from firms by researchers generally face poor responses.

This lack of systematic and continuous data collection makes it especially difficult to acquire the time series data on foreign firms operations that would enable a comprehensive dynamic approach to their impact on the economy in general and employment in particular. Existing studies tend to examine general aspects of FDI at points in time, devoting very little attention to the employment aspects of such investment and, for understandable reasons, relying heavily on BOI and BOT data.

In order to assess the employment effects of manufacturing MNEs in Thailand in the light of the paucity of existing data, this study will employ three major sets of original and previously untapped statistical data. The first set of data (the study survey), which attempts to capture the overall employment effects and general characteristics of MNEs, was obtained by compiling information on 678 manufacturing firms in Thailand with foreign equity from a wide variety of sources, including the BOI, the American, British, German, French and Australian Chambers of Commerce, the Japan External Trade Organisation (JETRO), the Federation of Thai Industries and the Million Baht Business directory.

Although limited due to the wide variety of sources and the nature of the topic, the study survey includes information on date of start-up, industrial sector, extent of foreign shareholding, promoted status, location of factory, total employment and total investment. The foreign ownership in the firms covered ranges from less than 1 per cent up to 100 per cent. Given the vintage of many of the data sources, a base year of 1985 was used for most of the information that was gathered, although data from other years was used when 1985 information was not available. In addition in order to reflect the most updated situation, data on 59 foreign firms which were established in 1986 and 1987 have been included in the sample.
As expected, it was discovered that most foreign firms listed in the non-BOI sources received promotional status from the BOI, although for most of them, the period for which they obtained tax holidays and other BOI privileges had expired. Out of the 678 firms compiled in the list, 571 or 84-per cent were promoted by the BOI. Out of the 667 firms for which employment data existed, BOI promoted firms accounted for more than 90 per cent of total employment.

In order to supplement the information in the study survey, in particular to examine characteristics of foreign firms such as firm size, type and skill structure of employees, overall productivity, local input usage and export activities, and to compare foreign with local firms, a second set of data (the BOI survey) was obtained and compiled from the BOI annual survey of promoted firms' operations of 1985. Given the already established importance of BOI-promoted firms among the total foreign firms in the manufacturing sector, it is felt that this data source can be satisfactorily used to provide representative information on characteristics of foreign firms in the manufacturing sector of Thailand. While some 334 promoted firms actually returned the questionnaires, the final number of manufacturing firms for which complete data existed and which could be used for this study amounted to 211.

Lastly, in order to observe the future trend of MNEs' employment effects in Thailand, a third data set (the future survey) based on information on 559 projects approved by the BOI in 1987 will be examined. Although all approved firms will actually start operations, most firms that reach this stage of the approval process have invested significant resources in project preparation and a large number would be expected to commence production in the next year or two. The information in the future survey includes the proposed ownership, employment, investment capital, location and export to total sales ratio.

For the purposes of the study the firms are classified into 14 manufacturing sectors, which are based on a slight aggregation of the Thailand Standard Industrial Classification at the three-digit level. In practice the other manufacturing sector mainly includes firms involved in producing toys, jewellery, artificial flowers and medical supplies. The home countries of foreign firms are classified into the following six groups:

Developed countries (DCs):

(1) North America (including mainly the United States and Canada);
(2) Japan;
(3) Europe (which includes other DCs such as Australia and New Zealand).

Less developed countries (LDCs):

(4) NICs (the newly-industrialised areas of Hong Kong, Taiwan (China) and the Republic of Korea);
(5) ASEAN (the members of the Association of Southeast Asian Nations including Singapore, Malaysia, Indonesia and the Philippines);
(6) other LDCs.

4. Characteristics of MNEs in Thailand

This section examines the major characteristics of foreign firms in Thailand in order to provide a perspective for the analysis of their employment effects in the following two sections.
The industrial organisation approach to the study of MNEs points out that for a firm to undertake FDI it must have some advantages over existing or potential local competitors. A number of economists have attempted to identify the ownership advantages of MNEs which are internal to particular firms and can be exploited anywhere, although the source of the advantages may be partly influenced by the home country of the firm. These advantages include access to cheaper capital, superior technological knowledge and marketing networks, better ability to differentiate products, and overall size of firm. It is, therefore, expected that the FDI undertaken by MNEs will reflect their ownership advantages. Moreover, one would expect MNEs from DCs which are well endowed with capital, skills and advanced technology to be engaged in activities using these factors more intensively than firms from LDCs.

The section will begin with a discussion of the pattern of ownership of foreign firms in Thailand and then continue to examine dates of start-up, type of activity, firm size, factor intensity and export performance. Factors which are likely to influence the characteristics of firms such as nationality and type of activities will also be observed.

4.1 Patterns of ownership and control

In general, foreign equity ownership is used as a measure of foreign control in a firm since it implies voting rights or some influence in the management of the firm. In order to exploit their ownership advantages, one would expect foreign investors to exercise control over their subsidiary's operations by holding a majority or 100 per cent equity share.

Table 9 shows the distribution of firms by degree of foreign ownership and by industry. It is seen that contrary to the above hypothesis minority foreign ownership, especially in the range of 25 to 49.9 per cent, dominates in almost every industry except for chemicals and petroleum products. However, the table also reveals that sectors characterised by relatively advanced technology or product differentiation such as chemicals and petroleum products, metals and metal products and electrical machinery, do tend to have higher shares of foreign firms with majority or 100 per cent foreign ownership than those in sectors characterised by standardised technology such as food processing, textiles, garments, leather products and wood products. This indicates that foreign firms which have a technological edge are more likely to hold, or to be permitted to hold, majority ownership.

Since investors from DCs tend to possess more ownership advantages than those from LDCs, it is also expected that the former prefer majority or 100 per cent foreign ownership, and the latter be more willing to accept minority foreign ownership. This is confirmed in table 10 which shows the distribution of firms by nationality and degree of foreign ownership. About 71 per cent of American firms and 43 per cent of European firms are majority or wholly owned subsidiaries. Meanwhile, minority foreign ownership is adopted by 90 per cent of NIC firms and 89 per cent of ASEAN firms, and 76 per cent of firms from other LDCs. It should also be noted that a large proportion of LDC investors hold less than 25 per cent of equity share, suggesting that they have fewer advantages over local investors than DC firms. However, Japanese investors are distinctively different from other DC investors as 78 per cent of them adopt a minority shareholding position. This may be partly due to the fact that Japanese investors are still sensitive to public resentment against them which surfaced in the early 1970s and, therefore, prefer to keep a low profile.

The same pattern of foreign ownership was observed by Tambunlertchai and McGovern (1984) and Kanchanapant (1985), the latter being based on the BOI survey of 1982. Nevertheless, it should be noted that it is not always necessary that the degree of foreign control be closely related with the share of foreign ownership. For instance, the number of local shareholders in a firm may be so large that cohesion among them is not possible or that each of them only holds a small share of the total equity. Thus a foreign investor or a group of related foreign investors with minority ownership may become the largest shareholder(s) and dominate the firm's management. Moreover, even if the number of local and foreign shareholders is not different, foreign dominance may still exist if local partners are not actively involved in management or if they are only dummy partners.
In order to be consistent with most other studies in Thailand and to reflect the above observation, the rest of this study will consider a foreign firm or MNE to be one with at least 10 per cent of equity being owned by a foreigner or a group of foreigners. When a foreign firm has investors from several countries, the nationality of the firm concerned is represented by the country which holds the largest equity share.

4.2 Date of start-up

As MNEs emerged in DCs long before those in LDCs, one would expect to observe that DC firms entered Thailand before LDC firms. This hypothesis is confirmed in Table 11 which shows the distribution of the 610 survey data firms with foreign ownership of at least 10 per cent by nationality and year of start-up. It can be seen that out of 169 firms which were established in 1970 and before, 144 or 85 per cent are firms with DC involvement, with some 46 per cent being Japanese, 15 per cent American and 25 per cent European. It is also shown that DC firms have continuously invested in Thailand’s manufacturing sector since the early 1960s although their overall share declined in recent years partly due to the increasing involvement of LDC firms, especially from the NICs. This finding is consistent with that of Tammunlerchtai and McGovern (1984) in their study of 618 foreign firms up to 1982, although they also include non-manufacturing firms.

It should also be mentioned that the number of American firms has increased relatively slowly over the years, confirming that they have been less active in the Thai manufacturing sector as compared to other DC firms. Finally, after being extremely active in the 1960s and 1970s, the share of Japanese firms declined significantly in the 1980s.

Although the presence of FDI is often said to help to speed up the industrialisation process, the host country is often concerned that it may have a negative impact if it enters the country by taking over existing local firms or by discouraging the entry of local firms. In the case of Thailand, however, it was found by Pongpissanupichit (1985) that only 62 out of 779 foreign affiliates or 8 per cent started their manufacturing activities during 1915-77 by takeover. This may be because there were no existing local firms to be taken over in relatively advanced industries. In addition, MNEs in export-oriented industries may have little motive for acquisition of domestic firms since they are not competing for a share in the local market. Moreover, based on BOI surveys of 1971, 1975 and 1979, Sibunruang (1986) discovered that the average age of BOI-promoted local firms and foreign firms is very similar, suggesting that local firms existed side by side with foreign firms and both actively took advantage of the BOI’s promotional privileges.

4.3 Type of activity

Due to their technology-related ownership advantages over local firms, one would expect MNEs, especially those from DCs, to be actively engaged in technologically advanced industries.

Table 12 shows the distribution of foreign firms by country group and by sector. It can be seen that the industries into which the majority of foreign firms entered are food, beverages and tobacco, chemical and petroleum products, other manufacturing, metals and metal products, electrical machinery, textiles and transport equipment. These seven industries accounted for about 74 per cent of total foreign firms.

The table also reveals that with the exception of the food, beverages and tobacco industry which captured a large share of foreign firms from all country sources, firms from different countries are engaged in different types of activities. Among DC firms, American firms are highly concentrated in chemical and petroleum products and electrical machinery, whereas Japanese firms are more diversified among textile products, chemical and petroleum products, metals and metal products, non-electrical machinery, electrical machinery and transport equipment. European firms are primarily involved in textile products, chemical and petroleum products, metals and metal products and other manufacturing.

Among LDC firms, it can be seen that NIC firms have mainly been involved in rubber products and other manufacturing, ASEAN firms in rubber products and non-metallic minerals,
and other LDC firms in textile products, leather products, chemicals and metals and metal products. The findings do support the hypothesis that DC firms are likely to be predominant in technologically advanced activities due to their ownership advantages over LDC firms, while the latter would be expected to be involved in the manufacturing of more standardised products.

### 4.4 Size of firm

Table 13 shows the average sizes of the 498 foreign firms from the study survey for which both investment and employment figures were available. It should be noted that since, in general, investment data were not available for non-promoted foreign firms the data in this table represents mainly BOI firms. It can be seen that among foreign firms, DC firms are consistently larger than LDC firms in almost every sector. American firms are the largest, followed by Japanese firms and then European DC firms.

Table 13 also presents data on 211 firms from the BOI 1985 survey, using fixed assets, sales and employment as proxies of firm size. It is confirmed again that DC firms tend to be larger than LDC firms. However, it is interesting to note that although Thai-promoted firms are smaller than DC firms, they are still larger than LDC firms, suggesting that there exist large and modern Thai firms along with MNE subsidiaries. However, the average size of Thai firms would become much smaller if non-promoted firms are taken into account. For example, Brimble (1987) found that the average investment of 4,521 factories granted permits by the Ministry of Industry in 1985 was 3.6 million baht with an average of only ten workers. The result is in line with Kanchanapant (1985) who found that on the average DC firms are larger than LDC firms in terms of fixed assets and sales; but her result is different in terms of employment, probably due to the difference in sampled firms.

### 4.5 Factor intensity

As a result of their easier access to sources of capital and the more advanced technological situation in their home countries, one would expect firms from DCs to be more capital-intensive than those from LDCs. Table 14 shows the investment to employee ratios for the study survey foreign firms and the fixed assets to employee ratios for the BOI survey data to assess the relative capital intensities of DC and LDC firms.

It can be seen that on average DC firms do have higher average capital intensities than those of local and LDC firms, especially in textiles, rubber products, non-metallic minerals, metal and metal products, non-electrical machinery and transport equipment. However, a closer look reveals that American firms on average have quite low capital intensities due to their engagement in relatively labour-intensive activities such as food, beverages and tobacco, electronics and other manufacturing.

In addition it is found that promoted Thai firms tend to use more capital-intensive techniques than their LDC counterparts. This finding is similar to that of Sibunruang (1986) who observed that Japanese and European firms were significantly more capital-intensive than local firms, but not American firms; and that LDC firms were more labour-intensive than local firms. In addition, Kanchanapant (1985) found that on the average the level of fixed assets per employee and the level of the value of machinery and equipment per employee of DC firms are higher than those of LDC firms, indicating the higher capital intensity of the former. These results for LDC firms confirm the findings of LeCraw (1977) that LDC firms in Thailand tend to have an advantage with regard to the use of small-scale labour-intensive techniques.

### 4.6 Export performance

Because of their possession of or better access to international market networks, MNEs are often expected to contribute significantly to the export performance of the host country. Some previous studies have already found that this is true in the case of Thailand. For instance a study for ESCAP/UNCTC (1985), using data for the 265 largest exporters in 1980, revealed that manufacturing MNEs accounted for 23 per cent of total Thai exports (124 major products) and about 39 per cent of total manufactured exports.
Sibunruang and Brimble (1987), using BOI survey data of 1971, 1975, 1979 and 1984, found that the average export propensity of foreign firms improved remarkably over time from 10 per cent in 1971 to 33 per cent in 1984. These improvements in export performance of foreign firms spread to additional industries over time. For instance in 1971 there were only three industries in which average export propensities of foreign firms exceeded 20 per cent, while by 1984 seven more industries were added. The study also observed that the average export propensities of foreign firms were higher than those of local firms throughout the 1970s. However by 1984 the export performance of local firms had surpassed that of foreign firms. Furthermore, among foreign firms export propensities of American, European and LDC firms have far exceeded that of Japanese firms since the late 1970s.

Table 15, based on the BOI survey of 1985, reveals at first glance that DC and Thai firms had the same average export propensity of 30 per cent which was much less than 47 per cent of LDC firms. However a closer look discovers that this is because of the aforementioned poor export performance of local market-oriented Japanese firms which had an average export propensity of only 19 per cent, while those of American and European firms were 62 and 33 per cent respectively. Among LDC firms only NIC firms are actively engaged in exporting with an average export propensity of 64 per cent, while those of ASEAN and LDC firms were 40 and 27 per cent respectively.

Table 15 also shows that foreign firms have relatively high average export propensities in a wide range of industries such as food, beverages and tobacco, textile products, garments, leather products, wood products, rubber products, electrical machinery and other manufacturing, reflecting to some extent the reliance of MNEs on local supplies of raw materials and cost-effective labour in Thailand to generate competitiveness in world markets.

The above analysis of some of the characteristics of foreign firms in the Thai manufacturing sector clearly supports the hypotheses that foreign firms will invest in activities which tend to reflect their ownership advantages over local firms. However the results regarding the likely effects of these advantages on employment are not so clear. While DC firms are generally larger than LDC and Thai firms they also tend to use more capital-intensive techniques and locate in more technology-intensive industries. Accordingly the next section will attempt to unravel the direct employment effects of the various groups of foreign firms in Thailand.

5. Direct employment effects of manufacturing MNEs

Direct employment effects have generally been defined as the "total number of people employed within the MNE subsidiary" (ILO, 1984). However, in addition to the total employment generation, this paper will also examine the direct impacts of MNEs on the skill structure within the firm itself and briefly consider issues relating to the payment and training practices of foreign firms.

5.1 Overall direct employment effects

As pointed out in section 2.1, the unemployment problem in Thailand is growing and becoming one of the major concerns of the Government. MNEs are frequently expected to help in generating employment. Despite this attempts to examine the role of MNEs in this area are quite dated. Previous attempts to assess the direct employment effects of MNEs in Thailand were carried out by Intarathai (1974) who estimated that the number of Thai workers employed in BOI-promoted foreign firms was 130,685 in 1972 as compared to 30,808 in 1960-62, and Hirono (1975) who produced somewhat conflicting estimates of 260,000 workers in both promoted and non-promoted foreign firms in 1973. Subsequently, Hongladaron and Lee (1984) indicated that about 386,255 workers were employed by foreign firms in 1980, although the source cited for their estimate did not actually present a breakdown between foreign and domestic firms. Neither of the two latter estimates were based on detailed surveys.

The overall direct employment of the 600 manufacturing foreign firms in the study survey amounted to 182,655 workers, both Thai and foreign, accounting for some 0.7 per cent
of the total labour force or 8.8 per cent of total employment in the manufacturing sector in 1985 (see table 16). However, when only wage and salary earners in the manufacturing sector are considered, the employment share of foreign firms increases to 15.2 per cent. While these figures refer only to the manufacturing sector it is unlikely that the MNEs in other sectors such as trading, finance and services would account for a large number of employees. The existing figures would appear to be quite in line with the overall BOI employment figure in table 8 and would imply that previous estimates considerably overstated the direct employment effects of MNEs in Thailand.

ILO (1981, table II.3) presented earlier estimates of the share of foreign MNEs in manufacturing sector employment that were in general much higher than that in Thailand, such as 20 per cent for Brazil in 1970, 30 to 35 per cent for Kenya in 1975, 33 per cent for Malaysia in 1970, 67 per cent for Singapore in 1976-77, and 30 to 35 per cent for Zaire in 1974. In fact the figure of 2 per cent presented in that book for the employment of American and Japanese companies in Thailand appears to be somewhat lower than our estimates. Our estimate for the share of foreign firms in total manufacturing employment in Thailand is in fact quite close to that of the Philippines of 7 per cent. Even if the MNE share in wage and salary earners of 15.2 per cent is taken, the data would still imply that the direct impact of MNEs in Thailand has fallen considerably short of that in most other developing countries.

5.2 Employment by industry

As revealed in table 16, industries which are the major sources of employment generation by foreign firms are textile products, food, beverages and tobacco, electrical machinery, chemical and petroleum products, garments, metals and metal products, and other manufactured products. These sectors together accounted for about 79 per cent of total employment by foreign firms.

Table 16 also provides estimates of the share of employment generated by foreign firms in total employment in various industries. It can be seen that the sectors in which MNEs accounted for more than 10 per cent of total employment are: chemical and petroleum products (23.2 per cent); non-electrical machinery (38.4 per cent); electrical machinery (30.7 per cent); textile products (17.5 per cent); and rubber products (22 per cent). These findings indicate that although the direct employment impact of MNEs in the manufacturing sector as a whole is rather small, their employment generation effects are quite significant in certain industries, especially when their share of wage and salary earners is considered.

5.3 Employment by nationality

There have been previous attempts to estimate total direct employment by foreign firms from various country sources. For instance, a survey by JETRO Bangkok Centre (1986) found that at the end of 1985 172 Japanese manufacturing firms employed 71,619 employees (of which 550 were Japanese employees). A survey by the US Embassy in Thailand (1984) found that 54 American manufacturing firms employed 26,807 persons, while a survey by the Industrial Market Research Services and Jorge Orgibet Associates (1986), conducted in the last quarter of 1985, found that 28 large American manufacturing firms employed 20,903 staff.

Table 17 presents the employment effects by nationality of the 600 foreign firms in the study survey. It can be seen that DC firms are the major source of employment, altogether creating 146,414 jobs and accounting for 80.2 per cent of total employment by foreign firms. Employment by 206 Japanese firms was the highest totalling 67,931 persons, followed by 48,877 persons employed by 160 European firms and 29,606 persons by 71 American firms. The results of the study survey seem to correspond quite closely with the estimates cited in the previous paragraph.

As expected from the analysis of sectoral distribution of foreign firms, American firms generated significant employment in food, beverages and tobacco, chemical and petroleum products and electrical products, Japanese firms in textile products, electrical machinery, transport equipment, and food, beverages and tobacco, and European firms in textile products, garments and food, beverages and tobacco.
Foreign firms from LDCs altogether generated 36,241 jobs or 19.8 per cent of the total employment by foreign firms. NIC firms are the largest employers among LDC firms as 109 of them employed 23,052 persons, while 24 ASEAN firms and 30 other LDC firms employed 6,328 and 6,861 persons respectively. NIC firms created a large number of jobs in food, beverages and tobacco and other manufacturing, while employment by ASEAN firms was concentrated in food, beverages and tobacco and electrical machinery; and other LDC firms in food, beverages, and tobacco and textile products.

5.4 Distribution of foreign firms by employment level

The numbers and percentage distribution of firms with foreign participation by various employment levels are presented in table 18. It can be seen that the distribution of DC and LDC firms with respect to employment levels are quite similar with about 70-80 per cent of firms in each country group falling in the ranges of 50-200 and 201-1,000. The 201 firms that fall in the 201-1000 range, representing 34 per cent of total foreign firms, generated 89,760 jobs or 49 per cent of the total employment of foreign firms.

Only 35 firms (mostly Japanese and European) or 6 per cent of total foreign firms, employed more than 1,000 persons, but generated total employment of 61,199 or 34 per cent of total employment by foreign firms in Thailand. A closer look reveals that these large firms are concentrated in a few industries, mainly textiles but also food, beverages and tobacco, garments and electrical machinery.

At the other end of the scale small firms employing less than 50 workers numbered 117 and generated employment of 3,512 workers, only 2 per cent of the total. Interestingly, Japanese firms were also highly represented in this group as well as firms from the NICs. The small-scale firms were mainly found in food, beverages and tobacco and chemical products, but also in rubber products, basic metals and other manufacturing.

5.5 Employment and location of firms

Given the importance to the Government of encouraging the creation of job opportunities in the rural areas to stem the growing tide of migration, table 19 presents the employment levels and distribution of foreign firms by location. It is strikingly evident from the table that foreign firms have had a relatively small impact in generating employment opportunities outside Bangkok and the five neighbouring provinces of Samut Prakan, Samut Sakhon, Nakhon Pathom, Nonthaburi and Pathum Thani.

Of total foreign firms, 134 or 24.3 per cent were located in Bangkok and 339 or 61.6 per cent were located in the five neighbouring provinces. These firms employed 37,650 workers in Bangkok and 103,882 workers in the five provinces, together accounting for 84 per cent of total employment by manufacturing foreign firms. Looking back to table 4 (and equating Bangkok and the five provinces in table 19 to Bangkok and the other central region in table 4), it can be seen that foreign firms contributed less than 4 per cent of manufacturing employment in the other regions while in Bangkok and the five provinces they accounted for almost 10 per cent. The discrepancy is even greater if one takes into account the contributions of foreign firms to total employment in the respective areas.

Table 19 also indicates that DCs and LDCs were similarly concentrated in Bangkok and the surrounding areas with the notable exception of ASEAN firms for which both numbers and employment levels in the other regions accounted for a much larger share of the total than with the other country groups. This is due to the high percentage of Singaporean and Malaysian firms among this group that locate in the southern region near the Malaysian border.

It would therefore appear that foreign manufacturing MNEs have not yet actively responded to the Government's policy to promote investment and employment generation in the regional areas. This probably results mainly from the concentration of government offices in the Bangkok area, the higher quality of the economic infrastructure and public utilities, and the uncertainty to foreign firms of locating in rural areas.
5.6 Employment and date of start-up

Table 20 presents a picture of the employment effects of MNEs over time by showing the distribution of employment by foreign firms depending on their start-up date. The picture is not quite complete since the employment data themselves are all from the 1980s but the table does reflect to some extent the dynamics of the direct employment effects of MNEs.

Overall the employment generation of foreign firms over time looks relatively stable although there do exist significant shifts between country groups. In terms of average employment levels, however, there was a continuous downward trend from a high of 509 workers per firm before 1970 to 214 in the 1980s. This doubtless reflects to some extent the increasing introduction of more mechanised production processes and the movement of MNEs into sectors demanding higher skills rather than large quantities of unskilled workers.

Among DCs, the shares of American and European firms in total foreign firm employment remained relatively constant while that of Japan declined sharply from almost 60 per cent in the period of 1970 and earlier to only 15 per cent in the 1980s, with the average employment level falling equally much. The high employment levels of Japanese firms in the early period resulted mainly from their heavy involvement in the textile sector. The average size of American firms peaked in the period 1971-80, largely as a result of the influx during that period of a number of firms in the electronics sector assembling integrated circuits.

In the early period the role of LDCs in employment generation was negligible, accounting for only 8 per cent of the total. However, led mainly by the NICs, the group's share in total employment of foreign firms has shot up to 41 per cent in the 1980s, with the NICs accounting for 26 per cent.

5.7 Employment structure and skill mix

Because of their technological advantage, one would expect DC firms to employ more skill-intensive techniques and hence hire more skilled employees than do LDC firms. This section employs BOI survey data in order to observe the employment structure of foreign firms. Table 21 shows the average employee distribution of the 211 promoted firms by country group.

It can be seen that the major differences in employment structure between DC and LDC firms lie in the managerial and worker levels, while the average share of engineers and technicians of these firms are more or less the same. European and American firms employed higher shares of managerial staff and skilled workers than LDC and local firms, thus confirming the above hypothesis in the case of these two country groups. These results confirm those of previous researchers such as Kanchanapant (1985). However, it is interesting to note the exceptional case of Japanese firms which, although employing more managers, exhibited a skilled/unskilled mix very similar to that of LDC and Thai firms.

A closer analysis also reveals that type of activities may well significantly influence the skill mix of sampled firms. For instance European firms employed relatively high managerial staff ratios in chemical and petroleum products, basic metal and metal products, electrical machinery and other manufacturing, and used high levels of skilled workers in textiles, garments and rubber products. On the other hand, American firms used high managerial levels in rubber products and basic metal and metal products, and had a high skilled worker ratio in electronics and transport equipment industries. It is difficult to draw any concrete conclusions in this regard without obtaining more detailed information.

Table 21 also presents a measure of labour productivity, measured by the average ratio of total sales to total employment of promoted firms. The labour productivities of DC firms were consistently almost double those of LDC firms, again reflecting to some degree the former's preference for using high skill levels of employment. It is interesting to note that while average labour productivity of Thai firms was lower than that of DC firms, it was still much higher than that of LDC firms, suggesting that local promoted firms were also involved in more skill-intensive activities.
In terms of the use of foreign employees, MNEs would in general be expected to prefer to employ their own nationals instead of local personnel in management and production supervision in order to ensure full control over the business and to protect the parent firms' technological advantages. In some cases the lack of qualified local nationals or the high turnover rates of local nationals may force foreign firms to maintain foreign staff for longer periods than initially anticipated. On the other hand, MNEs may favour the employment of local nationals since it is very costly to maintain foreign personnel and their family abroad. In addition foreign assignments may take an executive out of the mainstream of career development and he may either feel left out or become too comfortable abroad and be reluctant to rejoin the parent company (Frank, 1980).

Table 21 shows that DC firms in general hire a larger proportion of foreign employees than do Thai and LDC firms, with European firms leading the group. However, at the management level the results are less clear cut, with European, Japanese, ASEAN and other LDC firms exhibiting high levels of foreign to Thai management ratios and American and NIC firms employing lower ratios. This perhaps reflects different corporate strategies being practiced by firms from different countries. As expected, Thai firms employ the fewest foreign managers.

5.8 Payment structure

Due to the frequent changes in the design of the BOI questionnaire instrument, data on wages and salaries of foreign firms were not available from the 1985 BOI survey. Nevertheless much casual empirical evidence exists to support the claim that foreign firms pay significantly higher wages than Thai firms. However, Kanchanapant's study (1985) based on the 1982 BOI survey did find that the annual salary payment of DC firms per worker was, on the average, almost twice as much as that of LDC firms. This may be partly explained by the fact that DC firms tend to be engaged in more skill-intensive activities than LDC firms and therefore hire more qualified staff, as revealed above.

5.9 Training and staff development

One of the major contributions of MNEs towards the host country's economic development is the training of local production workers and technicians as well as professional staff. A survey of firms in the machinery and electronic industries in Thailand (Ng et al., 1986) found that most of the firms surveyed had conducted training programmes, usually held overseas, for local technicians, engineers and managerial staff before the start of production operations. Japanese firms seemed to use this approach more extensively than other foreign firms. Overseas training by foreign firms was usually held at the parent company's headquarters. Local firms generally prepared their staff in the same way during the pre-operating phase, but to a considerably lesser extent. Furthermore such overseas training was usually arranged by the foreign firms that supplied machinery and equipment to the local firm.

Little further concrete evidence exists with regard to most aspects of the training practices of foreign firms. There is no doubt that certain firms have imported comprehensive training approaches to the Thai subsidiaries with much success. Lever Brothers Thailand, for example, is renowned for its management training strategy while Thai Bridgestone has experienced considerable success with their own employee development using the concept of quality control circles from Japan. Indeed they were the first company in Thailand to implement such a programme.

However, in order better to examine the effects on foreign firms' performances of their superior training systems and hence deriving recommendations for improving the situation in Thai firms, considerably more attention needs to be paid to questions of recruitment, promotion policies and the exact nature of the training programmes that are being carried out. The detailed examination of these issues, which is beyond the scope of this paper, would contribute greatly to the general understanding of the process of human resource development and the ways in which it relates to the accumulation of technological capability and more successful technology transfer and adaptation.
6. The indirect employment effects of MNEs

Many studies have indicated that, in practice, the indirect employment effects of MNEs in developing countries are likely to be an important component of their contribution (and perhaps their negative impact on) to the domestic economy, especially with regard to developing linkages between industrial sectors. However, while recognising the potential importance, the problems of measuring and even defining "indirect employment effects" mean that "any discussion of indirect effects is, therefore, necessarily beset by a number of theoretical and practical difficulties."\(^{13}\)

Indeed, since no systematic examination of these issues in Thailand has yet been made, the present paper will limit its scope to examining a set of topics related to the linkages that may exist between firms and the likely contribution of foreign firms in enhancing the quality of these linkages. The issues that will be covered include an analysis of the indirect employment effects of MNEs using an input-output approach, a discussion of the linkages created by the use of local inputs and the development of subcontracting arrangements, and some thoughts about the spillover effects of MNEs on firms in the same industry. Although recognising the possible negative indirect employment effects resulting from takeovers, displacement of local workers and exploitation of local companies by foreign firms, there exists little evidence that they are at all significant in Thailand and hence will not be further considered.\(^{14}\)

6.1 Indirect employment effects through vertical linkages

While recognising the inherent problems associated with using a static input-output model to examine the backward linkage employment effects of foreign involvement, the present study took advantage of the calculations in recent analysis of the impact of trade policies in Thailand (Yokota, 1987) to provide a rough indication of the indirect employment effects of multinational firms in Thailand.\(^{15}\) By combining the 1980 input-output table coefficients with sectoral employment data from the National Statistical Office, a set of direct and total (direct plus indirect) labour coefficients were estimated as presented in columns (1) and (2) of table 22. A multiplier is then calculated which represents the amount of indirect labour associated with one direct worker in each sector. This can then be applied to direct employment use to generate indirect employment use. The indirect labour demand will be generated both within the manufacturing sector itself as well as in other sectors such as services and agriculture. The present analysis does not consider the sector in which the indirect demand is generated.

The multipliers show that sectors with high linkage effects in the Thai economy include food, beverages and tobacco, and non-electrical machinery, while those with lower linkage effects include garments, wood products, non-metallic minerals and metal products. It is interesting to note that those sectors with high linkage effects are not necessarily the same as those which have relatively higher direct labour coefficients. This provides some support to the notion that policy to promote investment in labour-intensive industries may not always maximise the overall employment effects.

The estimate of the indirect employment effects of foreign firms in Thailand in 1985 is shown in column (4). The total indirect labour use amounted to over 400,000 workers, with almost 200,000 being accounted for by the employment generated in the agricultural sector as a result of foreign investment in the processed food industry. Other sectors which generated large indirect labour demand include textile products, non-electrical machinery, electrical machinery and chemical products. The corresponding total employment generated by foreign investment in Thailand's manufacturing sector approached 600,000 workers. It should be noted that the overall indirect labour multiplier of 1.68, calculated using value-added weights which reflected the existing structure of the manufacturing sector in 1980, is considerably lower than the overall implied multiplier for foreign firms of 2.23 (calculated as the ratio of total indirect employment of manufacturing foreign firms to the total direct employment). This implies that the distribution of foreign investment activities in 1985 was more conducive to the generation of indirect labour effects than the overall distribution of manufacturing sector activity.
6.2 Subcontracting and the use of local inputs

Another way of looking at the employment linkages of foreign firms is to examine the extent to which they obtain intermediate inputs in the domestic market and interact with domestic companies through subcontracting arrangements.

The local input ratios for the Thai and foreign firms covered in the BOI survey are presented in Table 23. As expected, the sectors which are characterised by relatively high shares of local inputs tend to involve raw material-based activities such as food processing, wood products and leather products, while those using relatively more advanced technologies and requiring more sophisticated inputs such as chemical and petroleum products, metal products, electrical machinery and transport equipment utilise relatively fewer local inputs.

Overall, it can be seen that DC firms use considerably lower amounts of local inputs than either LDC or Thai firms. This result is doubtless explained partly by the fact that the DC firms are more involved in the more sophisticated sectors mentioned above, particularly chemicals, electrical products and transportation equipment, while LDC and Thai firms are more concentrated in the food processing and textile sectors. In fact it is likely that the local raw material ratio in the transportation equipment sector is as high as it is, even among the many DC firms in the sector, resulting largely from the Government's extensive localisation policy in the automotive sector (Tambunlertchai et al., 1986).

Furthermore, it is also evident that foreign firms in less sophisticated industries that are export-oriented, such as garments and other manufacturing (which includes many export activities such as toys and jewellery) use relatively low levels of local inputs. This is probably explained to some extent by the fact that exporters are eligible to import inputs free of import duty and other domestic taxes. In addition, in the garment sector the foreign firms exhibited noticeably lower local raw material ratios than their Thai counterparts.

The results which are generally consistent with previous studies such as Kanchanapant (1985) indicate that within non-resource-based industries, foreign firms which manufacture sophisticated products and which are export-oriented, tend to generate relatively lower levels of demand for local inputs than domestic firms.

In addition to the generation of employment as a result of local input purchases, a wide range of longer term, more qualitative, beneficial employment effects of subcontracting between foreign and domestic companies in developing countries have been well recognised since being extensively discussed by Watanabe (1971, 1972). These include the transfer of technology through the provision by foreign firms of technical and managerial assistance and the development of local entrepreneurial talent.

Studies of subcontracting in Thailand have not thus far concentrated on the specific role of foreign firms in the process, although a recent paper by Kanjanavirojkul (1987) did cover two sectors in which foreign firms are heavily involved, namely, the production of refrigerators and motorcycles. In her examination of subcontracting relationships in these industries, she found evidence to support the contention that relatively large contractors did play a role in improving the production processes of subcontractors by providing product specifications and advice on quality control. In some cases training of workers and technical advice on production techniques were also found. Tambunlertchai et al. (1986) concludes that foreign firms have played a significant role in the development of subcontracting activities in Thailand, although qualitative details on the nature of the role are not provided.

In a more detailed firm-level study of factors influencing firm-level productivity in Thailand, Brimble (1986) found that although the establishment of subcontracting relationships tended to be inhibited by the unreliable nature of subcontractors in terms of timeliness, quality and trustworthiness, a number of foreign firms who had found solutions to the problems found it economical to subcontract. In most cases the solution to the above problems involved the development of a meaningful relationship between the
foreign and domestic companies characterised by significant flows of technical and managerial assistance from the contractor to the subcontractor. One major joint venture electrical goods producer, in attempts to rationalise their own production process, assisted some of their long-time employees to establish a number of subsidiary companies to provide the main company with a wide range of intermediate inputs. Such efforts resulted in reductions of cost for the electrical goods producer in the expansion of employment opportunities in the supplying activities and in the development of local entrepreneurship.

The importance of subcontracting and a graphic illustration of its potential employment impacts in Thailand is provided by the recent success of Sititpol MMC Motors at breaking into the Canadian market for automobiles. The company is a joint venture with Mitsubishi Motors of Japan and has developed a wide network of subcontractors, often by providing considerable assistance, to provide the 35 to 50 per cent local content for its successful export venture. The indirect employment effects of a passenger car export volume equal to total existing production levels are clearly going to be significant.

Finally, one important inhibiting factor that was identified by all the aforementioned studies of subcontracting was the present multiple business tax system, which provided a significant deterrent to firms' decisions to make or buy and limited the development of subcontracting activities. Given the apparent beneficial effects of subcontracting on the development of local industries, this feature of the tax system should be addressed. Furthermore, since foreign firms frequently possess technological advantages that make them ideal candidates to be suppliers of technical assistance through subcontracting arrangements, specific attention should be paid to creating an environment that is conducive to the development of such arrangements.

6.3 Spillover effects in the same industry

In addition to the linkage effects discussed in the previous two sections, foreign firms may also play an important role in influencing the employment situation in its own industry through the migration of technical manpower from foreign to local firms, the steady diffusion of technology throughout the industry and the establishment of recognised standards through agreements instigated by the leading foreign firms. The generally superior training programmes of foreign firms that were mentioned in the previous section make them potentially important sources of well-qualified manpower for competitors and increase the chances of beneficial spillover effects.

The importance of these phenomena in the Thai economy is even more difficult to assess than the indirect linkage employment effects. However there are several examples in the electronics industry that illustrate that such spillover effects are occurring in Thai industry. Until recently the integrated circuit industry in Thailand was completely dominated by foreign firms. Several years ago, however, a local Thai entrepreneur decided to enter the business when the market was down and set up a company that was largely based on technical input drawn from the existing foreign producers. The company has since grown very rapidly and now depends largely on its own internal generation of skilled labour. On the management side, Lever Brothers Thailand is well-known for being a major supplier of highly trained managers to other consumer product companies in Thailand.

In another vein, an American producer of integrated circuits, when faced with shortages of technical manpower, recently decided to implement a comprehensive internal training programme to provide its staff with the possibilities of furthering their academic training at local institutions. The preliminary linkages (which may well involve some financial support from the American company) that have already been developed between the company and two electrical engineering programmes at Thai universities will hopefully result in both an increase of required technical manpower for the industry as a whole as well as improving certain aspects of the existing engineering courses. Another significant spillover effect relating to human resource development concerns the rapid imitation of the quality control concept that was mentioned in the discussion of training in the previous section.
It would be reasonable to conclude that while little concrete evidence exists regarding these so-called indirect or "soft" effects of MNEs, they appear to constitute a very important component of the overall employment contribution of MNEs in Thailand. As such, efforts to increase understanding of these effects and policy efforts to promote the development of linkages and to encourage the levels of beneficial spillovers should be welcomed.

7. Outlook for the future

The year 1987 marked a turning point with regard to FDI patterns in Thailand. Due to the appreciation of the yen and rising production costs in Japan, large numbers of Japanese investors are being forced to relocate their factories abroad in order to maintain their international competitiveness. The relaxation of regulations in Taiwan, China, on overseas investment combined with their own currency appreciation have also encouraged their enterprises to expand overseas investment activities.

Among the Asian countries, Thailand is generally considered to be one of the most attractive investment locations. Moreover, a boom in the manufacturing export sector has also induced Thai firms to invest more in the production for export. As a result, the number of projects applying for the BOI promotion status increased sharply from 431 projects worth about 60 billion baht in 1986 to 1,057 projects with total investment of 209 billion baht. The number of projects approved by the BOI also doubled from 295 projects totalling about 35 billion baht in 1986 to 607 projects worth about 66 billion baht in 1987.

The number of manufacturing projects approved by the BOI in 1987 amounted to 559, of which 331 or 59 per cent have at least a 10 per cent foreign equity share. These firms are distributed by country group and by sector as shown in table 24. It can be seen that there were 123 Japanese projects and 118 NIC projects, respectively accounting for 22 per cent and 21 per cent of total approved projects in the manufacturing sector. These two country groups together accounted for almost 75 per cent of total foreign firms, confirming the contentions mentioned above. However, for Japan the new surge represents a resurgence of sorts following a lull in FDI activities in Thailand, while for the NICs it represents a continuation of a steadily growing relationship. American and European interest in Thailand is relatively less than that of Japan and the NICs, with the two countries only accounting for 12 per cent of total applications.

The total proposed employment generation by foreign firms approved by the BOI in 1987 is 114,954 persons, with 49,118 persons or 42.7 per cent to be recruited by Japanese firms and 45,101 persons or 39.2 per cent by NIC firms (see table 25). Thus if all these foreign firms carry out their investment projects in Thailand, the overall employment by foreign firms will increase drastically by almost two-thirds of their employment levels in the past. The table also shows that the major industries in which employment is expected to be generated by foreign firms are textile products, rubber products, electrical machinery and other manufacturing products. These four industries together will employ 92,015 persons or 80 per cent of the total proposed employment by foreign firms. With the exception of the rubber products sector, these figures indicate that foreign firms will not generate significant employment effects in the rural areas through backward linkages in resource-based industries.

Thai firms represent only about 40 per cent of total numbers and total employment of projects approved by the BOI, a considerably lower figure than in previous years. However, the average employment of newly promoted Thai firms is almost equal to that of foreign firms (338 workers per firm compared to 352 workers), indicating that the size advantage of promoted foreign firms may be removed in the future. The interest of Thai firms lies mainly in the manufacturing of food, beverages and tobacco, textile products and rubber products. These three sectors accounted for 57 per cent of the total number of Thai projects, and 76.8 per cent of their proposed total employment generation, implying that Thai firms will contribute much more to the Government's policy goals of using agricultural resources and generating rural employment than the foreign firms.
Table 26 presents the distribution of BOI-promoted firms by degree of foreign ownership and proposed export propensity. As is the case with existing firms, a large proportion of these firms fall in the 25 to 49.9 per cent range. However, the share of approved firms with majority and 100 per cent foreign ownership is noticeably higher than that of the existing firms. At the same time the number of projects exporting 80 per cent or more of their output accounted for almost 80 per cent of total projects, representing a considerable increase over previous levels. The two observations are probably related since the BOI generally allows promoted firms to have majority foreign ownership if they export more than 50 per cent of output, and to have 100 per cent foreign ownership if they export 100 per cent of output. Indeed this is supported by the fact that 86.3 per cent of firms with foreign equity share in the range 50 to 99.9 per cent and 95.7 per cent of wholly foreign-owned firms will export at least 80 per cent. These shares are higher than those of firms with minority foreign ownership.

In terms of employment the results are even more biased towards export activities as over 90 per cent of the total employment to be generated by these firms will be involved in the export-oriented projects. This dramatic market shift towards exporting activities is likely to have far-reaching implications with regard to the employment effects (both direct and indirect) of foreign firms. Some existing foreign firms which in the past took advantage of protected domestic markets as well as the new wave of foreign firms will be competing in world markets, pressuring them to maximise production efficiency in Thailand. This implies that more efforts will have to be made by these firms with regard to technology transfer and human resource development in the Thai subsidiaries. Indeed preliminary evidence from some export-oriented Japanese firms in the electronics sector suggests that this is already the case as they are devoting considerable efforts to improving the quality and efficiency of their Thai workforce.

The location plans of BOI-approved firms are presented in table 27. In fact the location pattern of foreign-promoted firms is quite similar to that of the existing ones (see table 19). Foreign firms still prefer to locate their factories in Bangkok and the five neighbouring provinces, although the share of firms to be located in Bangkok has slightly dropped in all country groups. This may be partly due to the introduction of new criteria on granting privileges in September 1987, which provide the least incentives for firms locating in Bangkok. Overall, 76.8 per cent of the proposed employment of foreign firms will be in Bangkok and the five provinces with the remainder of just over 23 per cent in the regions. While representing a moderate increase over the foreign firms in the study survey this latter figure still does not represent the contribution by foreign firms to regional development that many politicians would like to see. As is the case with the existing situation, Thai firms will play a more important role in generating direct manufacturing employment in the rural areas.

8. Conclusions and major implications

The first part of this section aims to summarise the major findings of the present study concerning the general characteristics of MNEs in Thailand, their direct and indirect employment effects and the likely role of MNEs in generating employment effects in the future. The second outlines the major implications of the study for policy and for further research.

8.1 Summary of the main results

From the analysis of the characteristics of foreign firms, several important differences were identified between foreign firms originating in DCs and those from LDCs, many of them confirming hypotheses originating in the theoretical analyses of FDI. In particular, DC firms were found to be more predominant in technologically advanced industries while LDC firms tended to be concentrated in more standardised activities. Furthermore it was found that those firms engaging in technologically advanced industries tended to protect their ownership advantages by maintaining more control over the firm's operations. As a result DC firms, with the interesting exception of the Japanese, were much more likely to have majority or wholly-owned subsidiaries than those from LDCs. While DC firms were found to have entered Thailand before those from LDCs, the latter have recently been increasing their share in Thailand's foreign sector, led by a rapid growth of FDI inflows from the NICs.
In terms of production DC firms were generally found to be larger and more capital-intensive than local and LDC firms. However, LDC firms tended to be smaller and use more labour-intensive techniques than local promoted firms, indicating that there exist large and modern Thai firms along with MNE subsidiaries. On the export front, DC firms on average were seen to turn in poorer export performances than LDC firms, but this was mainly due to low average export propensities of Japanese firms. Among LDC firms the relatively higher export propensities resulted largely from the successful export activities of NIC firms.

The examination of the direct employment effects of MNEs in the manufacturing sector indicated that they have not been as large as suggested by earlier studies. In particular it was found that 600 foreign firms employed just over 180,000 persons, accounting for only 0.7 per cent of the total labour force or 8.8 per cent of total employment in the manufacturing sector in 1985. However, a closer look revealed that their share of total employment in some industries such as chemical and petroleum products, non-electrical machinery, electrical machinery, textile products and rubber products, was much higher than the overall average.

DC firms were found to be the major source of employment, accounting for more than 80 per cent of total employment by foreign firms. However, these firms tended to locate their factories in Bangkok and five neighbouring provinces and as a result only 16 per cent of total employment by manufacturing foreign firms was created in other regions.

In dynamic terms, it was demonstrated that the average employment levels of foreign firms have dramatically declined over time, reflecting to some extent the increasing introduction of more mechanised production process and the movement of foreign firms into higher skill-intensive activities which employ fewer unskilled workers. This was also reflected in the employment structure of foreign firms where DC firms, excluding Japanese ones, were found to employ higher shares of managerial staff and skilled workers than LDC and local firms and hence pay higher wages. DC firms were also seen to hire a larger proportion of foreign employees than Thai and LDC firms but at the management level the results were not conclusive.

The analysis of the indirect employment effects indicated that they were potentially much larger than the direct effects, both in terms of employment generated and in terms of more qualitative employment effects. Based on a static input-output model, it was estimated that over 400,000 jobs were generated by foreign firms through their backward linkages to other sectors. With regard to the use of local inputs, it was found that foreign firms engaged in sophisticated industries or producing for export markets tended to be more dependent on imported inputs than domestic firms. However, some evidence was cited to suggest that foreign firms did play an important role in improving the production processes of local subcontractors by providing product specifications, technical assistance and advice on quality control. In addition several examples of positive spillover effects of foreign firms through the migration of technical manpower and the diffusion of training practices from foreign to local firms were discussed.

The examination of projects approved by the BOI in 1987 revealed the existence of a wave of FDI in Thailand, largely coming from Japan and the NICs. If all these projects go ahead the employment generated by foreign firms will increase by almost two-thirds of the existing level. Most of the workers to be employed will be in export-oriented activities and this is likely to have a significant impact on production efficiency and staff development in foreign firms. However, most of the employment will be concentrated around Bangkok and it is not expected that foreign firms will directly contribute significantly to regional development.

8.2 Major implications of the study

The major implications of the study are as follows:

(1) Since the indirect employment effects of foreign firms appear to be substantial, more attention should be given to creating an environment in which the country maximises the generation of such effects. MNEs appear to play an important role in increasing the skills of local technicians, engineers and managerial staff with their superior...
training programmes and the development of human resources is clearly going to play an important role in Thailand's future development. However, since the human resource element of MNEs operations has been inadequately studied in Thailand, research priority should be given to carrying out detailed analyses of the human resource development policies of MNEs, especially in the areas of recruitment practices, internal firm organisation and training programmes.

(2) Given its importance in the foreign manufacturing sector, the BOI could pay more attention to the employment aspects of the overall investment promotion policy. This is especially important where there appear to be conflicts between the various goals being pursued by the BOI, such as the apparent conflict between the promotion of exports and the promotion of rural industrialisation and employment. It would also apply to the present policy of providing capital subsidies to promoted firms. In particular the existing incentives provided to promoted firms which locate in the regions have clearly not been effective in encouraging foreign firms to do so. If the Government wants to promote rural development, which would address many of the employment problems discussed in section 2.1 above, more efforts need to be made in terms both of providing incentives and developing the economic and social infrastructure in the regional areas.

(3) The BOI should also more carefully examine the specific areas where their policies are directly related to the employment practices of foreign firms, such as the requirement for foreign firms to replace foreign managers and technicians by Thais within a certain period of time. A systematic examination of the successes or failures of such attempts may provide useful indicators to directions for policy reform and improvement.

(4) There is a need for more consistent government policy formulation with regard to supply side aspects of employment. If Thailand is to remain a popular site for foreign investors, the Government will have to develop both a more flexible education system that will respond quickly to the needs of both foreign and domestic enterprises to supply needed workers in the right skill areas and a better functioning labour market with more comprehensive flows of information about job prospects in the present and future. The respective policy agents should carefully consider the possibilities of co-operating with existing foreign firms in these areas since they are likely to have better information about future technological trends as well as resources to support particular training programmes.

(5) Many of these implications take on particular importance in light of the large potential influx of foreign firms at the present time. To some degree, the country should be in a good bargaining position to shop for projects which will significantly contribute to the economic development objectives. Given the different characteristics of foreign firms with regard to direct employment effects, the Government should examine the possibilities of encouraging certain groups of firms, perhaps such as those from the NICs, that carry out activities that are more in line with Thailand's factor endowments. At the same time Government should ensure that policies designed to direct the inflow of FDI into various areas and promote the generation of employment effects do not become excessively bureaucratic and hence counterproductive.

NOTES

1 The terms MNE and foreign firm will be used interchangeably throughout the study. See section 4.1 for a rigorous definition.

2 See the Sixth National Economic and Social Development Plan (1987-91), prepared by the Office of the National Economic and Social Development Board.

3 See citation in footnote 2.
4 This is exemplified by the experience of a major foreign producer of integrated circuits who recently advertised for 4 engineers and only received 4 applications.

5 For more details see Poapongsakorn (1986).

6 To provide an idea of the value of the baht to be used as a reference for the reader for the remainder of the paper, the average baht/US dollar selling rates are given below:

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7 For more details see Sibunruang and Tambunlertchai (1986).

8 To the authors' knowledge, this data set is the most comprehensive that has been compiled regarding foreign firms' activities in Thailand.


10 This probably reflects the response of MNEs toward the government policy to encourage Thai equity participation. Both Tambunlertchai and McGovern (1984) and Sibunruang (1986) found that the share of majority foreign-owned companies significantly declined after the implementation of the Alien Business Law in 1972.

11 Indeed, Sibunruang (1986) found from her own survey of 57 firms that 15 out of 35 firms with minority ownership in the 25 to 49.9 per cent bracket had majority foreign control in the board of directors.

12 The same study also found that 97 per cent of factories granted permits in 1985 had investment less than 1 million baht. Indeed, even among foreign firms the study survey shows that BOI-promoted foreign firms, with average employment of 353, are considerably larger on average than non-BOI-promoted foreign firms which employed an average only 207 employees.

13 The major attempts to define systematically and examine the indirect employment effects of MNEs in developing countries are contained in ILO (1981) and ILO (1994). Indeed, the topics to be discussed in this section reflect to some extent the classification scheme outlined in ILO (1984), table 1, and confirm the findings in that report regarding the relative importance of "vertical linkage effects" and "narrow horizontal effects" vis-à-vis the "macroeconomic effects" and the "broad linkage effects".

14 However, recent concern has been expressed among academics and some civil servants concerning the potential employment displacement effects among small Thai firms of the rapid influx of foreign firms, especially from Japan and Taiwan (China): These concerns are rarely substantiated and, to the extent that the new firms are heavily export-oriented, the negative impacts are likely to be reduced. On the other hand, it must be remembered that if large export firms are permitted to market even a small percentage of their output in the limited domestic market, they may cause disruption in such markets that could have serious short-term dislocational employment effects.

15 The analysis appears to be similar to that of Jo, S.H. (1976), The impact of multinational firms on employment and incomes: The case of South Korea, Geneva, ILO, as cited in ILO (1981). The problems of using input-output based calculations are discussed in detail in ILO (1981) and the results presented in this paper should be interpreted as providing only a quantitative idea of the order of magnitude of the indirect employment effects of MNEs in Thailand.
16 The Ministry of Finance is presently planning to introduce a value-added tax system which would address the issue to a large extent.

17 See ILO (1984) for a comparative discussion of these effects.
Selected References


Tambunlertchai, Somsak et. al. (1986). Small and Medium Scale Industries in Thailand and Subcontracting Arrangements, Unpublished manuscript.


### Table 1: Population and employment by sector, 1960-86

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by sector:

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<tr>
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<td>7.6%</td>
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<td>Share</td>
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Notes: growth rates are compound annual rates and shares are sector shares
Table 2: Gross domestic product at 1972 prices, 1960-86

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<tr>
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<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>by sector:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Agriculture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>28.2</td>
<td>48.3</td>
<td>72.8</td>
<td>86.8</td>
<td>86.2</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>5.5%</td>
<td>4.2%</td>
<td>3.6%</td>
<td>-0.7%</td>
</tr>
<tr>
<td>Share</td>
<td>40.2%</td>
<td>32.2%</td>
<td>24.5%</td>
<td>23.2%</td>
<td>22.3%</td>
</tr>
<tr>
<td>Mining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0.9</td>
<td>2.6</td>
<td>4.8</td>
<td>6.0</td>
<td>6.1</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>11.7%</td>
<td>6.3%</td>
<td>4.7%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Share</td>
<td>1.2%</td>
<td>1.7%</td>
<td>1.6%</td>
<td>1.6%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>8.4</td>
<td>23.3</td>
<td>60.6</td>
<td>77.4</td>
<td>82.6</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>10.8%</td>
<td>10.0%</td>
<td>5.0%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Share</td>
<td>12.0%</td>
<td>15.5%</td>
<td>20.7%</td>
<td>20.7%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>3.3</td>
<td>8.7</td>
<td>16.6</td>
<td>17.8</td>
<td>17.9</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>10.0%</td>
<td>6.7%</td>
<td>1.4%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Share</td>
<td>4.8%</td>
<td>5.8%</td>
<td>5.7%</td>
<td>4.8%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Utilities</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0.2</td>
<td>1.6</td>
<td>5.6</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>22.5%</td>
<td>13.3%</td>
<td>9.9%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Share</td>
<td>0.3%</td>
<td>1.1%</td>
<td>1.9%</td>
<td>2.4%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Commerce</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>11.1</td>
<td>26.5</td>
<td>48.2</td>
<td>59.1</td>
<td>61.4</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>9.1%</td>
<td>6.2%</td>
<td>4.2%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Share</td>
<td>15.9%</td>
<td>17.7%</td>
<td>16.5%</td>
<td>15.8%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>4.8</td>
<td>9.2</td>
<td>18.8</td>
<td>25.8</td>
<td>27.2</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>6.7%</td>
<td>7.4%</td>
<td>6.5%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Share</td>
<td>6.9%</td>
<td>6.1%</td>
<td>6.4%</td>
<td>6.9%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>13.2</td>
<td>29.8</td>
<td>65.5</td>
<td>92.0</td>
<td>95.9</td>
</tr>
<tr>
<td>Growth</td>
<td>-</td>
<td>8.5%</td>
<td>8.2%</td>
<td>7.0%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Share</td>
<td>18.8%</td>
<td>19.9%</td>
<td>22.4%</td>
<td>24.6%</td>
<td>24.8%</td>
</tr>
</tbody>
</table>

Notes: growth rates are compound annual rates and shares are sector shares
p - provisional
Source: National Economic and Social Development Board
Table 3: Manufacturing sector employment and GDP at 1972 prices, 1985

<table>
<thead>
<tr>
<th>Sector</th>
<th>Employment Number</th>
<th>Distribution</th>
<th>GDP (million baht) Value Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>476 520</td>
<td>23.1%</td>
<td>22 431</td>
</tr>
<tr>
<td>Textile Products</td>
<td>208 800</td>
<td>10.1%</td>
<td>11 525</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>259 410</td>
<td>12.6%</td>
<td>8 804</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>34 570</td>
<td>1.7%</td>
<td>606</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>283 620</td>
<td>13.7%</td>
<td>1 449</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>73 280</td>
<td>3.5%</td>
<td>2 967</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>74 520</td>
<td>3.6%</td>
<td>10 294</td>
</tr>
<tr>
<td>Rubber &amp; Petroleum Products</td>
<td>26 190</td>
<td>1.3%</td>
<td>1 609</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>100 460</td>
<td>4.9%</td>
<td>4 624</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>117 560</td>
<td>5.7%</td>
<td>1 598</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>14 030</td>
<td>0.7%</td>
<td>1 813</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>73 460</td>
<td>3.6%</td>
<td>1 526</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>181 710</td>
<td>8.8%</td>
<td>5 762</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>142 570</td>
<td>6.9%</td>
<td>2 417</td>
</tr>
</tbody>
</table>

Total 2 066 700 100.0% 77 425 100.0%

Sources: National Statistical Office (employment)
National Economic and Social Development Board (GDP)
### Table 4: Population, employment and unemployment by region, 1986

<table>
<thead>
<tr>
<th></th>
<th>Other</th>
<th>Bangkok</th>
<th>Central</th>
<th>North</th>
<th>Northeast</th>
<th>South</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6,314</td>
<td>10,453</td>
<td>10,588</td>
<td>18,431</td>
<td>6,441</td>
<td>52,227</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.1%</td>
<td>20.0%</td>
<td>20.3%</td>
<td>35.3%</td>
<td>12.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td>2,664</td>
<td>5,380</td>
<td>5,865</td>
<td>9,631</td>
<td>3,151</td>
<td>26,691</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10.0%</td>
<td>20.2%</td>
<td>22.0%</td>
<td>36.1%</td>
<td>11.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td>671</td>
<td>736</td>
<td>281</td>
<td>214</td>
<td>168</td>
<td>2,069</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td>32.4%</td>
<td>35.6%</td>
<td>13.6%</td>
<td>10.3%</td>
<td>8.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Unemployed</strong></td>
<td></td>
<td>132</td>
<td>254</td>
<td>178</td>
<td>469</td>
<td>112</td>
<td>1,145</td>
</tr>
<tr>
<td>(% of labor force)</td>
<td></td>
<td>11.5%</td>
<td>22.2%</td>
<td>15.5%</td>
<td>41.0%</td>
<td>9.8%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Seasonally</strong></td>
<td></td>
<td>348.6</td>
<td>947</td>
<td>2,772</td>
<td>121</td>
<td>4,189</td>
<td></td>
</tr>
<tr>
<td><strong>Unemployed</strong></td>
<td></td>
<td>8.3%</td>
<td>22.6%</td>
<td>66.2%</td>
<td>2.9%</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Percentages represent regional shares  
* - includes 176.4 thousand seasonally inactive workers  
Source: National Statistical Office Labor Force Survey July Round
Table 5: Net private foreign direct investment inflow by country, 1970-86

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>4,968</td>
<td>12,927</td>
<td>30.8%</td>
<td>29.7%</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>5,782</td>
<td>12,617</td>
<td>35.8%</td>
<td>28.9%</td>
</tr>
<tr>
<td>U.K.</td>
<td>1,101</td>
<td>2,017</td>
<td>6.8%</td>
<td>4.6%</td>
</tr>
<tr>
<td>West Germany</td>
<td>418</td>
<td>1,204</td>
<td>2.6%</td>
<td>2.8%</td>
</tr>
<tr>
<td>France</td>
<td>261</td>
<td>396</td>
<td>1.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>336</td>
<td>2,036</td>
<td>2.1%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Italy</td>
<td>455</td>
<td>476</td>
<td>2.8%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Canada</td>
<td>-26</td>
<td>219</td>
<td>-0.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Australia</td>
<td>77</td>
<td>471</td>
<td>0.5%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>1,262</td>
<td>4,806</td>
<td>7.8%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Singapore</td>
<td>898</td>
<td>1,849</td>
<td>5.6%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>102</td>
<td>377</td>
<td>0.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Philippines</td>
<td>66</td>
<td>-34</td>
<td>0.4%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>17</td>
<td>391</td>
<td>0.1%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Others</td>
<td>432</td>
<td>3,842</td>
<td>2.7%</td>
<td>8.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16,149</strong></td>
<td><strong>43,594</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

FDI as a percent of Gross Domestic Investment: 2.1% 2.9%

Note: A negative figure indicates that the repatriation of equity and loans exceeded the respective inflows for that country.

Source: Bank of Thailand
Table 6: Net private foreign direct investment inflow  
by sector, 1970-86 (million baht)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Institutions</td>
<td>2 155</td>
<td>297</td>
<td>13.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Trade</td>
<td>3 514</td>
<td>8 312</td>
<td>21.8%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Construction</td>
<td>1 891</td>
<td>7 418</td>
<td>11.7%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Mining &amp; Quarrying</td>
<td>1 927</td>
<td>8 038</td>
<td>11.9%</td>
<td>18.4%</td>
</tr>
<tr>
<td>of which: Oil exploration</td>
<td>1 679</td>
<td>7 124</td>
<td>10.4%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Others</td>
<td>248</td>
<td>914</td>
<td>1.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>14</td>
<td>625</td>
<td>0.1%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Industry</td>
<td>5 392</td>
<td>13 935</td>
<td>33.4%</td>
<td>32.0%</td>
</tr>
<tr>
<td>of which: Food</td>
<td>571</td>
<td>983</td>
<td>3.5%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Textiles</td>
<td>2 045</td>
<td>973</td>
<td>12.7%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Metal &amp; non-metallic</td>
<td>247</td>
<td>1 258</td>
<td>1.5%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Electrical appliances</td>
<td>1 148</td>
<td>4 076</td>
<td>7.1%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Machinery &amp; transport equip.</td>
<td>328</td>
<td>1 008</td>
<td>2.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>648</td>
<td>2 103</td>
<td>4.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Petroleum products</td>
<td>216</td>
<td>2 062</td>
<td>1.3%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Construction materials</td>
<td>-68</td>
<td>91</td>
<td>-0.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Others</td>
<td>257</td>
<td>1 381</td>
<td>1.6%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Services</td>
<td>1 255</td>
<td>4 968</td>
<td>7.8%</td>
<td>11.4%</td>
</tr>
<tr>
<td>of which: Transportation &amp; travel</td>
<td>862</td>
<td>1 649</td>
<td>5.3%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Housing &amp; real estate</td>
<td>141</td>
<td>696</td>
<td>0.9%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Hotels &amp; restaurants</td>
<td>98</td>
<td>768</td>
<td>0.6%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Others</td>
<td>154</td>
<td>1 855</td>
<td>1.0%</td>
<td>4.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16 149</strong></td>
<td><strong>43 593</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Source: Bank of Thailand
Table 7: Net foreign direct investment in the manufacturing sector by country or area, 1970-85

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>Japan</th>
<th>UK</th>
<th>Germany</th>
<th>Hong Kong</th>
<th>Singapore</th>
<th>Other Nations</th>
<th>Total FDI Inflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Manufacturing</td>
<td>4,437</td>
<td>5,473</td>
<td>473</td>
<td>599</td>
<td>2,321</td>
<td>309</td>
<td>3,608</td>
<td>17,220</td>
</tr>
<tr>
<td>Food</td>
<td>25.5%</td>
<td>36.9%</td>
<td>16.5%</td>
<td>41.0%</td>
<td>45.3%</td>
<td>13.2%</td>
<td>39.6%</td>
<td>32.6%</td>
</tr>
<tr>
<td>Textiles</td>
<td>2.3%</td>
<td>-1.2%</td>
<td>0.8%</td>
<td>15.4%</td>
<td>3.8%</td>
<td>4.3%</td>
<td>1.8%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Metal &amp; non-metallic</td>
<td>-7</td>
<td>1,000</td>
<td>-1</td>
<td>91</td>
<td>203</td>
<td>105</td>
<td>149</td>
<td>1,541</td>
</tr>
<tr>
<td>Electrical appliances</td>
<td>2,633</td>
<td>1,066</td>
<td>24</td>
<td>63</td>
<td>583</td>
<td>25</td>
<td>193</td>
<td>4,507</td>
</tr>
<tr>
<td>Mach. &amp; transport equip.</td>
<td>15.4%</td>
<td>7.3%</td>
<td>0.8%</td>
<td>4.3%</td>
<td>11.4%</td>
<td>1.1%</td>
<td>2.1%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>1.3%</td>
<td>3.4%</td>
<td>0.6%</td>
<td>0.0%</td>
<td>5.9%</td>
<td>10.9%</td>
<td>0.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Petroleum products</td>
<td>2.2%</td>
<td>4.1%</td>
<td>1.3%</td>
<td>7.2%</td>
<td>7.4%</td>
<td>2.6%</td>
<td>7.8%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Construction materials</td>
<td>3.5%</td>
<td>0.1%</td>
<td>7.4%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>-11.4%</td>
<td>18.8%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Others</td>
<td>-119</td>
<td>29</td>
<td>4</td>
<td>0</td>
<td>79</td>
<td>12</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Other Sectors #</td>
<td>12,569</td>
<td>9,373</td>
<td>2,400</td>
<td>863</td>
<td>2,805</td>
<td>2,035</td>
<td>5,496</td>
<td>35,641</td>
</tr>
<tr>
<td>Total</td>
<td>17,107</td>
<td>14,846</td>
<td>2,873</td>
<td>1,462</td>
<td>5,126</td>
<td>2,344</td>
<td>9,104</td>
<td>52,862</td>
</tr>
</tbody>
</table>

Notes: percentages represent sector shares in country totals
# - includes finance institutions, trade, construction, mining, agriculture, services
Source: Compiled from Bank of Thailand data
Table 8: Details of board of investment activities, 1960-86

Firms Granted Promotion Certificates

<table>
<thead>
<tr>
<th>Total Number of Firms</th>
<th>1762 (100.0%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai-owned</td>
<td>903 (51.2%)</td>
</tr>
<tr>
<td>Foreign-owned</td>
<td>55 (3.1%)</td>
</tr>
<tr>
<td>Joint Venture</td>
<td>804 (45.6%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Registered Capital (million baht)</th>
<th>39,710 (100.0%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai</td>
<td>28,669 (72.2%)</td>
</tr>
<tr>
<td>Foreign</td>
<td>11,041 (27.8%)</td>
</tr>
<tr>
<td>Japan</td>
<td>840 (2.1%)</td>
</tr>
<tr>
<td>United States</td>
<td>1,866 (4.7%)</td>
</tr>
<tr>
<td>Taiwan</td>
<td>1,051 (2.6%)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>721 (1.8%)</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>556 (1.4%)</td>
</tr>
<tr>
<td>Singapore</td>
<td>373 (0.9%)</td>
</tr>
<tr>
<td>Others</td>
<td>3,633 (9.1%)</td>
</tr>
</tbody>
</table>

| Total Investment (million baht)         | 207,816         |

| Estimated Number of Thai Employees      | 478,370         |

| Number of Promoted Firms in Operation   | 1,325           |

Note: firms that receive promotion certificates have accepted the conditions imposed by the BOI for promotion status and have already submitted company registration documents to the BOI. Source: Office of the Board of Investment.
Table 9: Pattern of foreign ownership by sector
(number of firms)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage Foreign Shareholding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 10% 10-24.9% 25-49.9% 50-99.9%</td>
</tr>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>12 8 64 14 10 108</td>
</tr>
<tr>
<td></td>
<td>11% 7% 59% 13% 9% 100%</td>
</tr>
<tr>
<td>Textile Products</td>
<td>9 9 30 7 2 57</td>
</tr>
<tr>
<td></td>
<td>16% 16% 53% 12% 4% 100%</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>4 1 19 3 3 30</td>
</tr>
<tr>
<td></td>
<td>13% 3% 63% 10% 10% 100%</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>4 3 10 2 1 20</td>
</tr>
<tr>
<td></td>
<td>20% 15% 50% 10% 5% 100%</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>4 4 13 4 2 27</td>
</tr>
<tr>
<td></td>
<td>15% 15% 48% 15% 7% 100%</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>3 5 9 3 2 22</td>
</tr>
<tr>
<td></td>
<td>14% 23% 41% 14% 9% 100%</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>5 8 33 23 29 98</td>
</tr>
<tr>
<td></td>
<td>5% 8% 34% 23% 30% 100%</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>4 6 15 6 5 36</td>
</tr>
<tr>
<td></td>
<td>11% 17% 42% 17% 14% 100%</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>8 7 8 1 5 29</td>
</tr>
<tr>
<td></td>
<td>28% 24% 28% 3% 17% 100%</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>4 7 26 16 5 58</td>
</tr>
<tr>
<td></td>
<td>7% 12% 45% 28% 9% 100%</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>4 2 17 3 4 30</td>
</tr>
<tr>
<td></td>
<td>13% 7% 57% 10% 13% 100%</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>2 4 24 11 14 55</td>
</tr>
<tr>
<td></td>
<td>4% 7% 44% 20% 25% 100%</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>3 3 28 6 3 43</td>
</tr>
<tr>
<td></td>
<td>7% 7% 65% 14% 7% 100%</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>2 12 31 12 8 65</td>
</tr>
<tr>
<td></td>
<td>3% 15% 48% 18% 12% 100%</td>
</tr>
<tr>
<td>Total</td>
<td>68 79 327 111 93 678</td>
</tr>
</tbody>
</table>

Note: percentages represent ownership distribution by sector
Source: the Study Survey
Table 10: Pattern of foreign ownership by country group  
(number of firms)

<table>
<thead>
<tr>
<th>Percentage Foreign Shareholding</th>
<th>U.S.A.</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>Other LDCs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10%</td>
<td>4</td>
<td>15</td>
<td>12</td>
<td>23</td>
<td>11</td>
<td>3</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>5.3%</td>
<td>6.7%</td>
<td>6.9%</td>
<td>16.9%</td>
<td>31.4%</td>
<td>9.1%</td>
<td>10.0%</td>
</tr>
<tr>
<td>10% - 24.9%</td>
<td>3</td>
<td>17</td>
<td>22</td>
<td>28</td>
<td>5</td>
<td>4</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>3.9%</td>
<td>7.6%</td>
<td>12.6%</td>
<td>20.6%</td>
<td>14.3%</td>
<td>12.1%</td>
<td>11.7%</td>
</tr>
<tr>
<td>25% - 49.9%</td>
<td>15</td>
<td>143</td>
<td>65</td>
<td>71</td>
<td>15</td>
<td>18</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>19.7%</td>
<td>64.1%</td>
<td>37.1%</td>
<td>52.2%</td>
<td>42.9%</td>
<td>54.5%</td>
<td>48.2%</td>
</tr>
<tr>
<td>50% - 99.9%</td>
<td>19</td>
<td>33</td>
<td>42</td>
<td>10</td>
<td>2</td>
<td>5</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>25.0%</td>
<td>14.8%</td>
<td>24.0%</td>
<td>7.4%</td>
<td>5.7%</td>
<td>15.2%</td>
<td>16.4%</td>
</tr>
<tr>
<td>100%</td>
<td>35</td>
<td>15</td>
<td>34</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>46.1%</td>
<td>6.7%</td>
<td>19.4%</td>
<td>2.9%</td>
<td>5.7%</td>
<td>9.1%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>223</td>
<td>175</td>
<td>136</td>
<td>35</td>
<td>33</td>
<td>678</td>
</tr>
</tbody>
</table>

Notes: Percentages represent ownership distribution by country. The country group of each firm is determined by the largest foreign shareholder.  
Source: the Study Survey
Table 11: Distribution of foreign firms by year of start-up and country group (number of firms)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A.</td>
<td>25</td>
<td>24</td>
<td>23</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>14.8%</td>
<td>11.0%</td>
<td>10.4%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Japan</td>
<td>77</td>
<td>85</td>
<td>46</td>
<td>208</td>
</tr>
<tr>
<td></td>
<td>45.6%</td>
<td>38.8%</td>
<td>20.7%</td>
<td>34.1%</td>
</tr>
<tr>
<td>Europe</td>
<td>42</td>
<td>65</td>
<td>56</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td>24.9%</td>
<td>29.7%</td>
<td>25.2%</td>
<td>26.7%</td>
</tr>
<tr>
<td>NICs</td>
<td>14</td>
<td>31</td>
<td>68</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>8.3%</td>
<td>14.2%</td>
<td>30.6%</td>
<td>18.5%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>6</td>
<td>4</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>3.6%</td>
<td>1.8%</td>
<td>6.3%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Other LDCs</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>3.0%</td>
<td>4.6%</td>
<td>6.8%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Total</td>
<td>169</td>
<td>219</td>
<td>222</td>
<td>610</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Note: Percentages are country shares of firms starting in each period.
Source: the Study Survey
Table 12: Distribution of foreign firms by country group and sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>U.S.A</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>Other</th>
<th>LDCs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>13</td>
<td>33</td>
<td>25</td>
<td>16</td>
<td>5</td>
<td>4</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>16%</td>
<td>15%</td>
<td>14%</td>
<td>21%</td>
<td>13%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Textile Products</td>
<td>0</td>
<td>20</td>
<td>15</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>10%</td>
<td>9%</td>
<td>8%</td>
<td>0%</td>
<td>13%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>2</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>4%</td>
<td>4%</td>
<td>6%</td>
<td>0%</td>
<td>7%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>0%</td>
<td>4%</td>
<td>5%</td>
<td>0%</td>
<td>10%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>1</td>
<td>11</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>5%</td>
<td>2%</td>
<td>5%</td>
<td>4%</td>
<td>0%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>2%</td>
<td>2%</td>
<td>4%</td>
<td>4%</td>
<td>3%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>19</td>
<td>30</td>
<td>27</td>
<td>9</td>
<td>1</td>
<td>7</td>
<td>93</td>
<td></td>
</tr>
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<td></td>
<td>26%</td>
<td>14%</td>
<td>17%</td>
<td>8%</td>
<td>4%</td>
<td>23%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>3</td>
<td>8</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
<td>9%</td>
<td>17%</td>
<td>3%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
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<td>10</td>
<td>0</td>
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<td>21</td>
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<td>3%</td>
<td>6%</td>
<td>0%</td>
<td>17%</td>
<td>0%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>8</td>
<td>18</td>
<td>14</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>9%</td>
<td>9%</td>
<td>6%</td>
<td>13%</td>
<td>13%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>3</td>
<td>14</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>26</td>
<td></td>
</tr>
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<td>4%</td>
<td>7%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
<td>4%</td>
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<tr>
<td>Electrical Machinery</td>
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<td>20</td>
<td>10</td>
<td>9</td>
<td>3</td>
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<td>53</td>
<td></td>
</tr>
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<td></td>
<td>14%</td>
<td>10%</td>
<td>6%</td>
<td>8%</td>
<td>13%</td>
<td>3%</td>
<td>9%</td>
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</tr>
<tr>
<td>Transport Equipment</td>
<td>1</td>
<td>31</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>15%</td>
<td>2%</td>
<td>3%</td>
<td>4%</td>
<td>0%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>6</td>
<td>5</td>
<td>22</td>
<td>27</td>
<td>1</td>
<td>2</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8%</td>
<td>2%</td>
<td>13%</td>
<td>24%</td>
<td>4%</td>
<td>7%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>72</strong></td>
<td><strong>208</strong></td>
<td><strong>163</strong></td>
<td><strong>113</strong></td>
<td><strong>24</strong></td>
<td><strong>30</strong></td>
<td><strong>610</strong></td>
<td></td>
</tr>
</tbody>
</table>

Note: percentages represent sector distribution by country group
Source: the Study Survey
Table 13: Size of firms by country group and sector

### A. Average Investment (Ainv) and Employment (Aemp) of Foreign Firms

<table>
<thead>
<tr>
<th>Industry</th>
<th>DCs</th>
<th>LDCs</th>
<th>All foreign firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ainv</td>
<td>Aemp</td>
<td>No. of Firms</td>
</tr>
<tr>
<td>Food, Bever. &amp; Tobacco</td>
<td>125</td>
<td>327</td>
<td>53</td>
</tr>
<tr>
<td>Textile Products</td>
<td>348</td>
<td>1003</td>
<td>32</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>105</td>
<td>1136</td>
<td>9</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>65</td>
<td>460</td>
<td>6</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>20</td>
<td>240</td>
<td>11</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>107</td>
<td>203</td>
<td>11</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>396</td>
<td>234</td>
<td>43</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>240</td>
<td>258</td>
<td>13</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>334</td>
<td>273</td>
<td>13</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>290</td>
<td>257</td>
<td>33</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>211</td>
<td>191</td>
<td>19</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>381</td>
<td>527</td>
<td>34</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>221</td>
<td>244</td>
<td>30</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>45</td>
<td>161</td>
<td>30</td>
</tr>
<tr>
<td>Overall</td>
<td>236</td>
<td>375</td>
<td>337</td>
</tr>
</tbody>
</table>

### B. Average Fixed Assets (Afas), Total Sales (Asal), and Employment (Aemp) of Promoted Firms

<table>
<thead>
<tr>
<th>Industry</th>
<th>DCs</th>
<th>LDCs</th>
<th>Thailand</th>
<th>All BOI survey firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Afas</td>
<td>Asal</td>
<td>Aemp</td>
<td>Afas</td>
</tr>
<tr>
<td>Food, Bever. &amp; Tobacco</td>
<td>123</td>
<td>432</td>
<td>453</td>
<td>83</td>
</tr>
<tr>
<td>Textile Products</td>
<td>510</td>
<td>553</td>
<td>1231</td>
<td>54</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>162</td>
<td>505</td>
<td>1827</td>
<td>96</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>15</td>
<td>11</td>
<td>67</td>
<td>180</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>121</td>
<td>218</td>
<td>232</td>
<td>225</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>113</td>
<td>124</td>
<td>124</td>
<td>180</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>71</td>
<td>141</td>
<td>153</td>
<td>32</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>4901</td>
<td>3187</td>
<td>1568</td>
<td>6</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>269</td>
<td>430</td>
<td>322</td>
<td>-</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>184</td>
<td>327</td>
<td>227</td>
<td>-</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>133</td>
<td>534</td>
<td>510</td>
<td>31</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>112</td>
<td>287</td>
<td>175</td>
<td>97</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>19</td>
<td>98</td>
<td>252</td>
<td>37</td>
</tr>
<tr>
<td>Overall</td>
<td>331</td>
<td>438</td>
<td>501</td>
<td>68</td>
</tr>
</tbody>
</table>

Notes: Average fixed assets, average investment, and average total sales are million baht.
Section A excludes 102 foreign firms for which no investment data was available.
For numbers of firms in each category of Section B, see Table 14.
Sources: A – the Study Survey, B – the BOI Survey.
Table 14: Capital intensity of foreign and promoted firms by sector

A. Investment to Labor Ratios (Inv/Lab)

<table>
<thead>
<tr>
<th>Sector</th>
<th>DCs No. of Inv/Lab Firms</th>
<th>LDCs No. of Inv/Lab Firms</th>
<th>Overall No. of Inv/Lab Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>0.38</td>
<td>0.21</td>
<td>0.32</td>
</tr>
<tr>
<td>Textile Products</td>
<td>0.35</td>
<td>0.18</td>
<td>0.33</td>
</tr>
<tr>
<td>Garments (excl. Footwear)</td>
<td>0.09</td>
<td>0.08</td>
<td>0.09</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>0.14</td>
<td>0.27</td>
<td>0.20</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>0.08</td>
<td>0.27</td>
<td>0.14</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>0.53</td>
<td>4.79</td>
<td>1.47</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>1.69</td>
<td>0.98</td>
<td>1.59</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>0.93</td>
<td>0.30</td>
<td>0.71</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>1.22</td>
<td>0.16</td>
<td>1.00</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>1.13</td>
<td>0.62</td>
<td>1.03</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>1.10</td>
<td>0.53</td>
<td>1.09</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>0.72</td>
<td>0.89</td>
<td>0.75</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>0.90</td>
<td>0.59</td>
<td>0.89</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>0.28</td>
<td>0.09</td>
<td>0.17</td>
</tr>
<tr>
<td>Overall Investment/Labor Ratio</td>
<td>0.63</td>
<td>0.40</td>
<td>0.58</td>
</tr>
</tbody>
</table>

B. Fixed Asset to Labor Ratios (Fix/Lab)

<table>
<thead>
<tr>
<th>Sector</th>
<th>DCs No. of Fix/Lab Firms</th>
<th>LDCs No. of Fix/Lab Firms</th>
<th>Thai No. of Fix/Lab Firms</th>
<th>Overall No. of Fix/Lab Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>0.27</td>
<td>0.29</td>
<td>0.18</td>
<td>0.23</td>
</tr>
<tr>
<td>Textile Products</td>
<td>0.41</td>
<td>0.21</td>
<td>0.39</td>
<td>0.40</td>
</tr>
<tr>
<td>Garments (excl. Footwear)</td>
<td>0.09</td>
<td>0.08</td>
<td>0.12</td>
<td>0.09</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>-</td>
<td>0</td>
<td>0.32</td>
<td>0.32</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>0.22</td>
<td>1</td>
<td>0.54</td>
<td>0.98</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>0.52</td>
<td>2.67</td>
<td>1.49</td>
<td>3.10</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>0.92</td>
<td>0.92</td>
<td>0.92</td>
<td>0.92</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>0.46</td>
<td>0.15</td>
<td>0.13</td>
<td>0.19</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>3.10</td>
<td>0.02</td>
<td>1.43</td>
<td>2.26</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>0.83</td>
<td>-</td>
<td>0.63</td>
<td>0.75</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>0.81</td>
<td>-</td>
<td>0.42</td>
<td>0.57</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>0.26</td>
<td>0.11</td>
<td>0.26</td>
<td>0.23</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>0.64</td>
<td>0.30</td>
<td>0.25</td>
<td>0.50</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>0.07</td>
<td>0.11</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>Overall Fixed Asset/Labor Ratio</td>
<td>0.66</td>
<td>0.22</td>
<td>0.45</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Note: all ratios are million baht per worker.
Sources: A – the study survey, B – the BDOI Survey
Table 15: Average export propensities of promoted firms

<table>
<thead>
<tr>
<th>Sector</th>
<th>DCs No.of Firms</th>
<th>LDCs No.of Firms</th>
<th>Thai No.of Firms</th>
<th>Overall No.of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expr</td>
<td>Expr</td>
<td>Expr</td>
<td>Expr</td>
</tr>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>0.46</td>
<td>0.37</td>
<td>0.50</td>
<td>0.47</td>
</tr>
<tr>
<td>Textile Products</td>
<td>0.38</td>
<td>0.70</td>
<td>0.37</td>
<td>0.38</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>0.92</td>
<td>1.00</td>
<td>0.19</td>
<td>0.87</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>0.00</td>
<td>0.44</td>
<td>0.44</td>
<td>0.58</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>0.06</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>0.11</td>
<td>0.56</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>0.13</td>
<td>0.78</td>
<td>0.93</td>
<td>0.49</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>0.08</td>
<td>0.02</td>
<td>0.02</td>
<td>0.06</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>0.23</td>
<td>0.02</td>
<td>0.02</td>
<td>0.14</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>0.02</td>
<td>0.04</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>0.68</td>
<td>0.71</td>
<td>0.67</td>
<td>0.67</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>0.03</td>
<td>0.15</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>0.74</td>
<td>0.78</td>
<td>0.80</td>
<td>0.80</td>
</tr>
<tr>
<td>Overall Export/Sales Ratio</td>
<td>0.30</td>
<td>0.47</td>
<td>0.30</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Note: Expr = export sales to total sales ratio
Source: the BOI Survey
Table 16: Foreign firms' employment compared to total employment in the manufacturing sector (number of workers)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Total Employment (NSO)</th>
<th>Foreign firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1985</td>
<td>(1)</td>
</tr>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>269 261</td>
<td>476 520</td>
</tr>
<tr>
<td>Textile Products</td>
<td>151 956</td>
<td>208 800</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>125 075</td>
<td>259 410</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>20 116</td>
<td>34 570</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>118 653</td>
<td>283 620</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>52 606</td>
<td>73 280</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>38 683</td>
<td>74 520</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>25 670</td>
<td>26 190</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>78 810</td>
<td>100 460</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>83 748</td>
<td>117 560</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>11 919</td>
<td>14 030</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>48 828</td>
<td>73 460</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>125 077</td>
<td>181 710</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>50 568</td>
<td>142 570</td>
</tr>
</tbody>
</table>

Total Employment 1,200,970 2,066,700 182,655 (600) 15.2% 8.8%

Notes: (1) - wage and salary employment
(2) - total employment
Sources: the National Statistical Office and the Study Survey
Table 17: Employment of foreign firms by country group and sector

<table>
<thead>
<tr>
<th>Country</th>
<th>Employees</th>
<th>No.of Employ. Firms</th>
<th>&lt; 50</th>
<th>50 - 200</th>
<th>201 - 1000</th>
<th>&gt; 1000</th>
<th>Total</th>
<th>No.of Employ. Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A.</td>
<td></td>
<td></td>
<td>397</td>
<td>11</td>
<td>2770</td>
<td>14624</td>
<td>29</td>
<td>11815</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1%</td>
<td>15%</td>
<td>9%</td>
<td>37%</td>
<td>49%</td>
<td>41%</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td></td>
<td>1156</td>
<td>46</td>
<td>9129</td>
<td>28978</td>
<td>65</td>
<td>28668</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td>22%</td>
<td>13%</td>
<td>38%</td>
<td>43%</td>
<td>32%</td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
<td>896</td>
<td>29</td>
<td>7307</td>
<td>24225</td>
<td>55</td>
<td>16449</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td>18%</td>
<td>15%</td>
<td>41%</td>
<td>50%</td>
<td>34%</td>
</tr>
<tr>
<td>NICs</td>
<td></td>
<td></td>
<td>920</td>
<td>26</td>
<td>5323</td>
<td>14024</td>
<td>35</td>
<td>2785</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4%</td>
<td>24%</td>
<td>23%</td>
<td>43%</td>
<td>61%</td>
<td>32%</td>
</tr>
<tr>
<td>ASEAN</td>
<td></td>
<td></td>
<td>119</td>
<td>4</td>
<td>1208</td>
<td>3519</td>
<td>7</td>
<td>1482</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td>17%</td>
<td>19%</td>
<td>50%</td>
<td>56%</td>
<td>29%</td>
</tr>
<tr>
<td>Other LDCs</td>
<td></td>
<td></td>
<td>24</td>
<td>1</td>
<td>2447</td>
<td>4390</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0%</td>
<td>3%</td>
<td>36%</td>
<td>63%</td>
<td>64%</td>
<td>33%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>3512</td>
<td>117</td>
<td>28184</td>
<td>247</td>
<td>89760</td>
<td>201</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td>20%</td>
<td>15%</td>
<td>41%</td>
<td>49%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Note: Percentages show distribution of employment and firms by country group.
Source: the Study Survey.
Table 18: Distribution and employment of foreign firms by employment levels and country group (number of workers)

<table>
<thead>
<tr>
<th>Sector</th>
<th>U.S.A</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>LDCs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Employment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>6 135</td>
<td>6 590</td>
<td>6 554</td>
<td>5 792</td>
<td>1 796</td>
<td>1 514</td>
<td>28 381</td>
</tr>
<tr>
<td>Textile Products</td>
<td>0 23</td>
<td>9 992</td>
<td>9 608</td>
<td>1 505</td>
<td>0</td>
<td>1 482</td>
<td>36 587</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>1 886</td>
<td>3 571</td>
<td>7 425</td>
<td>1 695</td>
<td>0</td>
<td>522</td>
<td>15 099</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>0</td>
<td>0</td>
<td>3 162</td>
<td>1 358</td>
<td>0</td>
<td>941</td>
<td>5 461</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>350</td>
<td>2 147</td>
<td>983</td>
<td>1 136</td>
<td>195</td>
<td>0</td>
<td>4 811</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>938</td>
<td>473</td>
<td>1 111</td>
<td>400</td>
<td>63</td>
<td>171</td>
<td>3 156</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>3 692</td>
<td>5 839</td>
<td>5 892</td>
<td>927</td>
<td>35</td>
<td>889</td>
<td>17 274</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>1 590</td>
<td>1 638</td>
<td>677</td>
<td>972</td>
<td>477</td>
<td>408</td>
<td>5 762</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>400</td>
<td>1 865</td>
<td>2 546</td>
<td>0</td>
<td>973</td>
<td>0</td>
<td>5 784</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>2 377</td>
<td>4 150</td>
<td>3 129</td>
<td>889</td>
<td>671</td>
<td>428</td>
<td>11 644</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>1 001</td>
<td>2 359</td>
<td>1 927</td>
<td>0</td>
<td>0</td>
<td>104</td>
<td>5 391</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>8 646</td>
<td>7 733</td>
<td>2 222</td>
<td>1 782</td>
<td>1 999</td>
<td>164</td>
<td>22 546</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>844</td>
<td>6 612</td>
<td>1 121</td>
<td>165</td>
<td>89</td>
<td>0</td>
<td>8 831</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>1 747</td>
<td>962</td>
<td>2 520</td>
<td>6 431</td>
<td>30</td>
<td>238</td>
<td>11 928</td>
</tr>
<tr>
<td><strong>Overall Total</strong></td>
<td>29 606</td>
<td>67 931</td>
<td>48 877</td>
<td>23 052</td>
<td>6 328</td>
<td>6 861</td>
<td>182 655</td>
</tr>
<tr>
<td>(Country Shares)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16.2%</td>
<td>37.2%</td>
<td>26.8%</td>
<td>12.6%</td>
<td>3.5%</td>
<td>3.8%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: the Study Survey
Table 19: Employment and distribution of foreign firms by location and by country group

<table>
<thead>
<tr>
<th></th>
<th>Bangkok</th>
<th>5 Provinces</th>
<th>Other Regions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Employ. Firms</td>
<td>No. of Employ. Firms</td>
<td>No. of Employ. Firms</td>
<td>No. of Employ. Firms</td>
</tr>
<tr>
<td>U. S. A.</td>
<td>11 242</td>
<td>10 056</td>
<td>5 956</td>
<td>27 254</td>
</tr>
<tr>
<td></td>
<td>41.2%</td>
<td>36.9%</td>
<td>21.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Japan</td>
<td>7 523</td>
<td>47 136</td>
<td>8 445</td>
<td>63 104</td>
</tr>
<tr>
<td></td>
<td>11.9%</td>
<td>74.7%</td>
<td>13.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Europe</td>
<td>11 189</td>
<td>27 666</td>
<td>5 117</td>
<td>43 972</td>
</tr>
<tr>
<td></td>
<td>25.4%</td>
<td>62.9%</td>
<td>11.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td>NICs</td>
<td>5 517</td>
<td>13 913</td>
<td>2 732</td>
<td>22 162</td>
</tr>
<tr>
<td></td>
<td>24.9%</td>
<td>62.8%</td>
<td>12.3%</td>
<td>100.0%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>432</td>
<td>2 279</td>
<td>3 554</td>
<td>6 265</td>
</tr>
<tr>
<td></td>
<td>6.9%</td>
<td>36.4%</td>
<td>56.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Other LDCs</td>
<td>1 747</td>
<td>2 832</td>
<td>1 368</td>
<td>5 947</td>
</tr>
<tr>
<td></td>
<td>29.4%</td>
<td>47.6%</td>
<td>23.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>37 650</td>
<td>103 882</td>
<td>27 172</td>
<td>168 704</td>
</tr>
<tr>
<td></td>
<td>22.3%</td>
<td>61.6%</td>
<td>16.1%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Notes: Percentages show distribution of employment and firms by country group
Excludes 48 foreign firms for which location data was unavailable
Source: the Study Survey
Table 20: Distribution and employment of firms by year of start-up and country group

<table>
<thead>
<tr>
<th></th>
<th>1970 and earlier</th>
<th>1971-80</th>
<th>1981-87</th>
<th>All firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Average No. of Employ.</td>
<td>Employ.</td>
<td>No.of Firms</td>
<td>Total Average No. of Employ.</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>7 699</td>
<td>308</td>
<td>25</td>
<td>14 185</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>15%</td>
<td>23%</td>
<td>11%</td>
</tr>
<tr>
<td>Japan</td>
<td>44 732</td>
<td>589</td>
<td>76</td>
<td>16 833</td>
</tr>
<tr>
<td></td>
<td>57%</td>
<td>46%</td>
<td>28%</td>
<td>40%</td>
</tr>
<tr>
<td>Europe</td>
<td>19 319</td>
<td>471</td>
<td>41</td>
<td>17 874</td>
</tr>
<tr>
<td></td>
<td>25%</td>
<td>25%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>NICs</td>
<td>2 236</td>
<td>177</td>
<td>13</td>
<td>9 530</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>8%</td>
<td>15%</td>
<td>13%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>2 475</td>
<td>413</td>
<td>6</td>
<td>289</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>4%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Other LDCs</td>
<td>1 807</td>
<td>361</td>
<td>5</td>
<td>1 853</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>78 328</td>
<td>509</td>
<td>166</td>
<td>60 564</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: numbers in parentheses represent percentage shares of time period totals
Source: the Study Survey
<table>
<thead>
<tr>
<th></th>
<th>U.S.A</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>LDCs</th>
<th>Thai</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>9.4%</td>
<td>6.4%</td>
<td>6.6%</td>
<td>4.0%</td>
<td>4.4%</td>
<td>6.0%</td>
<td>5.0%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Engineers, Technicians</td>
<td>12.1%</td>
<td>10.1%</td>
<td>14.9%</td>
<td>11.6%</td>
<td>12.2%</td>
<td>11.3%</td>
<td>11.1%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Skilled Workers</td>
<td>49.6%</td>
<td>28.8%</td>
<td>38.3%</td>
<td>19.8%</td>
<td>29.3%</td>
<td>23.3%</td>
<td>34.4%</td>
<td>33.2%</td>
</tr>
<tr>
<td>Unskilled Workers</td>
<td>29.0%</td>
<td>54.7%</td>
<td>40.2%</td>
<td>64.5%</td>
<td>54.0%</td>
<td>59.5%</td>
<td>49.6%</td>
<td>49.4%</td>
</tr>
</tbody>
</table>

**Foreign Influence**

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Foreign to Thai Employee Ratio</td>
<td>2.0%</td>
<td>1.7%</td>
<td>2.4%</td>
<td>0.9%</td>
<td>0.6%</td>
<td>1.6%</td>
<td>0.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Foreign to Thai Manager Ratio</td>
<td>14.6%</td>
<td>19.5%</td>
<td>20.1%</td>
<td>14.0%</td>
<td>18.8%</td>
<td>16.9%</td>
<td>4.9%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Labor Productivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales per Employee (thousand baht)</td>
<td>817</td>
<td>799</td>
<td>983</td>
<td>360</td>
<td>286</td>
<td>456</td>
<td>712</td>
<td>767</td>
</tr>
</tbody>
</table>

Source: the BOI Survey
Table 22: Total employment effects of foreign manufacturing firms

<table>
<thead>
<tr>
<th>Sector</th>
<th>Direct Labor Input Coeff.</th>
<th>Total Labor Input Coeff.</th>
<th>Indirect Multiplier</th>
<th>Estimated Employment by MNEs (1985)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>2.15</td>
<td>15.99</td>
<td>6.45</td>
<td>28381</td>
</tr>
<tr>
<td>Textile Products</td>
<td>4.00</td>
<td>8.80</td>
<td>1.20</td>
<td>36587</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>7.30</td>
<td>13.00</td>
<td>0.78</td>
<td>15099</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>6.40</td>
<td>15.60</td>
<td>1.44</td>
<td>5461</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>8.40</td>
<td>12.90</td>
<td>0.54</td>
<td>4811</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>2.94</td>
<td>7.21</td>
<td>1.45</td>
<td>3156</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>1.09</td>
<td>2.85</td>
<td>1.63</td>
<td>17274</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>1.60</td>
<td>4.40</td>
<td>1.75</td>
<td>5762</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>6.54</td>
<td>10.92</td>
<td>0.67</td>
<td>5784</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>5.00</td>
<td>8.05</td>
<td>0.61</td>
<td>11644</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>0.50</td>
<td>4.40</td>
<td>7.80</td>
<td>5391</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>2.70</td>
<td>6.60</td>
<td>1.44</td>
<td>22546</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>3.91</td>
<td>10.30</td>
<td>1.63</td>
<td>8331</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>6.50</td>
<td>15.30</td>
<td>1.35</td>
<td>11928</td>
</tr>
<tr>
<td>Total Manufacturing **</td>
<td>3.75</td>
<td>10.07</td>
<td>1.68</td>
<td>182655</td>
</tr>
</tbody>
</table>

Notes: (1) = direct labor input for one million baht of output  
(2) = total labor input for one million baht of output  
(3) = [(2)/(1) - 1]  
(4) = see Table 16  
** - excluding rice milling, sugar milling, and slaughtering.  
*** - calculated using value-added weights  
Table 23: Use of local inputs by promoted firms by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>DCs</th>
<th>LDCs</th>
<th>Thai</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>80.4%</td>
<td>90.3%</td>
<td>99.7%</td>
<td>90.9%</td>
</tr>
<tr>
<td>Textile Products</td>
<td>56.7%</td>
<td>63.0%</td>
<td>47.0%</td>
<td>53.1%</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>21.2%</td>
<td>12.2%</td>
<td>64.8%</td>
<td>21.9%</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>-</td>
<td>-</td>
<td>64.8%</td>
<td>64.8%</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>88.8%</td>
<td>99.5%</td>
<td>51.9%</td>
<td>64.6%</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>47.6%</td>
<td>73.1%</td>
<td>53.7%</td>
<td>53.7%</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Products</td>
<td>22.7%</td>
<td>-</td>
<td>82.9%</td>
<td>37.2%</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>44.6%</td>
<td>42.9%</td>
<td>46.8%</td>
<td>45.3%</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>58.6%</td>
<td>60.1%</td>
<td>45.5%</td>
<td>51.9%</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>13.3%</td>
<td>-</td>
<td>49.8%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>62.7%</td>
<td>-</td>
<td>47.5%</td>
<td>61.2%</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>3.5%</td>
<td>28.9%</td>
<td>26.5%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>37.6%</td>
<td>52.2%</td>
<td>31.4%</td>
<td>37.4%</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>17.0%</td>
<td>18.7%</td>
<td>17.7%</td>
<td>17.7%</td>
</tr>
<tr>
<td>Overall Local Input Ratio</td>
<td>37.2%</td>
<td>71.5%</td>
<td>71.0%</td>
<td>49.6%</td>
</tr>
</tbody>
</table>

Notes: Percentages of total intermediate inputs procured domestically
Total number of firms in sample is 211 (see Table 14, Section B)
Sources: the BOI Survey
Table 24: Distribution of BOI-promoted firms in 1987 by sector and country group (number of firms)

<table>
<thead>
<tr>
<th>Sector</th>
<th>U.S.A.</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>Other LDCs</th>
<th>Total Foreign Firms</th>
<th>Thai</th>
<th>Total Promoted Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>31</td>
<td>.65</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>14.3%</td>
<td>7.3%</td>
<td>19.6%</td>
<td>6.6%</td>
<td>33.3%</td>
<td>0.0%</td>
<td>9.4%</td>
<td>28.5%</td>
<td>17.2%</td>
</tr>
<tr>
<td>Textile Products</td>
<td>1</td>
<td>14</td>
<td>2</td>
<td>12</td>
<td>1</td>
<td>4</td>
<td>34</td>
<td>29</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>4.8%</td>
<td>11.4%</td>
<td>4.3%</td>
<td>10.2%</td>
<td>16.7%</td>
<td>23.5%</td>
<td>10.3%</td>
<td>12.7%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>1.6%</td>
<td>2.2%</td>
<td>1.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.5%</td>
<td>0.9%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Leather Products and Footwear</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>1.6%</td>
<td>4.3%</td>
<td>5.9%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>3.3%</td>
<td>4.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>3.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>2.1%</td>
<td>8.8%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>1.6%</td>
<td>4.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.2%</td>
<td>1.8%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Chemical &amp; Petroleum Prods.</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>24</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>14.3%</td>
<td>2.4%</td>
<td>13.0%</td>
<td>6.8%</td>
<td>16.7%</td>
<td>17.5%</td>
<td>7.3%</td>
<td>1.3%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>2</td>
<td>10</td>
<td>6</td>
<td>18</td>
<td>2</td>
<td>4</td>
<td>42</td>
<td>36</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>9.5%</td>
<td>8.1%</td>
<td>13.0%</td>
<td>15.3%</td>
<td>33.3%</td>
<td>23.5%</td>
<td>12.7%</td>
<td>15.8%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>0.0%</td>
<td>4.3%</td>
<td>0.8%</td>
<td>0.0%</td>
<td>5.9%</td>
<td>1.2%</td>
<td>2.2%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>2</td>
<td>18</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>14</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>9.5%</td>
<td>14.6%</td>
<td>8.7%</td>
<td>5.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>9.1%</td>
<td>6.1%</td>
<td>7.9%</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>9.5%</td>
<td>6.5%</td>
<td>0.0%</td>
<td>1.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>3.6%</td>
<td>2.2%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>4</td>
<td>26</td>
<td>5</td>
<td>20</td>
<td>0</td>
<td>2</td>
<td>57</td>
<td>9</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>19.0%</td>
<td>21.1%</td>
<td>10.2%</td>
<td>16.8%</td>
<td>0.0%</td>
<td>11.5%</td>
<td>17.2%</td>
<td>3.5%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>8.9%</td>
<td>0.0%</td>
<td>1.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>3.9%</td>
<td>2.6%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>4</td>
<td>14</td>
<td>7</td>
<td>29</td>
<td>0</td>
<td>3</td>
<td>57</td>
<td>20</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>19.0%</td>
<td>11.4%</td>
<td>15.2%</td>
<td>24.6%</td>
<td>0.0%</td>
<td>17.6%</td>
<td>17.2%</td>
<td>8.8%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>123</td>
<td>46</td>
<td>118</td>
<td>6</td>
<td>17</td>
<td>331</td>
<td>228</td>
<td>559</td>
</tr>
<tr>
<td>Group Shares in Total</td>
<td>3.8%</td>
<td>22.0%</td>
<td>8.2%</td>
<td>21.1%</td>
<td>1.1%</td>
<td>3.0%</td>
<td>59.2%</td>
<td>40.8%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Notes: The Thai category includes 21 firms with a foreign shareholding of less than 10%
Percentages represent sector shares in country group totals
Source: the Future Survey
Table 25: Proposed employment of BOL-promoted firms in 1987 by sector and country group

<table>
<thead>
<tr>
<th>U.S.A.</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>Other LDCs</th>
<th>Total Foreign Firms</th>
<th>Total Promoted Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, Bev. &amp; Tobacco</td>
<td>911</td>
<td>847</td>
<td>1,438</td>
<td>899</td>
<td>401</td>
<td>0</td>
<td>4,496 26,618 31,114</td>
</tr>
<tr>
<td></td>
<td>35.7%</td>
<td>1.7%</td>
<td>16.5%</td>
<td>2.0%</td>
<td>48.6%</td>
<td>0.0%</td>
<td>3.3% 34.5% 16.2%</td>
</tr>
<tr>
<td>Textile Products</td>
<td>410</td>
<td>15</td>
<td>250</td>
<td>579</td>
<td>3,102</td>
<td>235 1,598</td>
<td>21,174 22,399 43,273</td>
</tr>
<tr>
<td></td>
<td>7.1%</td>
<td>31.0%</td>
<td>6.6%</td>
<td>6.9%</td>
<td>28.5%</td>
<td>29.7%</td>
<td>18.4% 23.7% 22.5%</td>
</tr>
<tr>
<td>Garments (exc. Footwear)</td>
<td>0</td>
<td>262</td>
<td>190</td>
<td>456</td>
<td>0</td>
<td>0</td>
<td>908    363 1,271</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>0.5%</td>
<td>2.2%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.8% 0.5% 0.7%</td>
</tr>
<tr>
<td>Leather Prod. and Footwear</td>
<td>0</td>
<td>121</td>
<td>221</td>
<td>1,543</td>
<td>0</td>
<td>0</td>
<td>1,985 3 120 5 405</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>0.2%</td>
<td>2.5%</td>
<td>3.6%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.7% 4.4% 2.8%</td>
</tr>
<tr>
<td>Wood &amp; Wood Products</td>
<td>0</td>
<td>514</td>
<td>0</td>
<td>474</td>
<td>0</td>
<td>0</td>
<td>988    3,297 4,285</td>
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<tr>
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<td>1.0%</td>
<td>0.0%</td>
<td>1.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.9% 4.3% 2.2%</td>
</tr>
<tr>
<td>Paper &amp; Printing</td>
<td>0</td>
<td>190</td>
<td>288</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>478    282 760</td>
</tr>
<tr>
<td></td>
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<td>0.4%</td>
<td>3.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.4% 0.4% 0.4%</td>
</tr>
<tr>
<td>Chemical &amp; Petrol. Prods.</td>
<td>235</td>
<td>192</td>
<td>383</td>
<td>986</td>
<td>20</td>
<td>465</td>
<td>2,281 132 2,413</td>
</tr>
<tr>
<td></td>
<td>4.1%</td>
<td>0.4%</td>
<td>4.4%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>8.6%</td>
<td>2.0% 0.2% 1.5%</td>
</tr>
<tr>
<td>Rubber &amp; Rubber Products</td>
<td>461</td>
<td>1,194</td>
<td>1,281</td>
<td>7,370</td>
<td>169 1,670</td>
<td>12,145</td>
<td>10,489 22,634</td>
</tr>
<tr>
<td></td>
<td>8.0%</td>
<td>2.4%</td>
<td>14.7%</td>
<td>16.3%</td>
<td>20.5%</td>
<td>31.1%</td>
<td>10.6% 13.6% 11.8%</td>
</tr>
<tr>
<td>Non-Metallic Minerals</td>
<td>0</td>
<td>0</td>
<td>175</td>
<td>225</td>
<td>0</td>
<td>731</td>
<td>1,131 994 2,125</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>0.0%</td>
<td>2.0%</td>
<td>0.5%</td>
<td>0.0%</td>
<td>13.6%</td>
<td>1.0% 1.3% 1.1%</td>
</tr>
<tr>
<td>Metals and Metal Products</td>
<td>167</td>
<td>3,189</td>
<td>340</td>
<td>1,154</td>
<td>0</td>
<td>0</td>
<td>4,850 1,239 6,089</td>
</tr>
<tr>
<td></td>
<td>2.9%</td>
<td>6.5%</td>
<td>3.9%</td>
<td>2.6%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>4.2% 1.6% 3.2%</td>
</tr>
<tr>
<td>Non-Electrical Machinery</td>
<td>628</td>
<td>1,080</td>
<td>0</td>
<td>241</td>
<td>0</td>
<td>0</td>
<td>1,949 475 2,424</td>
</tr>
<tr>
<td></td>
<td>10.8%</td>
<td>2.2%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.7% 0.5% 1.3%</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>1,938</td>
<td>19,510</td>
<td>3,251</td>
<td>14,002</td>
<td>0</td>
<td>170 38,901</td>
<td>891 39,792</td>
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<tr>
<td></td>
<td>33.4%</td>
<td>39.7%</td>
<td>37.6%</td>
<td>31.0%</td>
<td>0.0%</td>
<td>3.2%</td>
<td>33.8% 1.2% 20.7%</td>
</tr>
<tr>
<td>Transport Equipment</td>
<td>0</td>
<td>3,404</td>
<td>0</td>
<td>469</td>
<td>0</td>
<td>0</td>
<td>3,873 1,889 5,762</td>
</tr>
<tr>
<td></td>
<td>0.0%</td>
<td>6.9%</td>
<td>0.0%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>3.4% 2.4% 3.0%</td>
</tr>
<tr>
<td>Other Manufacturing</td>
<td>1,047</td>
<td>3,365</td>
<td>561</td>
<td>14,080</td>
<td>0</td>
<td>742 19,795</td>
<td>4,916 24,711</td>
</tr>
<tr>
<td></td>
<td>18.1%</td>
<td>6.9%</td>
<td>6.4%</td>
<td>31.2%</td>
<td>0.0%</td>
<td>13.8%</td>
<td>17.2% 6.4% 12.9%</td>
</tr>
<tr>
<td>Total</td>
<td>5,797</td>
<td>49,118</td>
<td>8,737</td>
<td>45,101</td>
<td>825 5,376</td>
<td>114,954</td>
<td>77,104 192,058</td>
</tr>
</tbody>
</table>

Country Group Shares in Total

<table>
<thead>
<tr>
<th>U.S.A.</th>
<th>Japan</th>
<th>Europe</th>
<th>NICs</th>
<th>ASEAN</th>
<th>Other LDCs</th>
<th>Total Foreign Firms</th>
<th>Total Promoted Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0%</td>
<td>25.6%</td>
<td>4.5%</td>
<td>23.5%</td>
<td>0.4%</td>
<td>2.8%</td>
<td>59.9%</td>
<td>40.1% 100.0%</td>
</tr>
</tbody>
</table>

Notes: The Thai category includes 21 firms with a foreign shareholding of less than 10%
Percentages represent sector shares in country group totals
Source: the Future Survey
Table 26: Export orientation and ownership of BOL-promoted firms in 1987

<table>
<thead>
<tr>
<th>Percentage Foreign Shareholding</th>
<th>Zero Exports</th>
<th>0% - 79.9%</th>
<th>80% or More</th>
<th>Total Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Firms</td>
<td>No. of Firms</td>
<td>No. of Firms</td>
<td>No. of Firms</td>
</tr>
<tr>
<td>0% (100% Thai)</td>
<td>36 3 663</td>
<td>10 984</td>
<td>157 51 926</td>
<td>203 56 573</td>
</tr>
<tr>
<td></td>
<td>17.7% 6.5%</td>
<td>4.9% 1.7%</td>
<td>77.3% 91.8%</td>
<td>100.0% 100.0%</td>
</tr>
<tr>
<td>0.1% - 10%</td>
<td>4 376</td>
<td>0 0</td>
<td>17 19 683</td>
<td>21 20 059</td>
</tr>
<tr>
<td></td>
<td>19.0% 1.9%</td>
<td>0.0% 0.0%</td>
<td>81.0% 98.1%</td>
<td>100.0% 100.0%</td>
</tr>
<tr>
<td>10% - 24.9%</td>
<td>3 111</td>
<td>4 754</td>
<td>18 17 366</td>
<td>25 18 231</td>
</tr>
<tr>
<td></td>
<td>12.0% 0.6%</td>
<td>16.0% 4.1%</td>
<td>72.0% 95.3%</td>
<td>100.0% 100.0%</td>
</tr>
<tr>
<td>25% - 49.9%</td>
<td>23 3 010</td>
<td>25 4 124</td>
<td>88 19 000</td>
<td>136 26 134</td>
</tr>
<tr>
<td></td>
<td>16.9% 11.5%</td>
<td>18.4% 15.8%</td>
<td>64.7% 72.7%</td>
<td>100.0% 100.0%</td>
</tr>
<tr>
<td>50% - 99.9%</td>
<td>6 758</td>
<td>4 350</td>
<td>63 30 271</td>
<td>73 31 379</td>
</tr>
<tr>
<td></td>
<td>8.2% 2.4%</td>
<td>5.5% 1.1%</td>
<td>86.3% 96.5%</td>
<td>100.0% 100.0%</td>
</tr>
<tr>
<td>100%</td>
<td>4 342</td>
<td>0 0</td>
<td>89 38 569</td>
<td>93 38 911</td>
</tr>
<tr>
<td></td>
<td>4.3% 0.9%</td>
<td>0.0% 0.0%</td>
<td>95.7% 99.1%</td>
<td>100.0% 100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>76 8 260</td>
<td>43 6 212</td>
<td>432 176 815</td>
<td>551 191 287</td>
</tr>
<tr>
<td></td>
<td>13.8% 4.3%</td>
<td>7.8% 3.2%</td>
<td>78.4% 92.4%</td>
<td>100.0% 100.0%</td>
</tr>
</tbody>
</table>

Notes: Percentages represent distribution across shareholding groups
Export percentages were not available for eight promoted firms
Source: the Future Survey
Table 27: Employment and distribution of promoted firms by location and by country group

<table>
<thead>
<tr>
<th></th>
<th>Bangkok</th>
<th>5 Provinces</th>
<th>Other Regions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Firms</td>
<td>Employ.</td>
<td>No. of Firms</td>
<td>Employ.</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>8 1 995</td>
<td>38.1% 34.4%</td>
<td>9 3 506</td>
<td>42.9% 60.5%</td>
</tr>
<tr>
<td>Japan</td>
<td>14 1 087</td>
<td>11.7% 2.2%</td>
<td>87 31 884</td>
<td>72.5% 65.4%</td>
</tr>
<tr>
<td>Europe</td>
<td>9 2 370</td>
<td>20.9% 28.2%</td>
<td>27 5 053</td>
<td>62.8% 60.2%</td>
</tr>
<tr>
<td>NICs</td>
<td>21 7 371</td>
<td>18.1% 16.5%</td>
<td>77 28 598</td>
<td>66.4% 64.1%</td>
</tr>
<tr>
<td>ASEAN</td>
<td>1 102</td>
<td>16.7% 12.4%</td>
<td>2 255</td>
<td>33.3% 30.9%</td>
</tr>
<tr>
<td>Other LDCs</td>
<td>4 319</td>
<td>23.5% 5.9%</td>
<td>11 4 875</td>
<td>64.7% 90.7%</td>
</tr>
<tr>
<td>Total Foreign</td>
<td>57 13 244</td>
<td>17.6% 11.6%</td>
<td>213 74 171</td>
<td>65.9% 65.2%</td>
</tr>
</tbody>
</table>

Notes: Percentages show distribution of employment and firm numbers by country group. Excludes eight promoted firms for which location data was unavailable. Source: the Future Survey.
ANNEX

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