

THE ROLE OF JAPANESE OVERSEAS AFFILIATES AND TECHNOLOGY TRANSFER: IMPLICATIONS FOR INDONESIA

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1 INTRODUCTION: THE UNEMPLOYMENT PROBLEM IN INDONESIA

In East Asia¹, many countries experienced negative growth in 1998. Since their economies have maintained high growth rates until recently, no one could have forecasted the current economic depression. Because of the currency turmoil and the subsequent financial and economic crisis, economic activity in most countries in this region has shrunk abruptly. Many factories had to lay off their workers. As a result, the number of jobless people has unexpectedly increased and led to a severe problem of unemployment. A comparison of official (and highly underestimated) unemployment rates for 1998 (figures for 1996 given in brackets) shows the seriousness of this problem: Korea 6.8% (2.8%), Hong Kong 4.7% (2.8%), Thailand 4.0% (1.5%), Malaysia 3.9% (2.6%), Philippines 10.1% (7.4%) (Keizai Kikakuchō 1999, 326).

In Indonesia, the most affected country, the number of unemployed persons even was said to be more than thirty million throughout the year 1998. It was reported that at least twenty million people lost their jobs as a direct result of the economic crisis since July 1997. At the end of 1998, the unemployment rate of Indonesia was said to be roughly 30% of the labor force. Hence the most urgent task for Indonesia now, besides regaining political stability, is to reduce the rate of unemployment and thus the number of unemployed people.

As for solving this unemployment problem, it is argued here that an export promotion policy is recommendable. This view is supported by two factors. First, the devaluation of the currency will strengthen international price competitiveness and secondly, under the present economic conditions, an autonomous recovery in the domestic market cannot be expected in the short run. When exports increase, domestic production also expands. In turn, factories need to hire more workers and the economy is stimulated through the effect of positive linkages finally resulting in the creation of new jobs and thus in a decline of unemployment.

¹ In this paper East Asian countries include Northeast and Southeast Asian countries.

However, the actual situation in Indonesia is still very different from such a recovery scenario. In Indonesia, exports decreased by 8.1% in monetary terms (US dollars) in 1998 as compared to 1997 (Keizai Kikakuchō 1999, 334). The export of manufactured commodities showed both an increase and a decrease, with striking differences between single product groups. Commodities with increased exports were mainly agro-based industrial products such as shrimps and cocoa, or products which utilized domestic materials and components. However, the export of manufacturing commodities such as electrical products and electronics, high-tech commodities etc., drastically declined.

To understand this development it is important to know that the production style in Indonesia is still basically focussed on the final stage of assembly relying on imported components, parts and materials from Japan, Singapore and other East Asian countries. After the prices of imported parts and materials had doubled or tripled, most domestic manufacturers lost their comparative advantage and had to stop importing parts and components. In the case of the apparel industry, for example, foreign buyers have cancelled their contracts for the import of Indonesian apparel. Besides the fact that the costs of imported materials have increased, foreign banks refused to accept L/C (letters of credit) issued by Indonesian banks. The system of wholesale and retailing has been damaged, and the transportation network has also suffered, since these sectors had been mostly managed by overseas Chinese, many of whom have left the country since the start of the political turmoil.

The decline of exports and the shrinkage of the domestic market has lowered the operation rate of factories enormously and has forced many companies to lay off substantial numbers of their workers. This situation in Indonesia is similar to that in Thailand, Malaysia or the Philippines but differs by showing a more favorable exchange rate for export. Thus an export promotion policy seems highly recommendable. However, any increase in exports can be achieved only by an industrial base characterized by strong industrial linkages and high technological abilities. One way to build up such an industrial base, and probably the most promising way, is through the inducement of foreign direct investment (FDI) from abroad, especially when it comes with the necessary technology transfer.

This paper argues that such a FDI led export promotion policy is highly recommendable for Indonesia in tackling its current unemployment problems in the medium run and that it thus might help to prevent the disorder and riot that threaten to destroy the social and economic basis of this country. In referring to the benefits of such FDI, this paper focuses on Japanese affiliated enterprises and the crucial role for job creation these firms have played in the past and might continue to play in the future. The

crucial role of technology transfer is especially highlighted as it does not only set apart Japanese firms from their Western counterparts but as the character of Japanese technology transfer has also changed remarkably over time.

2 THE ROLE OF FOREIGN DIRECT INVESTMENT

The governments of East Asia should stimulate domestic production by increasing exports which in turn can be expected to stimulate the labor market. They should concentrate their efforts in one strategic area, namely the promotion of exports especially under the condition of the recent currency devaluation. In the immediate post war period, Japan faced a similar serious economic depression. At that time, the Japanese government led a strong export promotion policy. MITI (Ministry of International Trade and Industry) played a leading role in this respect. Additionally, JETRO (Japan External Trade Organization) was established as a supporting organization for the promotion of Japanese exports during the post war period and also in the following rapid growth period.

However, the present situation in East Asia is obviously not the same as it was in Japan fifty years ago. For the governments of East Asian countries, special strategies for inviting FDI have to be implemented because FDI can help the production of export commodities and open the foreign market for their products. In particular, Japanese companies have built up a lot of experience in joint venture business in East Asia over the last three or four decades (NRI and ISEAS 1995). Governments should utilize the know-how of foreign affiliates in operating factories, exporting domestically produced commodities and training their staff.

When we observe the impact of the economic crisis in each Asian country, the degree of damage seems to depend on the strength of the existing industrial linkages and the technological and managerial capabilities of the countries. In the last few decades Southeast Asian countries have enjoyed rapid economic growth. But their strategy, in short, has been to promote an export-oriented industrialization policy which solely relied on FDI and cheap labor (see Masuyama, Vandenbrink and Chia 1997). This strategy has come increasingly under pressure with newcomers like China entering the market as competitors.

Furthermore, Southeast Asian countries have not paid enough attention to the industrial deepening of their economies and to the necessity of human resource development. This is one of the structural reasons why Indonesia and other Asian countries have fallen into the recent economic problems. When we examine the recovery process from the crisis, we can

recognize a clear difference among different East Asian countries. The economic trends of Korea and even Thailand already show an upward swing, but the economic condition of Indonesia has further deteriorated which is not only due to the political situation. The government of Indonesia should be aware of the necessity of strengthening industrial linkages and the importance of upgrading national technological capabilities.

The significance of FDI and its contributions to recipient countries can be summarized as follows (also see Yamashita 1998, 65–7): first, foreign direct investment contributes to industrialization and economic development through job creation, technology and managerial transfer, to foreign exchange earnings through exports, and to the development of supporting industries; second, the training of local employees at foreign affiliated companies contributes not only to career development in one company but also to human development in the society in general; and third, by transferring advanced foreign technologies and managerial know-how, local managers and employees may change their attitudes and try to modernize their management style.

2.1 Japanese direct investment and job creation

Direct investment from Japan to Asian countries amounted to 112.3 billion US dollars in total from 1951 to the first half of 1998 as shown in Table 1. Indonesia, China, Singapore and Thailand are the main four recipients of Japanese FDI in this region, followed by Malaysia, South Korea and the Philippines.

Table 1: **Japanese foreign direct investment in selected Asian countries**
(million US\$)

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 (first half) | 1951–97 |
|-------------|--------|--------|--------|--------|--------|----------------------|---------|
| World total | 36,205 | 41,051 | 50,694 | 48,019 | 53,972 | 16,782 | 616,292 |
| Asia total | 6,637 | 9,699 | 12,264 | 11,614 | 12,181 | 2,977 | 112,276 |
| South Korea | 246 | 400 | 445 | 416 | 442 | 175 | 6,572 |
| China | 1,691 | 2,565 | 4,473 | 2,510 | 1,987 | 435 | 17,699 |
| Thailand | 578 | 719 | 1,224 | 1,403 | 1,867 | 709 | 11,678 |
| Singapore | 644 | 1,054 | 1,152 | 1,115 | 1,824 | 272 | 13,626 |
| Malaysia | 800 | 742 | 573 | 572 | 791 | 274 | 8,292 |
| Philippines | 207 | 668 | 718 | 559 | 524 | 136 | 4,618 |
| Indonesia | 813 | 1,759 | 1,596 | 2,414 | 2,514 | 635 | 23,505 |

Source: JETRO (1999)

The total number of employees directly hired by 11,600 Japanese affiliated companies in Asia (outside of Japan) was 1.9 million as of October 1998 (see Table 2). Japanese FDI has directly created 221,000 jobs in Indonesia, 467,000 in China and 338,000 in Thailand. Adding indirect employment creation, Japanese FDI might account for five to six million employees in Asia.² Thus the role of Japanese direct investment with regards to employment creation in this region must not be underestimated.

With respect to the role of FDI, an important factor is the training of personnel, especially the in-house training system based on OJT (on-the-job training). At Japanese affiliates in East Asia, this system was introduced more than three decades ago and thus benefits from its lengthy experience. Through this system, the Japanese government and Japanese companies have been working together with recipient countries of FDI and have been supporting their efforts in upgrading their national capabilities by technology transfer both through Japanese FDI and official technical cooperation. This combination of private companies' interest and the official sector's support clearly sets apart Japanese FDI from that of its Western counterparts including the way of conducting technology transfer and assistance.

Table 2: Number of Japanese overseas affiliates and number of their employees (as of October 1998)

| | Number of companies | Total number of employees | Japanese employees dispatched |
|-------------|---------------------|---------------------------|-------------------------------|
| World total | 24,952 | 3,080,120 | 54,323 |
| Asia total | 11,606 | 1,880,492 | 26,648 |
| Korea | 646 | 79,963 | 485 |
| China | 2,588 | 466,973 | 5,043 |
| Thailand | 1,469 | 337,540 | 4,917 |
| Singapore | 1,453 | 79,450 | 3,960 |
| Malaysia | 1,028 | 219,254 | 2,574 |
| Philippines | 501 | 121,113 | 1,188 |
| Indonesia | 764 | 221,339 | 2,284 |

Source: Tōyō Keizai (1999)

² This figure includes indirect and anticipated job creation in various industries as domestic parts and material suppliers, transportation, hotel and restaurant, and other services. It is an inference based on previous analyses based on input-output analyses in many Asian countries (also see Yamashita *et al.* 1989; Yamashita 1991, 1994, 1995, 1998).

However, comparing the number of employees in Japanese overseas affiliates in Asia as stated in Table 2 for 1998 with the previous years 1996 and 1997, we can see some decline in employment. This decrease reflects the immediate impact of the regional economic crisis on the activity and operation rates in single firms. Any rebound to a new and sustainable net job creation by Japanese affiliated enterprises can only be expected when two requirements are fulfilled. The first is a substantial recovery of the Asian economy, the second is the industrial strengthening and upgrading of Asian industries facilitating the re-attainment of international competitiveness. Thus FDI reflects both industrial strength and an important means in achieving it.

2.2 Changes in Japanese FDI strategy

Japanese FDI in Asia has gone through several stages in its development. It began in the 1960s with investment in large machine assembly plants to support Asian import substitution industrialization, and then in the 1970s moved into a phase based on natural resource development and importation. During the period of the yen's appreciation since 1985, investment sharply increased in Asia, taking advantage of reduced production costs in order to maintain international competitiveness, and establishing an export base in Asia for the markets of Japan, Europe and the USA but also increasingly for the Asian market itself.

The move towards local production by Japanese affiliate companies has helped to bring about substantial progress in the economic development and industrialization of Asian countries. From the Japanese perspective, moreover, the phased and chain-reaction like development of Asian countries with different levels of technology and income has generated beneficial effects both for Japan's growing and declining industries.

In addition to the region being considered an economic growth area and a large potential market, Japanese corporations find the Asian region especially attractive as every country is at a different stage of development, and all have been (until recently) involved in a cyclical structure of mutual growth. On top of this, all Asian countries in general welcome the introduction of export-oriented foreign investment, and thus provide the necessary conditions for the acceptance of Japanese-style management methods that focus on export promotion. For Japanese companies, one main effect of establishing production facilities overseas has been the increase of exports of parts, services and associated machinery to these affiliates abroad, especially in Asia. Until 1993, Japanese exports in terms of value have been highest to the USA, but since then exports to Asia took

the lead. Asia has now become the largest importer of Japanese products, including capital goods, parts and materials for domestic production.

3 TECHNOLOGY TRANSFER BEFORE THE YEN APPRECIATION OF 1985

One distinctive characteristic of Japanese corporate investment abroad before 1985 was that it was mainly carried out by large companies and that it was concentrated in labor-intensive industries which utilized cheap labor. The investment which was designed for import substitution in the domestic market was concentrated in three industries: (1) textiles, (2) automobiles (including motor cycles) and (3) electrical appliances and electronics. During this period, local Japanese affiliates made a number of changes in their education and technology training.

During the initial period of the advance of Japanese companies overseas from the 1960s until the 1970s, know-how in such areas as operation technology, machine repair and maintenance, and quality control was taught to local employees by means of on-the-job training. At this time, seniority-based promotion and lifetime employment were still prevalent, and the education of human resources was carried out under these systems. In other words, systems generally used in Japan were imported unchanged into the plants set up in Southeast Asia. This meant that operational technology was not just taught by the use of manuals, as was the case in European and American affiliates, but machine repair, quality control and production control were taught directly to local employees (Yamashita 1991, 14–20).

Unlike Western companies, which taught only operational technology as specified in manuals, Japanese affiliates taught a responsive system, which included the operational technology it was based upon, such as repairs, quality control and frequent model changes. In order to discover whether the Japanese or the US-European affiliates were more enthusiastic towards technology transfer and human resource development, a large-scale survey of Japanese affiliate companies in Southeast Asian countries was conducted by the author and others between 1984 and 1987 (Yamashita 1991, 14–22; Yamashita 1995, 343–52). Some of the findings will be described here.

Local government officials and many economists have long believed that Japanese affiliated companies are unwilling to carry out technology transfer. This impression was based on a simple comparison of the practices of Japanese companies with that of US or European companies in East Asia and the assumption that technology transfer would proceed automatically after the departure of foreign technical advisors. However,

this has been only seldom the case. By contrast, the fact that Japanese advisors normally stayed for longer periods than US and European advisors, turned out to be a decisive factor for successful technology transfer and thus led to an overall positive evaluation of the way technology transfer was conducted by Japanese firms (Yamashita 1995).

It is important here to be clear how the term technology transfer is being used. The Japanese affiliated companies had constantly trained local staff from operation technology to maintenance, repair, quality control (QC), and further technical know-how, not just simple operation techniques. The progress of technology transfer at Japanese affiliated companies is further highlighted by the results of another survey of Japanese managers in ASEAN countries during 1985–87 (Yamashita *et al.* 1989, Yamashita 1991). Employing the nine-stage hypothesis of technological development to this survey, technology transfer was assumed to progress according to the following stages: (1) operational technology, (2) repair and maintenance, (3) quality control, (4) process and procurement technology, (5) improvement of existing and (6) introduction of new technology, (7) molding and development of tools, (8) design, (9) development of new products and development of manufacturing plant and equipment.

The Japanese managers were asked which stage of technology transfer they had completed by that time. In this survey of automobile, electrical appliances and textile manufacturing companies in ASEAN countries, 74% of the managers answered that they had completed the first stage, the transfer of operational technology. The figure for repair and maintenance was 57% and for quality control 50%. For process and procurement technology, the figure dropped to about 28%, and for improvement technology to 11%. Almost no enterprise had yet done anything about design and new product development (Yamashita 1995, 342–7).

The survey results show that the early stages of technology transfer had already been set up at the Japanese affiliated enterprises. Japanese enterprises had been teaching these stages to local employees, whereas the European and American companies seemed to limit their technology transfer to the stage of operation technology. However, even at Japanese affiliated companies the later stages of technology transfer had not yet proceeded as the early stages did.

4 THE 'BLACK-BOX' PHENOMENON IN TECHNOLOGY TRANSFER AFTER 1985

Japanese FDI increased sharply following the yen appreciation after the 1985 Plaza Accord. The most striking difference in Japanese investment in Asia after 1985 was a shift away from securing markets towards constructing ex-

port platforms. The problem for Japanese affiliates was how to make up for the still existent deficiencies in the technical ability of local employees. As a measure to cope with this problem, Japanese affiliates introduced automated machinery and robots into the production line. Efficiency was greatly improved, and high-quality products for export were produced by the new production system. The training system was also changed and simplified by dividing the work into smaller process units, enabling the speedy induction of unskilled workers. This system also served to counter the frequent 'job-hopping' of local employees in this region. Indeed, with two or three days training, workers could be put to work on the factory floor.

Malaysia, for example, has succeeded in its policy of export-oriented industrialization, concentrating on the electrical appliance and electronics industries, and has become the world's leading exporter of both air conditioners and color TV sets. This has been achieved by the government's policy to support the construction of high-tech factories without any skilled local workers. The move towards machine production based upon automated machinery for the purpose of exports certainly allowed the production of high quality goods, but at the same time the level and range of technical skills acquired by local employees was restricted.

However, due to the introduction of automated systems incorporating high technology, local staff could not easily acquire high technology skills. Thus, local employees were just carrying out simple processing tasks, while automated systems carried out the high-level processing and inspection jobs. Although the quality of the product is guaranteed to be high, the skill level of local workers remains low. This can be called the 'black-box' phenomenon in the process of technology transfer (see Yamashita 1995, 347–52; 1998, 68–9) as the workers cannot see, touch, or otherwise directly observe the production process because of the employment of high technology machinery. Interestingly, the 'black-box' phenomenon can also be seen in the existing electric and electronic machinery plants that are located in rural parts of Japan.

Thus the characteristics and former advantages of Japanese technology transfer embedded in the responsive system described above were diminished and sometimes even disappeared totally. As a result the technological level of local firms and local employees could only be raised at a much lower speed despite running highly efficient companies and industries at the same time. Since the outburst of the Asian crisis, which is partly due to the insufficient upgrading of technological capabilities of local companies, most of these firms and industries have lost steam and thus threaten the further industrial development of Indonesia and other Southeast Asian countries. However, such a technological upgrading and shift to new industries has become absolutely necessary to stay com-

petitive not only versus other Asian countries like China or Vietnam but also on a global level. Thus new forms of technology transfer seem essential both from the perspective of Japanese (and other multinational) firms and from the perspective of Asian recipient countries.

5 THE TRAINING OF LOCAL EMPLOYEES IN THE AUTOMOBILE INDUSTRY

The training and technical guidance given to local employees in automobile production plants is different from the cases of the electronics industry examined above. The automobile industry still needs a lot of skilled workers, even in automated factories that are well equipped with robots and high-tech machinery. Thus the automobile industry presents an interesting industry for our analysis here (in addition it is an important industry in Indonesia).

In the electronics industry, even if skilled personnel are limited, high-tech goods still can be produced by automated machines that achieve the high quality requirements for export. However, in the automobile industry, a lack of skilled personnel raises problems in terms of quality control and inspection. Accordingly, automobile assemblers need to continue to train local technicians and operators. Japanese affiliated electronics companies in Asia have exported their products all over the world, but Japanese affiliates of the automobile industry in the same region have not which is mainly due to still existing technical problems.

Japanese automobile manufacturers have operated their assembly plants in Thailand and other Southeast Asian countries since the early 1960s. Their training method was basically OJT. Automobile makers strove to improve quality control, using manufacturing methods such as production control, QC circles, and suggestion systems (Sato 1993). They were aware of the need for employment education. They set up education sections at Japanese headquarters, established training centers within the company both in Thailand and Japan, providing a system for the acceptance of local employees for training, and carried out the systematic education of local employees. Japanese affiliates then increased the number of local employees dispatched to Japan for training.

Japanese automobile affiliates enthusiastically embrace the training of technicians and the transfer of technology to local plants. Automobile production is an industry calling for high levels of division in the production process. In producing automobiles with Japanese-style production control methods and concepts such as *kanban* and just-in-time systems, the need for skilled technicians has to be constantly borne in mind (for more details see Yamashita 1998, 69–79).

6 THE CURRENT STATE OF THE AUTOMOBILE INDUSTRY IN INDONESIA

In Indonesia, the production level of automobiles was 389,000 units in 1997, representing a record figure for Indonesia that even surpassed the production for Thailand in that year. But as a result of the prolonged economic crisis and the drastic changes in politics, the demand for automobiles declined sharply and reached only 58,000 units in 1998 (Fourin 1999). One Japanese affiliated auto-assembler was forced to reduce its operation rate of factories from 22 days per standard month to 9 days a month in 1998. For reasons of anonymity, this company will be referred to as T. Following this reduction, company T then laid-off workers. The total number of employees of the company was reduced to 3,600 as of the end of August 1998 from the levels of 6,000 people in January 1997 and 5,300 in January 1998.³

Company T has so far exported complete cars and CKD (complete knock-down) sets to Brunei, Malaysia and other countries, but it stopped these exports in 1998. Then the company restarted to export K-5 engines to its parent company in Japan helping the company T to stay in business in Indonesia. This example is instructive: When Japanese affiliates get enough support from their parent companies, they can survive even sharp business downturns as in the case of company T during 1997 and 1998. Recently, Japanese automobile assemblers, including Toyota, Nissan, Mitsubishi and others have decided to expand their imports of auto-parts from their affiliates in Southeast Asia. In the case of Toyota, this will mean an increase in the amount of imported parts made by its ASEAN affiliates from 2.5 billion yen, recorded in 1997, to more than 14 billion yen in the year 2000. This figure is six times that of the 1997 figure; Nissan and Mitsubishi also plan to increase their import of products from ASEAN (*Nikkei Weekly* 26 October 1998). These movements support the *keiretsu* auto-part makers in ASEAN whose operation rates have been significantly lowered.⁴

The situation is much more severe at auto-part manufacturers and small-scale subsidiaries in Indonesia, because assemblers themselves have not had the purchasing power to order parts from part makers. According to Herman Latif, chairman of the Association of Indonesia Automotive Industries, almost all auto-part subsidiaries ceased business, apart

³ These figures are derived from personal interviews of the author with directors of company T in August 1998.

⁴ For a closer analysis of the role of Japanese companies within the ASEAN automobile industry during the current crisis, see also the contribution of Legewie in this volume.

from Japanese affiliates like Denso, Akebono, Kayaba, Aishin and others. Japanese auto part makers are now trying to expand the export of their products to Japan and ASEAN region with the help of *keiretsu* assemblers in Japan. In contrast, local Indonesian part makers are in serious danger of not being able to return to business when the time comes to operate in the future. Thus there is a real danger of the destruction of the supporting system in the automobile industry which has been built-up during the last decades.

In Indonesia, the industrial structure is still biased towards low value-added sectors. Even the modern assembly sectors like the automobile and electronics industries still rely on imported parts and components for their final products. This means that localization rates are low and domestic inter-industrial relationships are still weak. We can easily observe the difference between the automobile industry in Indonesia and Thailand. The number of auto-part manufacturers in Thailand is about 800 and it is at most 150–200 in Indonesia (see Legewie in this volume). We need to recognize the difference in the history of automobile production and industrial organization of both countries. Human resources are also different in terms of quantity and quality directly relating back to the topic of technology transfer and the strong need of Indonesia for an enforced transfer of technological capabilities.

7 APPROACHES TO IMPROVE THE SITUATION IN INDONESIA

The question is how to solve the special problem of unemployment and the general problem of industrial development and technology transfer as described above and which role Japanese affiliated enterprises can play within this process. Japanese companies have established their factories and offices in Asian countries since the early 1960s. Since then they have been operating in this region accumulating experience and know-how not only of the business but also of the understanding of Asian people. As Japan as a whole should do, Japanese multinational firms should recognize the importance and significance of their close relationship with Asian countries and affiliates at a micro-level. The strong economic interdependence built up over decades requires a solution beneficial to both parties if it shall be of a sustainable nature.

Here, job creation in East Asia, especially in Indonesia, has been our major concern. In Indonesia, the government needs to consolidate conditions for export or to put it in concrete terms: (1) to conduct an export promotion policy with incentives, (2) to finance exporters or manufacturers that are going to export their products, (3) to invite export-oriented FDI

and, (4) to improve the channels and the system of international trade. The economic crisis in Indonesia can be considered to have partially been the result of a decline of FDI. In 1998, the total FDI decreased by 60% over the previous year (Keizai Kikakuchō 1999, 352). FDI from Japan has sharply fallen to less than 25% of the value of 1997 (see Table 3).

Table 3: Foreign direct investment approved by Indonesia

| | No. of cases | Investment value (million US\$) | | | | | |
|-----------|--------------|---------------------------------|--------|--------|-----------|-----------|--------|
| | | Total value | Japan | UK | Singapore | Hong Kong | USA |
| 1996 | 959 | 29,928.5 | 7,655 | 3,391 | 3,131 | 1,106 | 642 |
| 1997 | 790 | 33,832.5 | 5,421 | 5,474 | 2,299 | 251 | 1,018 |
| 1998 | 834 | 12,935.7 | 1,191 | 4,740 | 1,194 | 356 | 565 |
| 1967–1998 | 6,353 | 215,910.9 | 42,598 | 37,681 | 20,150 | 18,971 | 15,081 |
| | | 100% | 19.7% | 17.5% | 9.3% | 8.8% | 7.0% |

Note: Figures for 1998 only cover the period January and October 1998. The number of cases represents the number of new investments plus the change of status, while investment value represents the new investment plus expansion plus change of status.

Source: BKPM (1998)

At the same time, there has been an explosion of both urban and rural unemployment. The number of people below the poverty line has risen sharply and could soon reach 80 million, or 40% of the population. At present the Indonesian Government is preparing a ‘Social Safety Net Program’ (JPS, *Jaring Pengaman Sosial*) which aims at alleviating poverty by stimulating economic activities among the most economically disadvantaged segments of Indonesian society (for more details see Sumodiningrat 1999). Beside short-term support programs for the worst groups within the Indonesian population, self-help measures and sustainable strategies will be needed for Indonesia. Thus, the government should also study the possible ways for activating production and creating new jobs, by introducing attractive FDI policies in the medium and long term.

In the short term, the Indonesian government should give incentives and subsidies to exporters of local products and labor intensive manufacturing products which utilize domestic materials. This includes a pro-Chinese policy as many Chinese left Indonesia since early 1998 and withdrew their capital from Indonesian banks, exacerbating the situation. Chinese people have played a significant role so far in the process of economic development in this country. The government needs to induce them to return and provide proper investment policies both for domestic and for-

eign investors for export, making good use of the devaluation of the Indonesian rupiah. In the long run, the government should have a long-term national industrial development plan which aims at drastic industrial transformation from low-tech to high-tech industries and from low value-added to high value-added industries. FDI will be a decisive determinant in achieving this aim.

At present stage of the Indonesian economy, the private sector and companies from abroad play an important if not the decisive role in enabling an economic recovery. One possible way forward is through action led by Japanese *keiretsu* groups. Each *keiretsu* group of the automobile industry, for example, could work together in implementing relief measures for the Indonesian automobile industry. They could use each other's products and increase their sales through international channels and markets. Thus, they could create new industrial and business relationships and organizations in the region.

Japanese companies can also contribute to technology transfer and human development through their FDI. As we have noticed the importance and success of technology transfer (especially personnel training) carried out through private channels in the past, we acknowledge the ongoing importance of any means in upgrading the technological capabilities of Indonesian workers, firms and industries. However, the recent experience of only limited technology transfer as a result of the 'black-box phenomenon' and insufficient industrial upgrading serves as a strong reminder to look for new and more effective and sustainable paths of transferring technology. The long history of industrial engagement by Japanese firms in Indonesia and other Asian countries and the high degree of mutual dependence should work towards regional cooperation that is beneficial to both parties.

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