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Title	Transfer of Japanese Technology and Management through Direct Investment in Indonesia
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Citation	年次学術大会講演要旨集, 7: 167-172
Issue Date	1992-10-22
Type	Conference Paper
Text version	publisher
URL	http://hdl.handle.net/10119/5362
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Description	一般論文

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2D8 Transfer of Japanese Technology and Management through Direct Investment in Indonesia

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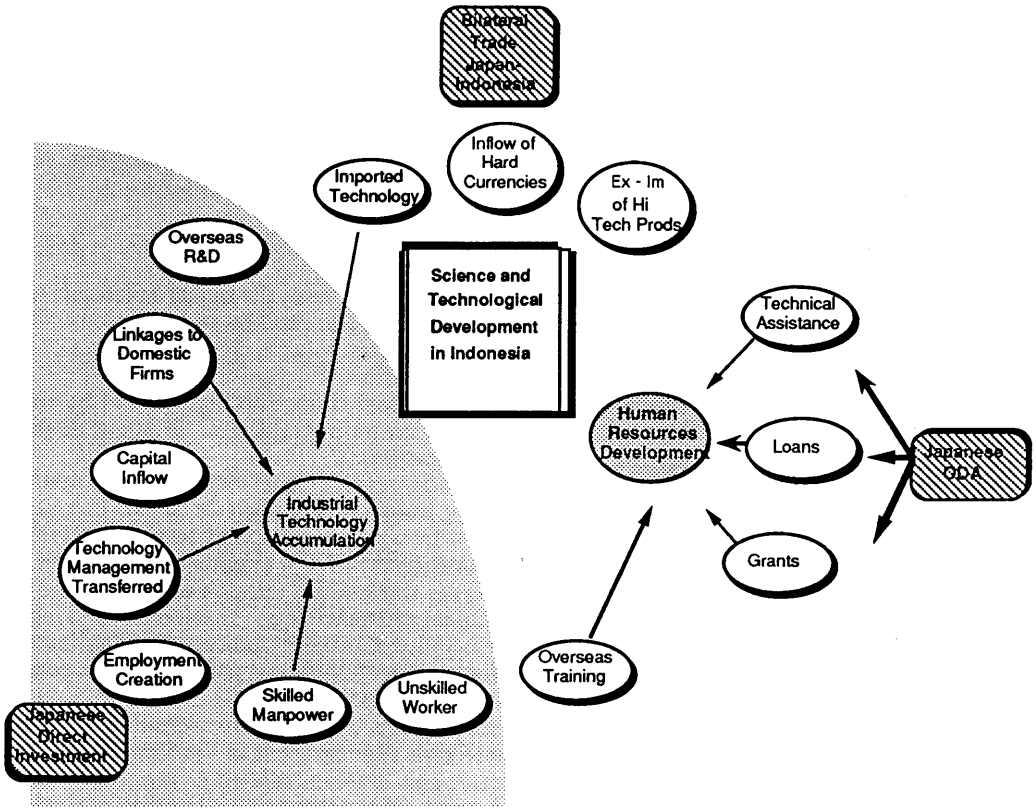
1. Introduction:

In the field of investment, accumulated of Japanese Direct Investment (JDI) in Indonesia shared around 30 % of all foreign investment. Moreover, Indonesia is second only to United States as a single recipient country of Japanese foreign investment. The contemporary proliferation of the economic assessment of Japan-Indonesian relation not necessarily illuminated the discussion about what is the science and technological implication of such relation. The writer's knowledge a few works so far have been undertaken on the aspect of contribution of Japanese affiliated companies to the process of industrial developments in Indonesia. The study was undertaken to fill research gap which will elucidate complex relationship of economic relations and science and technologies (S&T) development, that include in broader theme: "The Assessment of the Impact of Japan - Indonesian Relation on Science and Technological Development in Indonesia" as ilustrated in the figure below.

Figure 1 : The Scope of The Study



This paper mainly cover the direct investment related issues, therefore deal with these following questions;

-In what way the JDI presence in Indonesia contributes on S&T development in Indonesia.

-What kind of measures should be carefully taken to facilitate the technological and management transfer for enhancement the Indonesian's industrial structures.

The paper will assess the JDI presence from empirical survey result, and to draw policy recommendation to facilitate better country's efforts to promote industrialization.

2. Foreign Direct Investment and Industrialization Process:

Indonesian government as many other local governments expect foreign companies to contribute to promote local industrialization in the following ways: to create employment; to earn foreign exchange through export; to foster technology transfer and personnel development; and to develop related industries.

There has been pointed out by others studies the presence of foreign firms is not important if it is measured only from economic indicators such as; flow of capital, employment or industrial output *[Pangestu 1990]* and *[Graham and Krugman 1989]*. The share of foreign capital as compared to the gross capital formation is 1.33% and, as percentage of GDP is 0.38% (as of 1980-1989). However, the existence of foreign companies could not be ruled out if we look at the manufacturing sector. Local investor, as in the most developing economies did not go all out to invest in industries, partly because their lack of experiences, the brand consciousness of the consumer public for imported manufactured goods, and the reluctance of foreigners to enter join ventures with them. Other major reasons are that the retail trades, mineral-extraction industries, and property development were considered to be more attractive investments to them. Therefore, the presence of foreign investor is inevitable to pursue the Indonesian industrialization.

The main concern of this study is relate to the technology and management transferred through the presence of foreign investments. One of the major questions at issues is the extent to which affiliates from developed countries raise the technological level of locally owned firms. There is a wide range of possible effects. There could be at one extreme, a negative effect if the foreign owned firms simply displace of local firms from profitable local markets and take over the rents formerly accruing to local owners. If the foreign firms force their way into local markets by higher level of efficiency, local consumer, at least, may gain from their presence. But if the foreign firms enter through political pressure or through the exercise of monopoly power, there may even be losses to consumers. Since technology is to some extent a public good, a more likely outcome is that some spillovers to local firms will occur. Among the possible channels for such spillovers, besides pure imitations, are *[Lipsey 1991]*:

1. Through the provision of management and technical training to local personnel who then transfer human capital to existing local firms or use it to establish new ones.
2. Through the training of local suppliers of intermediate products to meet the higher standards of quality control, reliability and speed of delivery required by technology and method of operation of foreign - owned operation. The motivation may be to procure lower-cost components or raw materials or, in some cases, to meet local contents requirements imposed by host countries.
3. Through intensifying the degree of competition faced by local firms, forcing them to become more efficient or to leave the industry. This effect is treated as an unfavorable one in some development literature, but it does produce efficiency gains that could be important.

Technology can flow under many guises, in form of goods, services and technical information. It is necessary to explore the possible means of technology transfer involved in Japan-Indonesia join venture's company. Three carriers generally considered to which correspond to flow of technology *[Madeuf 1984]*: (1) *capital embodied technology* -is transmitted through exports of equipment, tooling and intermediate goods (2) *Human embodied technology* is transmitted through education and training programs, personal contacts, professional mobility, technical assistance, etc. (3) *Disembodied technology* is disseminated through patent, literature, blue-print, feasibility of project studies, operating instructions, etc. This flow may combine and constitute complex form as "technological packages" that correspond, mainly to the supplying of turnkey factories or to setting up a subsidiary.

The are a number of studies have focused on the several aspects of Japan joint ventures in other Asian countries. Yamashita *[1991]* in his studies of Japanese style management in the foreign join ventures companies argued: "Human resources development and human relations are most important considerations for Japanese enterprises; Their business success depends upon wether they can maintain -

good human relations in local joint ventures and upon how many local staff member they can develop. The aspects of production, Trade and Financial System of JDI have been assessed *[Tokunaga 1992]* while Koike and Takenori *[1990]* focus their attention on skill formation in the Japan and south Asian countries. Unfortunately none the works mention above studying the JDI in Indonesia. Among the possible effects of foreign presence in host country's economy stated by others' works have mentioned above are adopted to assess the particular case of Japanese join ventures' firms in Indonesia.

3. Methodology:

There have been relatively few systematic analyses of the impact of direct investment on the development of industries within host countries. There are quite a few channels of such influence and some of them are difficult to trace. In absence of well-established methodology to cope with the issues the studies applying rather exploratory approaches. Technology acquisitions by developing countries as Indonesia involves not only the transfer of written information but also person-embodied skills, know how, the adaptation of production process into domestic industries. Such technology transfer may include the exchange of information and personnel through technical assistance agreement; direct employment of foreign expatriates; the import of machinery and equipment; and purchase of patented technology or expertise through licenses and agreements.The effect of JDI presence to Indonesian economy to be explored in the study focused in the area related to the technological aspects such as: management, employment and training, technology, R&D related issues, etc.

The study has been done in three levels; macro, sectoral and micro level. Macro level study involved a desk work consist of survey literature and analize government related policies, statistical analysis of trade and investment data base during the period of 1968 to 1991. The sectoral level study has done by making a survey on Japan Direct investment activities on selected sectors in manufacturing namely: Textile, Chemical, Automotive and Parts, Electronics, Fabricated Metal, Machinery and Other manufacturing. At present, total of 45 companies answered the questionnaire dispatched to them, representing 32 % of response rate. As for micro level study have been undertaken by visiting selected firms to make in-depth interviews and sequential discussion to some resource persons.

4. Profile of JDI Activities in Indonesia:

The motivation JDI has shifted over time, from securing reliable flows of raw materials in the past toward more capital and technology intensive industries. Rising domestic wages and scarce of land drove Japanese manufacturers abroad to established production of labor-intensive products, largely for sale in the host countries. It is in line to the early stage of Indonesian industrialization policy, generally encounters the path of import substitution. Most of the companies surveyed are considered as large enterprises in terms of amount of capital, sales and employment, and the shares of Japanese capital are dominant. The market orientation of JDI also has shifted over time, more evidence after 1986 which more of products have been exported. Empirical study shows the lower labor cost and domestic market is considered as main motive for JDI inflow to Indonesia, followed by the investment incentives provided by Indonesian government. Againts the expectation, the company surveyed did not consider the availability of cheaper raw materials as important factor in making investment decision. This fact correspond with the issues of local procurement and immaturity of related domestic industries. Local procurement is still low while in increasing trend, triggering by the yen appreciation and depreciation on Indonesian currency.

The reasons for low rate of local procurement include lack of quality i.e. technological precision, delay on delivery, and high cost. JDI manufacturers considered the immaturity of related industries e.g. subcontractors and part suppliers as among other problems in making investment in Indonesia.

The presence of JDI might also contribute on creation of the linkages to the national economy to strengthen the industrial structures of the recipient countries. It may perform wether in forms of relations to other companies and local entities, or through strategic alliances by making contracts and other agreements.

There are some possible relationship with local entities or other foreign companies in Indonesia such as; making capital investments in companies; collaborating technically with other companies; make agency contracts with other companies; supplies goods and machinery to other companies or have commercial dealing in machinery, goods or materials with other companies.

The JDI linkage to local economy is still under explored, and even still quite large numbers of JDI do not make any relations to other local firms and other countries' firms as well. The most frequent relation to other firms is deal with supplies good and machinery. There are also a few linkages with local universities or research institutions. The capacity of domestic industries to absorb the technology brought by foreign firms might be enhanced through creating better linkagewith them.

Management

The management style is important factor be understood for the successful of company operation. Most of the companies surveyed said they introduce the Japanese management style to their join ventures in Indonesia. The reason for applying Japanese style management is because of its inherent to the company's philosophy and due to the absent of established indigenous management style. Therefore the applicability of Japanese style management should be assessed. The essence of Japanese management system applied in Yamashita's study is adopted in the survey. The survey found that most of the companies felt no difficulties in applying the Japanese management system. Some elements of Japanese management are fully adopted in JDI, while some of other is not fully accepted.

On the job training [OJT], Small group activities [QC], Lifetime employment, and Labor - management cooperation, is among the elements of Japanese management system that can easily applied; While Job rotation, Ringi systems, Group oriented, Career development, Priority given to shop floor are the elements which rather difficult to be adopted.

The survey shows the degree of independence that might reflect the foreign subsidiaries' capabilities in some aspects of management. Most of the company still under fully directed by parent company on design of plant and equipment, planning and investigation. The extent of independence to parent firm is still somehow large in terms of installation and initial operation, purchase of equipment and construction. Many companies stated they least dependent on parent firms on production and maintenance, negotiation with suppliers and making minor technical change. To some extent the JDI cooperates with local companies in all the management aspects although the frequency is still low.

Manpower and Training

Much of the company surveyed employed skill worker, around 33% of companies said they are employing more than 80 % of skilled worker; While around other 33% of them said their labor consists of 50-79% skilled worker. To fulfill the job requirements all the companies surveyed provide technical training in abroad or domestic. The field of training mainly in technology & engineering fields i.e.: production-installation or maintenance and repair. Training for new plant set up, plant expansion, introduction of new equipment, training for problem solving such as improvement quality, productivity and job safety and preparation for promotion are among the main purpose of training offered. The JDI contributes on skill formation in manufacturing sectors. There is thus considerable evidence that JDI shows substantial commitment to training.

Among other major incentives to make investment in Indonesia is a cheaper labor cost. Since most of the JDI involved in more technological and capital intensive industries, thus the abundance of manpower not a single determinant factor. The quality of domestic worker that fulfill such industrial requirements much more appreciate. The studies intend to know how the foreign manager's evaluate the domestic worker that confront the to their requirements.

The several aspects of local worker's attitude considered as important factors to measure the capability of absorb the imported technology. The board of foreign company management evaluate positively the local workers' behaviour. The Japanese managers rating the Indonesian worker's attitude higher in the following aspects: Capacity for assimilation of imported technology, Labor turn-over, Level of discipline, and Level of motivation. Meanwhile the ratings are lower in the following terms: Degree of motivation towards innovativeness, Extent of entrepreneurial spirit, Willingness to accept responsibility and Extent of productivity consciousness.

Production Process

State of the art production facilities, efficiency of operation and maintenance and efficiency of energy utilization is a good indicator to measures the absorption capability of local company toward imported technology. The state of the art of production facilities in compared to the parent company is almost equally disperse. Around 37 % companies' production facilities as the same as the parent has, 27 % said a bit older and 34% said outdated facilities. Only 1 company said their production facilities newer than

parent company has, and therefore theirs more efficient on operation and maintenance as well as on energy utilization.When they ask about the efficiency of operation and maintenance in compares to the parent company, it found as follows. Around 22 % of companies say their efficiency same as their parent company does, 35 % said theirs a bit less efficient and 42,5 % said they were less efficient. As to the efficiencies of energy utilization in compare to the parent company the survey found as the following. Around 20 % of companies saying their efficiency as same as their parent company does, 32 % said they are a bit less efficient and 42 % said they were less efficient.
Around 37 % of production facilities of JDI is as same to the parent company level. At the same time the efficiencies on operation, maintenance and energy utilization catch the parent company's level only by around 20% companies. It means the level of adaptation of local company sparingly is still lower than should be.

R&D and Technology Sourcing:
Foreign direct investments are generally seems to discourage the real transfer of technology and the development of domestic innovative capacity. There is reluctant on the part of foreign investor to allocate funds for local R&D activities since most of these activities are controlled by their head offices in countries where extensive R&D facilities have already been established *[Ozawa 1982]*. The findings from our survey are generally confirmed to such argument if we means by R&D is fundamental or applied research. Situation in Indonesia shows clearly that private firms in general engage in very little fundamental or applied research. However, there is s good deal more "development" activity, in the form of relatively minor product and process innovation and modification.
More than a half of company surveyed told they are doing R&D in Indonesia. The main concern for R&D mainly aimed at lowering production cost and improving reliability.
Indonesian's import technology payments to Japan are increasing in along with the increase of JDI. The number and value of imported technology payment are correlate with the number of investment projects, it's suggest that the flow of Japanese technology to Indonesia mostly done through investment activities.
Regarding the technology sourcing direct cost of technology contracts for the most of companies were not excessive that ranging from 1 to 5 percent of the sales, but some restrictions imposed in technology contracts might became disadvantegeous for the recipients. It seems the bargaining position of local partners is very weak when dealing with technological matters. From the field survey found that at the beginning many of local partners lack of experiences and do not even have the elementary level understanding the technology, namely acquisition capability that include the ability to negotiate with foreign supplier and procured technology from various possible choices. It is many local partners fully rely on the decision related to technological matter to their foreign partners. It is found in our survey the restrictive technology practices imposed by the licenser to limit the use of their technology.

5. Conclusion:
The provision of capital through JDI is probably much less important than the supply of management skills, technology, market access and access to finance. Because of the local technology base is very small JDI activities might also benefecial in providing technology link abroad. The presence of JDI is important in accumulation of skill formation since Japanese company shows strong commitment to train their workers and theirs rely upon OJT as basis for skill formation.
The technical corporation through JDI is triggered the process Indonesian manpower development program. It is shown through empirical survey that the JDI contribution performs in the following way: Training Indonesian manpower to Japan under private or governmental basis and; Dispatch of Japanese expert or exchanges of experts between two countries. The creation of linkages to local economy such as subcontractor are still limited.
There is growing awareness among local partners toward technological sourcing; because besides of technological fees there are also restriction clauses in the technological contracts that need to be fully considered before signing the agreements. Because the nature of contracts agreement is purely private business it is not feasible for government to do monitoring over technology agreements. Competitive product market and to raise the local partners' capacities are the most effective solutions.
Despite of Indonesian government has appropriately adopted a reasonably open posture toward foreign investment, it is necessary to reshape the policy that cope with question how is the industry could be survived in the world competition. Amid increasing competion with other countries on promoting foreign

investments the Indonesian's policy should be carefully examined. The main policy issues with regard to the foreign investment therefore maximizing the national benefit from the foreign presence rather than seeking to control or regulate the entry of foreign firms.***

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