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## Financing of foreign direct investment and trade flows: the case of Indonesia

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Financing of Foreign Direct  
Investment and Trade Flows  
- The Case of Indonesia -

by

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## Financing of Foreign Direct Investment and Trade Flows - The Case of Indonesia

### I Introduction

Foreign direct investment in developing countries improves the access of host countries to technical and managerial know-how and thus may raise the competitiveness of developing countries on world markets. Yet, export growth is likely to be not confined to host countries. Home country exports can be stimulated as well through investment, first in a narrow sense if investment goods are exported from parent companies to the affiliates in the host country (intra-firm trade). This trade is likely to occur in the early stages of establishing affiliates abroad and may be complemented by unaffiliated exports in the medium run. Such exports are encouraged if the technological know-how which is disseminated by the affiliates and eventually imitated by local investors in the host country raises demand for imports of capital goods from the home country.

However, due to lack of reliable data there is a lot of speculation about the magnitude of investment-induced exports of home

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countries. This paper argues that such trade effects depend to a considerable extent on the way foreign direct investment is financed, through either foreign and domestic equity or foreign loans. This determinant of investment-induced trade is widely neglected in the major empirical analyses of foreign direct investment in developing countries [i.e. Reuber, 1973; Frank, 1980].

In Chapter 2 various ways of financing foreign direct investment and their hypothesized impact on home country exports are discussed. Chapter 3 provides empirical evidence on financing of foreign direct investment in Indonesia. Chapter 4 assesses the impact of the financial structure on home country exports to Indonesia. Chapter 5 summarizes the major results.

## II The Relationship between Financial Structure of Foreign Direct Investment and Trade

Investment regulations in most developing countries require joint ventures between foreign investors and local investors as a precondition for a foreign firm to operate in a host country. Such joint ventures usually take the form of a minimum local equity participation, sometimes to be augmented during a certain period of operation until a majority local ownership is achieved (indigenization). Besides equity capital, loan capital is provided by the foreign investor. The relation between equity and loan capital depends on various factors, some of which are policy-influ-

enced such as the accessibility of the local capital market for foreigners, the differences in interest rates between the local and the international capital market, the factor intensity of the production process, and the legal requirements for local majority shareholding. With respect to the latter factor, for instance, one may hypothesize that the loan/equity ratio will be relatively high if local counterpart funds are in short supply and if there is a strict obligation of local majority shareholding to be fulfilled within a short period of time. Both loan and equity capital can be financed in cash as well as in kind, the latter in form of land (by the local counterpart), or raw materials, parts, components, machinery and equipment (by the foreign investor). Again, the policy environment such as foreign exchange restrictions or currency overvaluation may provide incentives for either cash or kind payment. If restrictions are severe especially with regard to the repatriation of funds, more incentives may exist in favour of payment in kind instead of in cash.

As a result, there is always a trade effect associated with financing of foreign direct investment if a foreign loan or equity is financed in kind. How large this trade effect is in absolute as well as in relative terms compared to total exports from the home to the host country, will be estimated in the following chapter for the Indonesian case. One may argue that in the Indonesian case two factors constitute an additional incentive for financing foreign direct investment in kind. One is the predominance of Japanese investment in Indonesia (excluding the energy sector) [Thee Kian Wie, 1984a, 1984b]. Japanese parent companies

seem to prefer so-called package deals in joint ventures with Indonesian counterparts [Panglaykim, 1983, p. 258; Thee Kian Wie, 1984b]. Such arrangements encompass the delivery of home country goods as a variant of investment financing. The second factor is related to the conditions under which Indonesian investors operate in joint ventures, that is lack of local capital and the requirement to take over a local majority ownership within a decade upon the start of operations.

Both factors are presumed to encourage "dummy" shareholding, that is the foreign investor purchases shares in the name of the local partner [Weinstein, 1976, pp. 388-390]. Consequently, "nominal" local equity capital is in fact foreign loan capital. Two effects may emerge from such practices. First, local equity capital may in fact be lower than indicated by officially published data on financing of realized investment. Second, the officially published debt-equity ratio may be higher than in a situation where the requirements of local majority ownership would not exist<sup>1</sup>.

Under the assumption that Japanese-Indonesian joint ventures rely on loan capital to a greater extent than joint ventures with foreign investors from other countries [Thee Kian Wie, 1984b] two

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<sup>1</sup> Such requirement can be fulfilled if the official equity capital is kept low compared to loans. However, if local equity is in fact financed through hidden foreign loans this way of equity financing would be more trade-conducive than normal local equity financing because under hidden loan financing of equity the official repayment and repatriation of the funds would no longer be possible. More incentives would then exist to pay the hidden loan in kind, that is purchasing plant equipment and conveying the property in the equipment to the local counterpart.

hypotheses can be derived from the institutional background of investment in Indonesia: first, financing-induced trade effects of a Japanese investment unit are higher than those of another home country and second, such trade effects are downward-biased because of the existence of "dummy" shareholdership and the trade effects of hidden loan financing. Whereas the latter hypothesis cannot be evaluated empirically because of data inavailability the former one is accessible to a statistical test.

### III Financing of Foreign Direct Investment in Indonesia

Available host country information on foreign direct investment in Indonesia shows Japan to be the leading investor outside the energy sector<sup>1</sup>. By end of March 1983, Japan comprised 48 per cent of realized foreign investment, followed by Hong Kong 7 per cent, US 5 per cent and the Netherlands 3 per cent [Joesa Jakarta, 1984, and Appendix Table 1]<sup>2</sup>.

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<sup>1</sup> The energy sector comprising mainly the petroleum industry is excluded by law from Indonesian investment statistics. If this sector would be included, the US have been estimated to be the largest foreign investor [Thee Kian Wie, 1984b].

<sup>2</sup> Figures based on approved investment reveal a more favourable picture for non-Japanese investment. However, realization rates of such investment albeit fluctuating over years on the average remained far below the corresponding Japanese rates. Recent information on the basis of approved investment (Appendix Table 2) does not indicate a significant change in home country ranking except higher US approved investment than that of Hong Kong. However, what matters are the realization rates and in this regard Hong Kong-based investors which in many cases are from China and Japan have still implemented their investment to a higher degree than US investors [Langhammer/Groß, 1986].



Appendix Table 2 provides information on the sources of financing as they were anticipated in investment approvals. Given local capital shortage and access restrictions on the local capital market it is not surprising that loan financing exceeds equity financing considerably, especially in the more capital-intensive sectors of metal manufacturing, for instance. More important, however, are differences in investment financing between home countries. It appears that on average Japanese investors relied more on loan financing than other investors and that this difference cannot be explained by a different sector orientation of Japanese investors. Even in identical sectors loan/equity ratios of Japanese investment are generally higher than in the case of other home countries. However, this pattern has to be qualified in so far as it is based on approved investment. Realized investment may be financed in other ways than initially designed at the time of approval.

The relevance of changing financing patterns during the stage of implementation is suggested by data provided by the Indonesian investment authority BKPM on the financing structure of Japanese and US investment both for approved and realized investment between 1967 and 1983 (Tables 1 and 2). Two major findings can be derived from the tables.

First, in the process of investment implementation loan financing becomes more important. That means that on average debt-equity ratios are higher for realized than for approved investment. Loan financing in the process of realization becomes particularly

Table 1 - Average Debt-Equity Ratios of Approved and Realized Japanese Direct Foreign Investment in Indonesia by Sector, 1967 - March 1983 (in per cent and ratio)

Sector	Approved Investment			Debt-Equity Ratio	Realized Investment		
	Equity Capital Indonesia	Capital Foreign	Loan Capital		Equity Capital	Loan Capital	Debt-Equity Ratio
<b>Primary Sector</b>							
Agriculture	19.3	53.2	27.5	0.38	70.0	30.0	0.43
Forestry	16.8	27.5	55.7	1.26	44.6	55.4	1.24
Fishery	14.9	26.3	48.8	1.43	37.2	62.8	1.68
<b>Manufacturing Sector</b>							
Food and beverages	17.4	37.3	45.3	0.83	37.8	62.2	1.64
Textile/leather & products	8.9	26.8	64.2	1.79	29.3	70.7	2.41
Wood and products	18.8	22.6	58.5	1.41	27.9	72.1	2.59
Paper and products	18.4	28.0	53.6	1.16	81.8	18.2	0.22
Chemical/rubber & products	14.4	18.4	67.1	2.04	24.7	75.3	3.05
Non-metallic minerals	11.9	14.8	73.2	2.74	17.6	82.4	4.69
Basic metals	6.1	17.7	76.2	3.19	13.8	86.1	6.19
Metal products	13.6	19.9	66.4	1.98	34.1	65.9	1.93
Other industries	12.7	38.1	49.2	0.97	45.2	54.8	1.21
Construction	24.9	57.3	17.8	0.22	72.6	27.4	0.38
<b>Tertiary Sector</b>							
Trade	19.4	18.6	62.0	1.63	13.0	87.0	6.70
Restaurant and hotel	3.7	11.6	84.7	5.54	12.0	88.0	7.32
Transportation	13.7	15.9	70.3	2.37	18.1	81.9	4.51
Real estate	15.7	18.5	65.8	1.92	21.4	78.6	3.66
<b>Total</b>	<b>8.8</b>	<b>28.3</b>	<b>72.8</b>	<b>2.90</b>	<b>22.1</b>	<b>77.8</b>	<b>3.52</b>

Source: Data provided by Indonesian investment authority BKEM.

Table 2 - Average Debt-Equity Ratios of Approved and Realized American Direct Foreign Investment in Indonesia by Sector, 1967 - March 1983 (in per cent and ratio)

Sector	Approved Investment			Debt-Equity Ratio	Realized Investment		
	Equity Capital Indonesia	Capital Foreign	Loan Capital		Equity Capital	Loan Capital	Debt-Equity Ratio
<b>Primary Sector</b>							
Agriculture	8.1	57.5	34.4	0.53	90.3	9.7	0.11
Forestry	11.2	13.3	75.4	3.07	22.6	77.4	3.42
Fishery	8.7	20.3	70.9	2.44	-	-	-
Coal mining	-	54.8	45.1	0.81	20.5	79.5	3.87
Other mining	-	100.0	-	-	-	-	-
<b>Manufacturing Sector</b>							
Food and beverages	8.6	46.0	45.4	0.83	61.4	38.5	0.63
Textile/leather & products	8.0	28.6	63.4	1.73	74.7	25.2	0.34
Wood and products	8.6	24.5	66.8	2.01	26.9	73.1	2.71
Chemical/rubber & products	9.7	46.2	44.1	0.79	42.6	57.3	1.34
Non-metallic minerals	10.7	34.6	54.6	1.20	29.0	70.9	2.44
Metal products	6.1	12.6	81.3	4.34	18.5	81.5	4.39
Construction	19.6	36.5	43.8	1.78	38.4	61.5	1.60
<b>Tertiary Sector</b>							
Transportation	10.5	35.4	54.1	1.18	14.5	85.5	5.89
Real estate	24.7	48.7	26.6	0.36	100.0	-	-
<b>Total</b>	<b>8.9</b>	<b>33.5</b>	<b>57.5</b>	<b>1.35</b>	<b>40.2</b>	<b>59.8</b>	<b>1.49</b>

Source: Data provided by Indonesian investment authority BKPM.

crucial in the tertiary sector, that is in capital-intensive office and hotel building, for instance. This holds for Japanese as well as for US investment. If this pattern is brought in a line with relatively low realization rates as indicated in Appendix Table 2, lack of in particular local equity appears to be a bottleneck which changes investment financing. Unfortunately, available information does not allow to identify whether it is the Indonesian or the foreign investor's part of equity which cannot be mobilized. Unlike equity data for approved investment which is disaggregated by the two origins, equity capital for realized investment cannot be separated into a local and a foreign component. However, this would not be a serious data gap if "dummy" shareholding indeed prevails, i.e. if equity capital in Indonesia mostly comes from one source, namely the foreign investor.

Second, Japanese-Indonesian joint ventures in manufacturing have used loan financing to a much larger extent than US-Indonesian ones. This would fit into the observation that Japanese firms offer their local counterparts a package of services including financing on a loan basis.

Whether such a financing pattern has a special trade effect, for example through disbursement of loans in kind, is the key question. Thus, it may be asked whether the sectoral structure of kind/cash financing ratios coincides with the sectoral structure of loan/equity ratios.

According to unpublished data provided by the Indonesian Central Bank foreign investment has had a sizeable trade effect since. During the 1967-1985 period foreign direct investment in Indonesia has been implemented half in cash and half in kind, that is by importing goods (Table 3). Though the kind share slightly decreased between 1980 and 1985 compared to 1967-1980 the share of investment paid in kind remained sizeable and even dominating in some large sectors (78 per cent in forestry; 66 per cent in chemicals; 62 per cent in metal products) not to speak of small sectors or industries such as fishery (70 per cent) wood and wood products (66 per cent), or communication (88 per cent).

One may hypothesize that there should be a positive cross-sector correlation between both ratios if the above assumed practices to disburse loans in the form of capital goods purchases would actually be applied in Japanese-Indonesian joint ventures. Unfortunately, no information exists for the kind/cash financing ratio of individual home countries in specific sectors. Yet, since Japanese realized investment amounted to 61 per cent of realized investment in manufacturing and 48 per cent of total realized investment, it may be not far from reality to link the implementation of investment as presented in Table 3 mainly to Japanese investment.

We have therefore applied a rank correlation between the sectoral loan/equity ratios of Japanese realized investment (Table 1) with the sectoral kind/cash financing ratios (Table 4) in order to test the above-mentioned hypothesis. The result is surprising at

Table 3 - Implementation of Foreign Investment in Indonesia<sup>a</sup> by Sector, 1967 - 1985 (in millions of US-\$)

Sector	1967-1980			1981	1982	1983	1984	1985	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
	In cash	In kind	Total																		
Agriculture	30.4	51.2	81.6	5.5	7.5	13.0	1.7	4.1	5.8	1.8	4.9	6.7	0.7	3.4	4.1	0.9	2.8	3.7	41.0	37.9	114.9
Forestry	59.9	282.9	342.8	2.9	32.0	34.9	7.1	3.9	11.0	14.6	1.3	15.9	7.2	9.1	16.3	2.7	-	2.7	94.4	329.2	423.6
Fishery	34.5	68.0	102.5	0.4	-	0.4	-	9.0	9.0	0.3	5.5	5.8	0.6	0.1	0.7	0.2	-	0.2	36.0	82.6	118.6
Mining and quarrying	281.6	191.9	473.5	56.8	13.2	70.0	16.5	15.7	32.2	33.0	77.0	110.0	46.1	-	46.1	29.2	1.8	31.0	463.2	299.6	762.8
Manufacturing	1120.5	1486.7	2607.2	134.7	108.8	243.5	181.1	207.2	388.3	168.2	189.8	358.0	127.8	105.9	233.7	298.8	169.9	468.7	2031.2	2268.2	4299.4
Food	64.2	113.5	177.7	2.0	13.8	15.8	1.9	5.2	7.1	2.1	2.4	4.5	16.0	1.7	17.7	158.5	0.9	159.4	244.7	137.5	382.2
Textiles & leather	420.2	476.4	896.6	45.4	57.1	102.5	9.8	59.9	69.7	3.0	22.5	25.5	3.7	4.9	8.6	13.3	4.1	17.4	495.4	624.9	1120.3
Wood & wood products	10.3	15.6	25.9	2.1	0.1	2.2	9.8	19.9	29.7	5.4	8.3	13.7	5.6	7.6	13.2	-	11.9	11.9	33.2	63.4	96.6
Paper & paper products	4.6	42.2	46.8	2.4	0.1	2.5	1.4	0.2	1.6	5.8	-	5.8	2.8	-	2.8	3.5	-	3.5	20.5	42.5	563.0
Chemicals & rubber	163.2	251.2	414.4	20.5	24.0	44.5	54.6	110.3	164.9	31.7	145.8	177.5	21.5	45.7	67.2	25.5	34.6	60.1	317.0	611.6	928.6
Non metallic minerals	181.0	114.9	295.9	30.2	0.7	30.9	52.4	0.6	53.0	36.5	0.2	36.7	25.1	-	25.1	7.7	-	7.7	332.9	116.4	449.3
Ferrous metals	105.2	143.6	248.8	7.9	-	7.9	27.9	0.6	28.5	53.1	4.3	57.4	26.5	-	26.5	47.4	-	47.4	268.0	148.5	416.5
Metal products	164.4	312.3	476.7	22.3	13.0	35.3	23.3	10.5	33.8	29.7	4.8	34.5	26.6	40.3	66.9	42.9	117.2	160.1	309.2	498.1	807.3
Others	7.4	17.0	24.4	1.9	-	1.9	-	-	-	0.9	1.5	2.4	-	5.7	5.7	-	1.2	1.2	10.2	25.4	35.6
Construction	21.3	30.4	51.7	0.2	0.4	0.6	5.7	1.2	6.9	0.5	-	0.5	0.5	-	0.5	1.3	0.5	1.8	29.5	32.5	62.0
Trade & hotels	70.2	37.7	107.9	2.9	-	2.9	-	-	-	1.6	0.5	2.1	7.2	-	7.2	7.8	0.9	8.7	89.7	39.1	128.8
Wholesale trade	9.2	1.6	10.8	2.5	-	2.5	-	-	-	0.4	-	0.4	-	-	-	-	-	-	12.1	1.6	13.7
Hotels	61.0	36.1	97.1	0.4	-	0.4	-	-	-	1.2	0.5	1.7	7.2	-	7.2	7.8	0.9	8.7	77.6	37.5	115.1
Transport & communication	10.8	38.9	49.7	1.2	0.1	1.3	-	-	-	-	-	-	2.4	-	2.4	1.0	-	1.0	15.4	39.0	54.4
Transport	9.4	5.6	15.0	0.2	-	0.2	-	-	-	-	-	-	0.2	-	0.2	1.0	-	1.0	10.8	5.6	16.4
Communication	1.4	33.3	34.7	1.0	0.1	1.1	-	-	-	-	-	-	2.2	-	2.2	-	-	-	4.6	33.4	38.0
Real estate, business services and others	184.2	38.8	223.0	8.5	3.9	12.4	6.1	-	6.1	17.9	-	17.9	73.7	3.3	77.0	80.6	0.2	80.8	371.0	46.6	417.2
Total	1813.4	2226.5	4039.9	213.1	165.9	379.0	218.2	241.1	459.3	238.0	278.9	516.9	266.2	121.8	388.0	422.6	176.0	598.6	3171.5	3210.2	6381.7

<sup>a</sup>Excluding investments in the petroleum and banking sectors.

Source: Unpublished data provided by the Bank Indonesia.

Table 4 - Financing Structure, Factor Intensity and Trade Effects in Foreign Direct Investment in Indonesia - Rank Correlation<sup>a</sup>

	Capital-labour ratios of developed country subsidiaries in Indonesian manufacturing industries 1967-1977 <sup>b</sup>	Kind/cash financing ratios of foreign direct investment in Indonesia by sectors 1967-1983
Loan/equity ratios of realized Japanese investment 1967-1983	0.88* ( 9 )	-0.59** ( 16 )
Loan/equity ratios of realized US investment 1967-1983	0.26 ( 6 )	0.20 ( 10 )
Kind/cash financing ratios of foreign direct investment in Indonesia, by sectors 1967-1983	-0.74** ( 9 )	-

\* significant at the 1 per cent level

\*\* significant at the 2 per cent level

<sup>a</sup>Number in brackets denotes the number of observations. - <sup>b</sup>Fixed assets per worker calculated by Hasan, 1981, pp. 50-51, cited in: Hill, 1985, table 18, p. 18 Appendix.

Source: See Tables 1-3.

first glance since it does not support the assumption that sectors with high percentage of loan financing are correlated with those in which investment is mainly implemented in kind. Instead, the estimates yield a statistically significant negative rank correlation coefficient of  $-0.59$  implying that Japanese investment financed mainly by loans was mainly implemented in cash and not in kind. Investment implementation in kind seems to be correlated with the equity share in financing.

This result is based on all sectors including primary and tertiary activities. If we limit the analysis to the manufacturing sector which comprises nine out of a total of sixteen sub-sectors we can further address the question whether the production technique applied by foreign-based subsidiaries correlates with the implementation pattern as well as with the debt-equity structure of Japanese investment. The expected outcome is that for relative capital-intensive industries within the manufacturing sector the financial structure of Japanese investment shows high loans parts, whereas investment implementation is characterized by high cash parts<sup>1</sup>. While the high capital intensity of investment in some industries results in a considerable import of foreign loans and is therefore consistent with high loan-equity ratios, the link of equity financing to investment implementation in kind and similarly, of loan financing to implementation in cash requires a

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<sup>1</sup> Table 4 shows that statistically significant results are only obtained for Japanese investment and its financing pattern and not for US investment implemented in a smaller number of sectors. This finding supports our view that both implementation pattern and capital-intensity of production in foreign-based firms operating in Indonesia are mainly influenced by the pattern and the production techniques of Japanese investment and that US investment has very different patterns.



more detailed interpretation<sup>1</sup>.

A possible explanation of this statistical result is related to the investment regulations which foreign investors face in Indonesia. When local shareholders are required to hold a majority of equity in the joint ventures after a decade it may be profitable for foreign investors to pay their initial equity contribution in kind, i.e. plant equipment, and convey the ownership of the equipment to local nationals later on. In doing so, they would keep transaction costs low and perhaps could gain an extra-profit, that is the difference between the nominal value of the equity share and the time value of the equipment which had already been depreciated<sup>2</sup>.

#### IV Trade Effects of Foreign Direct Investment in Indonesia

Information on how foreign direct investment in Indonesia has been implemented, in cash or in kind, provides preliminary evi-

<sup>1</sup> The third outcome from Table 4 that high capital intensity in manufacturing industries negatively correlates with low kind/cash financing ratios is consistent with the two other significant correlations.

<sup>2</sup> The observed statistical correlation does not contradict the observation reported by Weinstein [1976, pp. 389-390] that foreign direct investment in Indonesia is generally characterized by high debt/equity ratios, since the correlation coefficient is not estimated on the basis of the absolute level of these ratios but on their sectoral ranking. Table 2 suggests that relatively low ratios for Japanese-Indonesian joint ventures prevailed in some labour-intensive light industries as well as in the primary sector. In these activities dominated by medium-sized firms local counterparts are likely to be more easily available in order to take over foreign equity in kind than in the capital-intensive industries being larger in size and smaller in number.

dence on the trade effects per unit of realized investment. However, it does not allow for assessing the importance of trade created by foreign investment in total exports from the home to the host country. Such an assessment requires data on the absolute amount of realized investment of home countries and on the kind/cash financing ratios by sectors and home countries. While data exist with respect to realized investment (Appendix Table 1)<sup>1</sup>, kind/cash financing ratios for individual home countries are lacking. For the subsequent analysis we have assumed that average kind/cash ratios for each sector apply to all home countries. This procedure leads to the following amounts of financing in kind, that is investment-induced imports from the home countries<sup>2</sup> aggregated for the period 1967-1982 : imports from Japan 1088 Mill. US-\$, USA 135 Mill. US-\$, Netherlands 92 Mill. US-\$, and West Germany 36 Mill. US-\$. For Japan, investment-induced imports amounted to 5.3 per cent of total Indonesian manufactured imports<sup>3</sup> from Japan during 1967-1982. The corresponding estimates

<sup>1</sup> Disaggregated data for realized investment in Indonesia by five major home countries (Hong Kong, Japan, Netherlands, USA and West Germany) as well as for total foreign investment exist for the period 1967-March 1983. Thus, there is a three months' difference in period coverage between the data of the kind/cash financing ratios (Table 3) available at year-end and the figures on realized investment by home countries (Appendix Table 1). Apart from this lacking full overlap data are widely compatible as it is signalled by the difference in total realized investment of only 2 per cent between 1967-March 1983 and 1967-end 1982. Hong Kong investment is excluded in the following, as we assume that such investment is not accompanied by significant exports from Hong Kong to Indonesia.

<sup>2</sup> There is a second implicit assumption involved in estimating trade effects, that is implementation in kind to be equal to goods imports of the host country from the home country. It is hence excluded that purchases of goods to implement investment are made from other sources than the home country. This assumption is supported by the observation that in Indonesia 1976/77 87 per cent of total Japanese subsidiaries' imports of inputs came from Japan and only the rest from third countries (MITI, 1977, Table 13).

<sup>3</sup> Again an implicit assumption is made that implementation in kind includes purchases of manufactured goods (capital and intermediate goods) only, but not raw materials, energy or agricultural goods. Manufactures are defined as SITC 5-8 minus 67 and 68.

for the US are 1.5 per cent, for the Netherlands 5.6 per cent, for West Germany 0.6 per cent, and for total foreign investment 5.1 per cent. Such differences cannot be explained by a different sectoral composition of realized investment among home countries. Japanese investment has not been concentrated on sectors with high shares of investment in kind compared to e.g. West Germany. Under the above assumptions, investment in kind amounts to 52 per cent of total Japanese investment, whereas the respective share for West German investment is 61 per cent. The low relative trade effects of West German investment can be explained by rather low absolute amounts of realized investment and a relatively high absolute amount of German manufactured exports to Indonesia. The opposite holds for the Netherlands, for instance. This would mean that over fifteen years West German exporters of manufactures were able to maintain a competitive position in Indonesian markets without the stimulus of sizeable own investment in Indonesia. However, West German manufactured exports amounted on average to roughly 42 per cent of Japanese manufactured exports at the beginning of the period in 1967, but has been declining to 26 per cent in 1981<sup>1</sup>. These changes suggest that it has become increasingly difficult for West German exporters to defend market shares without the help of investment which could have initiated additional exports.

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<sup>1</sup> Figures for 1982 suggest a recovery (33 per cent). Whether this is a beginning of an upswing or only due to exceptional factors remains an open question.

## V Summary

Foreign direct investment has a positive impact on exports from home to host countries which is brought about by purchases of investment goods and intermediate inputs either from parties related to the subsidiary (intra-firm trade) or from other non-related parties. The Indonesian example shows how trade has already been stimulated in the implementation stage of foreign investment through an inflow of foreign loans and equity in kind rather than in cash. Available information for investment in Indonesia suggests that more than fifty per cent of foreign investment in manufacturing was implemented through imports of goods and that this share was even larger for some non-manufacturing activities.

An analysis of the financial structure of foreign investment suggests that financing in kind was rather linked to the equity than the loan share in total foreign investment of Japan, the dominating home country in investment in Indonesia. In 1967-1982, sectors and industries with a high share of equity financing and implementation in kind were agriculture, the paper industry, and the construction industry followed by forestry, fishery, and food industries. On the other hand, high loan parts of Japanese investment coincided with a relatively large cash part in investment implementation in non-metallic minerals, trade, real estate and basic metals.

A tentative explanation for this somewhat surprising result may be found in the indigenization rules applying to foreign investment in Indonesia. The obligatory transfer of foreign equity to local shareholders within a relatively short period of time provides an incentive to effect the transfer by simply changing the ownership of plant equipment.

The trade effect of Japanese foreign direct investment was estimated to amount to roughly five per cent of total manufactured imports from Japan, but this effect was much smaller in the case of West Germany, for instance, a country with only a negligible volume of foreign investment in Indonesia.

The above results confirm the emergence of trade effects of foreign direct investment already at an early stage of implementation and provide evidence with respect to the importance of financing for the magnitude of such trade effects. The relevance of equity financing for the trade effect suggests that especially exports of investment goods from home countries are initiated. In these goods Japanese suppliers seem to have been competitive mainly because they were able to offer package deals to their local counterparts, and not because they necessarily possess a comparative advantage in the production of investment goods. One could argue that such investment-induced trade may substantially reduce the economic gains from foreign investment derived by the host country as has been sometimes done in the literature [Thee Kian Wie, 1984b, p. 101]. However, such a conclusion cannot be made unless all effects of foreign direct investment on trade

(including host country exports), growth, and employment are assessed. Furthermore, it seems that investment-induced trade effects are influenced to a considerable degree by investment regulations applied by host countries. These regulations differ among host countries and hence, our findings for Indonesia cannot be generalized for other developing countries.

Appendix Table 1 - Realized Foreign Investment by Major Four Countries by Industry (as of March 31, 1983) - Mill. US-\$

	West Germany	Nether- lands	U S A	Japan
Agriculture/plantation	-	30.0	27.8	13.5
Fishery	-	-	-	33.4
Forestry	-	-	25.2	29.9
Mining	-	22.5	6.8	-
Food/drink	3.1	11.2	4.8	15.2
Textile	-	2.0	0.4	468.9
Wood industry	-	-	14.1	10.0
Paper industry	-	0.2	-	3.3
Chemicals	23.2	35.3	85.8	108.5
Mineral non metal	-	-	9.5	201.2
Basic metal industry	3.3	1.4	-	910.4
Metal product	27.9	15.6	36.5	181.9
Other industries	1.2	0.8	-	1.8
Construction	-	0.4	12.3	14.2
Hotel	-	3.0	-	28.4
Office building/housing	-	17.4	0.1	54.3
Transportation	-	21.3	1.6	18.0
Other services	1.1	0.1	-	8.0
Total	59.8	161.2	224.9	2100.9

Source: Bank Indonesia : Penanaman Modal Asing 1967 s/d 31 Maret 1983. Cited in: Joesa Jakarta, 1984.

Appendix Table 2

Sources of Financing at Approved Foreign Investments of Five Major Home Countries in Indonesian Industries End September 1985 <sup>a)</sup>

Home country Industry	West Germany				Netherlands				U S A				Hong Kong				J a p a n			
	Loan	Equity	Loan/ equity ratio	Real- ization rate b)	Loan	Equity	Loan/ equity ratio	Real- ization rate b)	Loan	Equity	Loan/ equity ratio	Real- ization rate b)	Loan	Equity	Loan/ equity ratio	Real- ization rate b)	Loan	Equity	Loan/ equity ratio	Real- ization rate
Agriculture	-	-	-	-	-	-	-	-	15.5	27.1	0.57	65	6.4	9.7	0.66	3	4.7	1.3	3.62	70
Fishery	-	-	-	-	-	-	-	-	-	-	-	-	29.6	9.3	3.18	23	31.8	14.3	2.22	59
Forestry	-	-	-	-	-	-	-	-	-	1.5	-	100	101.6	34.3	2.96	50	27.5	10.5	2.62	79
Mining	-	-	-	-	36.6	6.8	5.38	52	25.0	8.0	3.13	59	14.1	10.5	1.34	84	-	-	-	-
Manufacturing	236.6	90.7	2.61	17	132.0	170.5	0.77	24	789.5	218.5	3.61	14	326.9	145.0	2.25	40	3,272.8	870.0	3.76	64
Food/drink	4.5	4.1	1.10	47	19.2	10.2	1.88	62	8.2	4.7	1.74	37	58.9	26.3	2.24	63	22.2	9.4	2.36	73
Textile	-	0.5	-	-	50.1	29.3	1.71	2	0.8	0.7	1.14	27	79.5	57.9	1.37	48	498.1	190.5	2.61	71
Wood industry	8.8	2.5	3.52	-	-	-	-	-	0.7	0.3	2.33	20	58.8	11.4	5.16	29	17.5	6.8	2.57	44
Paper industry	-	-	-	-	-	0.2	-	100	16.5	5.5	3.00	3	50.0	18.3	2.73	9	5.5	3.4	1.62	37
Chemicals	31.5	32.1	0.98	30	25.1	118.4	0.21	24	93.7	95.5	0.98	44	59.0	16.5	3.58	44	169.8	44.1	3.85	51
Nonmet. minerals	-	-	-	-	-	-	-	-	8.2	5.2	1.58	88	-	0.6	-	-	197.9	37.4	5.29	93
Basic metals	107.2	4.3	24.93	3	1.0	1.0	1.00	95	447.3	45.7	9.79	-	-	1.5	-	47	1,381.4	321.3	4.30	93
Metal prod.	83.6	46.6	1.79	22	36.1	11.2	3.22	33	214.1	60.9	3.52	15	20.7	11.5	1.80	28	979.3	256.3	3.82	18
Other ind.	1.0	0.6	1.67	75	0.5	0.2	2.50	100	-	-	-	-	-	1.0	-	20	1.1	0.8	1.38	95
Construction	41.7	20.6	2.02	2	13.4	10.6	1.26	18	42.1	16.6	2.54	21	66.9	12.3	5.44	92	4.4	13.4	0.33	79
Trade	-	1.1	-	100	-	0.1	-	100	-	-	-	-	-	-	-	-	7.1	2.1	3.38	87
Hotel	-	-	-	-	-	-	-	-	23.0	18.0	1.28	-	67.8	24.5	2.77	26	24.1	5.2	4.63	100
Office buildg./ housing	-	-	-	-	45.6	7.7	5.92	33	0.2	0.4	0.50	33	253.4	60.3	4.20	35	59.9	17.5	3.42	82
Transportation	-	-	-	-	18.7	2.5	7.48	100	1.3	0.8	1.63	76	-	-	-	-	22.0	5.2	4.23	47
Other services	-	-	-	-	-	-	-	-	-	-	-	-	21.6	11.8	1.83	7	-	-	-	-
Total	278.3	112.4	2.48	15	246.3	198.2	1.24	31	896.6	290.9	3.08	17	888.3	317.7	2.80	41	3,454.3	939.5	3.68	65

a) Absolute figures in Mill. US\$.

b) Realized investment amount in per cent of initially approved amount of equity plus loan.

Source : Unpublished data provided by the Bank Indonesia.



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