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### **“Japanese aid as a prerequisite for FDI: the case of Southeast Asian countries”**

BLAISE Séverine<sup>1</sup>

#### **Abstract:**

This study investigates the nexus between Japan’s official development assistance and foreign direct investments inflows in Southeast Asian Countries. An analysis of the geographical and sectoral decomposition of aid flows reveals that assistance programs were mainly allocated under the shape of loans for economic infrastructures projects. This orientation attests that the needs of the recipient country are taken into account but also reveals a logic of return on investment. Conditional logit analysis shows that Japanese aid flows did have a significant positive impact on private investors location choice even though other profit-maximizing factors such as agglomeration effects or the quality of infrastructure had a leading spillover effect. In a context of growing scarcity of aid funding, the study concludes by asserting the importance of a complementary process in which foreign aid is directed towards the development of infrastructures, acting as a pre-requisite for future direct investments. Finally, Japan providing an interesting case study, we stress the need for a better cooperation between public and private sectors in development assistance programmes.

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<sup>1</sup> Senior lecturer in economics at the University of New Caledonia (Noumea), Laboratoire d’Etudes Juridiques et Economiques (LARJE), Email: [severine.blaise@univ-nc.nc](mailto:severine.blaise@univ-nc.nc)  
Associate member of the Research Unit for Statistical and Empirical Analysis in Social Sciences of Hitotsubashi University, a Global Centers of Excellence program under the direction of Professor Kyoji Fukao.

## INTRODUCTION

Despite the global economic crisis, total official development assistance (ODA) from members of the Development Assistance Committee (DAC) rose by 10.2% in real terms to US\$119.8 billion in 2008, after a sharp fall of 8.4% in 2007. This good news should not blind us to the harsh prospects on development aid funding. Indeed, the state of public finance in most industrialized economies cast new doubt on the willingness of the richest countries to fulfil their commitment to increasing ODA to the 0.7% target. Aid commitments to Africa remain far below the levels agreed in the G8 summit in Gleneagles (Scotland) in 2005. Such inertia brings new discontent and may be a major obstacle to the achievement of the Millennium Development Goals (MDG). The current crisis is already placing pressure on the world's most vulnerable populations and, the recently released *Development cooperation Report 2009*, warns that "failure to deliver the benefits of globalization, especially in developing countries, risks undermining global stability".

Nonetheless, huge aid flows alone will not solve world poverty: experience has shown that the issue of aid effectiveness is crucial. In the past years, it has been placed at the centre of the debate and embedded in the Paris Declaration (2005). For some, foreign aid does nothing but support the consumption expenditure habits of corrupted governments or, at least, governments that are not inclined to promote real economic development; for others, foreign aid clearly serves the interest of the donor rather than the needs of the recipient. This controversy is also stimulated by the difficulty in establishing a direct relationship between aid and growth neither on the theoretical nor on the empirical level. A review of the extensive literature on this issue shows that econometric evaluations of the direct impact of aid on growth are quite unsatisfactory or controversial (e.g. Burnside & Dollar 2004). Indeed, economic growth is a complex and slow process of transformation of the productive structures and beyond that, of lifestyle. In this context, the "direct" impact of foreign aid is at best small. Blaise (2004b) suggest that on the macroeconomic level, one should rather investigate the indirect effects of aid to evaluate its effectiveness (as implicitly acknowledged by the set of the eight time-bounded MDG).

Obviously, recipient countries need to improve their absorption capacity of foreign capital flows, which has manifold implications. But the conditions of aid attribution by donor countries are also decisive: the logic and the structure of aid management has heavy implications in terms of composition of flows, continuity of the policy<sup>2</sup> and finally in terms of aid effectiveness. One way of improving this effectiveness is to design aid programs as part of a broader economic cooperation framework, encompassing both public and private capital flows with the aim of fostering trade and investment networks as well as "green" technology transfers for sustainable development.

In this regards, some lessons can be drawn from the experience of East Asian countries. If the main driving forces to their development have been internal, foreign aid did play a significant role in those countries. Previous works have underlined the importance and the peculiarity of Japanese aid policy, which has been clearly different from what is practised in the West and often misunderstood (Blaise 2006). The successive waves of Japanese aid flows in East Asia follow a logic of regionalization (the so-called "flying geese pattern" identified by Akamatsu, 1962) in which public and private flows are closely bounded and constitute a singular practice of economic rationalization of assistance programs. Japanese aid acted as a prerequisite to future private investments: it came to supplement a national effort, by directly stimulating the development of economic infrastructures and indirectly promoting the inflow of private capital and improving their absorption. Our study of the link between Japanese ODA and foreign direct investments (FDI) in the case of the People's Republic of China (China hereafter), using a province-by-province econometric analysis of the decision of localization of Japanese investors, showed that aid programmes had a spillover effect on direct investment inflows (Blaise, 2005).

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<sup>2</sup> Aid volatility and fragmentation may, in some cases, contribute to macroeconomic instability. See Chauvet and Guillaumont (2008) for a review of this issue.

The aim of this paper is to verify if we can observe the same logic and the same spillover effect of Japanese aid on FDI flows in the case of four Southeast Asian countries (ASEAN-4 hereafter): Indonesia, Malaysia, the Philippines and Thailand. We therefore focus on one of the possible indirect impacts of aid – the impact through FDI– leaving aside the issue of aid effectiveness in terms of growth or poverty reduction, which calls for caution on the interpretation of our results. Indeed, if ODA does not predict FDI, it can still be effective, but for other, such as humanitarian goals. Alternatively, if ODA is found to promote Japanese FDI, it remains to be demonstrated whether those private flows have a positive impact on the development of the host countries. Yet, a short review of the literature on Japanese FDI in Asian developing countries will offer supportive views on the contribution of pro-trade oriented FDI to the development of recipient countries.

In the first part of this work, an analysis of Japanese ODA to ASEAN-4 reveals that Japan has been the leading donor in those countries, accounting for more than half of total aid commitments since the late 70's. Substantial aid flows have been allocated under the shape of loan for infrastructure projects in the transport and the energy production sectors. The second part presents the trend and distribution of Japan's FDI in those countries. It shows that the bulk of direct investments was made in the manufacturing sector and stresses the peculiarity of those investments, acting as a vector of industrialization and trade promotion. Lastly, after a brief review of the literature on the aid-FDI nexus, an econometric evaluation of the decision of location of Japanese investors in ASEAN-4 is carried out using a conditional logit model in which foreign aid is introduced along with other profit-maximizing factors. The results confirm the spillover effect of Japanese ODA on FDI and lead us to conclude that the public-private sectors cooperation in Japanese assistance programs has been quite effective.

## I- Japanese ODA in “flying geese” pattern

Japan undertook what would, only in retrospect, be called foreign aid, partly because of its obligation to make war reparations to neighbouring developing countries victimized in World War II (table n°1). In this early period, the Japanese government used the term of “economic cooperation” (*keizai kyouryoku*) rather than “aid”, to describe a range of efforts to promote mutually beneficial economic relations with developing countries, including official aid but also export credits and private capital flows. Japanese aid flows have been substantial ever since, granting Japan with the position of leading donor in this region.

**Table n°1: War reparations and reparations-like agreements  
between Japan and East Asian countries**

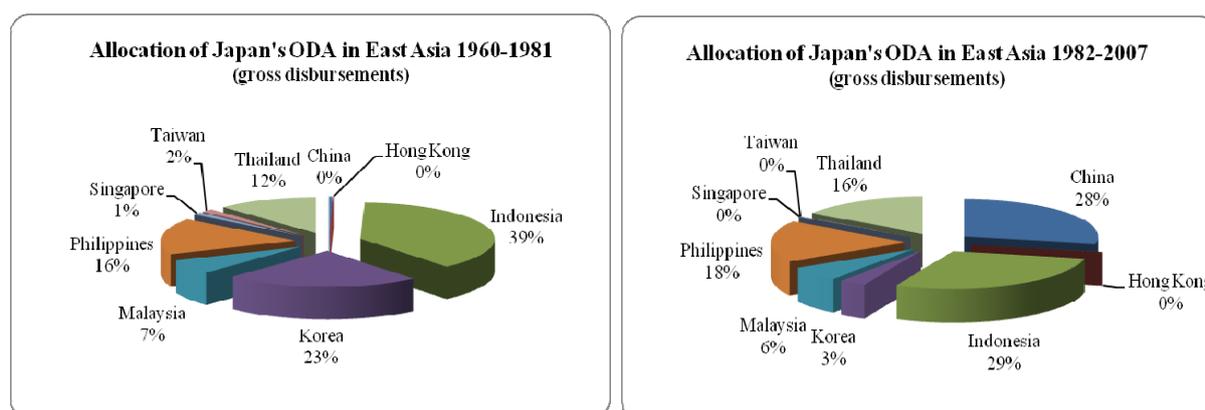
<i>Country</i>	<i>Year</i>	<i>Amount</i>	<i>Repayment Period</i>
Thailand	1955	26,7 millions \$	1962-1970
Philippines	1956	550 millions \$	1956-1966
Indonesia	1958	223 millions \$	1958-1970
South Korea	1965	300 millions \$	1965-1975
Singapore	1967	8,2 millions \$	1968-1972
Malaysia	1967	8,2 millions \$	1968-1972

Source: Arase (1995).

An analysis of ODA distribution in selected countries gives an interesting picture (Charts n°1): while for most advanced countries as Korea, Taiwan and in a lesser extent Singapore<sup>3</sup>, aid significantly decreased since 1982, for poorer countries aid flows sharply expanded (especially for China). It seems that even in countries which suffered political troubles (for example in the Philippines) the progression of Japanese ODA was not hindered. In Thailand, the evolution of aid was similar to the increasing business interests in the country. Finally, ODA to China more than doubled since 1982, granting the country with the position of top recipient and outstripping aid to Indonesia.

<sup>3</sup> On the whole period, Singapore and Hong-Kong received comparatively low amounts of Japanese aid, mainly because of the size of these economies and their high level of per capita income.

## Charts n°1a and 1b



Source: « *Geographical Distribution of Aid Flows to Developing Countries* », DAC, various issues.

In those East Asian countries, aid flows were almost multiplied by four between 1980 and 1999, in accordance with the official commitment of Japanese government (and mostly under international pressure for recycling Japan's surplus). This geographical distribution has important implications: aid flows are mainly allocated to middle and high income countries, under the shape of loan aid to economic infrastructures projects.

### a) The leading donor in Southeast Asia

As mentioned before, from the beginning of the 80's Japan has become strongly involved in the NIEs of the second generation. Table n°2 shows that the share of Japanese aid in total aid commitments has been consistently superior to 50% from the end of the 70's.

**Table n°2: Share of Japan's ODA in total ODA commitments (%)**

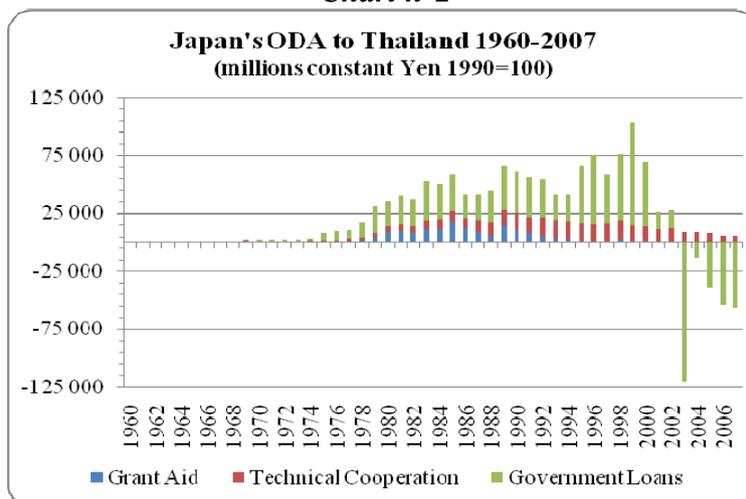
<i>Year</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Philippines</i>	<i>Thailand</i>	<i>Average ASEAN-4</i>
1967	69,6	..	73,0	..	71,3
1968	23,1	7,2	53,5	4,5	22,1
1969	18,0	37,2	67,8	39,7	40,7
1970	19,5	22,2	51,1	18,2	27,7
1971	20,7	21,7	53,1	30,9	31,6
1972	20,7	5,3	43,4	16,1	21,4
1973	30,2	62,6	45,3	13,5	37,9
1974	49,3	69,4	34,5	75,7	57,2
1975	37,4	65,7	58,6	56,5	54,6
1976	27,7	49,4	27,8	14,5	29,8
1977	46,3	59,2	34,3	67,7	51,9
1978	30,2	70,2	58,4	56,1	53,7
1979	41,2	53,6	31,4	45,5	42,9
1980	34,0	59,1	47,3	58,0	49,6
1981	43,5	58,7	49,2	51,6	50,7
1982	34,1	78,9	49,7	67,5	57,5
1983	37,7	68,9	57,9	60,2	56,2
1984	44,7	63,5	56,1	59,3	55,9
1985	55,9	51,0	20,7	61,8	47,4
1986	24,3	47,0	48,1	62,5	45,5
1987	60,6	44,1	53,9	66,4	56,2
1988	62,1	90,1	69,8	79,4	75,4
1989	54,0	48,7	43,1	46,1	47,9
1990	50,9	73,5	48,4	59,6	58,1
1991	49,4	49,9	58,1	70,5	57,0
1992	57,1	86,4	61,2	54,2	64,7
1993	65,0	88,7	58,1	91,1	75,7
1994	71,1	94,6	79,6	85,1	82,6

<i>Year</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Philippines</i>	<i>Thailand</i>	<i>Average ASEAN-4</i>
1995	54,6	81,1	68,5	82,4	71,7
1996	81,5	67,0	62,4	88,1	74,8
1997	28,4	76,1	77,5	86,3	67,1
1998	82,7	75,9	80,8	90,6	82,5
1999	45,5	97,1	83,1	90,4	79,0
2000	42,5	98,5	79,6	91,9	78,1
2001	68,6	76,7	78,9	61,2	70,3
2002	31,6	57,8	65,3	80,2	58,7
2003	77,3	56,0	31,2	29,1	48,4
2004	60,9	61,4	27,1	81,8	57,8
2005	45,0	97,9	11,2	63,3	54,3
2006	36,3	72,3	11,9	15,0	33,9
2007	52,3	37,5	39,3	23,2	38,1
Average (1967-2007)	<b>45,99</b>	<b>61,95</b>	<b>52,45</b>	<b>57,39</b>	

Source: DAC Development database on Aid.

Although it never claimed formal war reparations, Thailand was the first country to conclude a reparation-like agreement with Japan. In 1955, an agreement on the repayment of a yen loan took out during WWII is reached. Thailand was to receive 5.4 billion yen in cash and 9.6 billion yen under the shape of capital and services.<sup>4</sup>

*Chart n°2*



Note: Loan and Grant Aid are on an E/N basis, and technical cooperation is on a JICA's disbursement basis.

Source: *ODA Annual Report*, Ministry of Foreign Affairs of Japan, various issues.

Although Japan has been providing technical assistance to Thailand since 1950, Chaisakul (2001) notes that it received its first OECF yen loan of 10 billion only in 1968, and a second one of 17 billion in 1972. During this initial period and until the beginning of the 70's, Japanese aid was closely linked to the Japanese business interests and to the promotion of exports markets of Japanese firms (Söderberg, 1996). As pointed out by Lincoln (1992), Thailand is a very good example of the common agenda prevailing between the Japanese government and the business community. He notes that a significant part of Japanese aid was allocated under the shape of loans for the industrial complex of Laem Chabang, enhancing Japanese FDI in this region. However, facing rising discontent in Asian recipient countries and in particular in Thailand, Japanese grant aid was progressively redirected towards rural and agricultural development<sup>5</sup>.

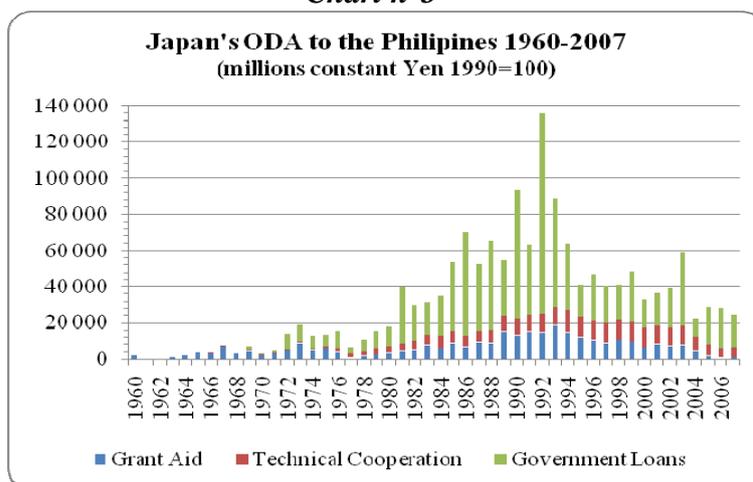
<sup>4</sup> See Chittiwatanapong P. (1993) on war reparations.

<sup>5</sup> Tinakorn et Siroros (1991).

In the case of the Philippines, aid was initiated within the framework of formal war-reparation on the period 1956-76. With more than \$ 550 million out of \$ 1.01 billion, this country received the largest amount, twice the one of Indonesia<sup>6</sup>. Conceptualized as an investment rather than a provision of service, including capital goods, more than 60% of aid were spent on infrastructure projects (public works, transport, education and medical equipment) and 15% in the industry (cement and steel works, electrical machinery, telecommunication equipments, domestic electric goods, etc.). In addition, Japanese firms granted \$ 250 million to their Filipino affiliates as development loans with commercial terms.

But “real” ODA began with a budget of \$ 250 million for a motorway project in 1969, the consecutive establishment of loan programs in 1971 and the start of grant aid in 1972. Japan became a member of the Consultative Group of Donors for the Philippines in 1971, and as war reparation ended, the cooperation system was completely settled with both loans and grants. Warkentin B. (1996) also emphasize that until the 80’s, roughly 50% of bilateral ODA (excluding US military assistance) came from Japan. In 1982, disbursements reached 71.4% of total bilateral ODA and 65.2% of total multilateral and bilateral aid. From the 80’s to nowadays, the Philippines have usually been the third largest recipient of Japanese ODA. Following the 1986 revolution and the coming to power of President Aquino, commitments have more than doubled, as a consequence of the political support of the Japanese government and the strong appreciation of the yen. It’s worth noting that Mapalad (2000) for instance, found a positive evaluation of the impact of Japanese aid on the economy of the Philippines.

**Chart n°3**



Note: Ibid. Source: Ibid.

The main feature of Japanese aid, that is the preponderance of loan aid over grant aid, is again quite obvious: the bulk of aid flows is composed by loans, which represent between 80 and 92% of total ODA on the whole period, apart from few years.

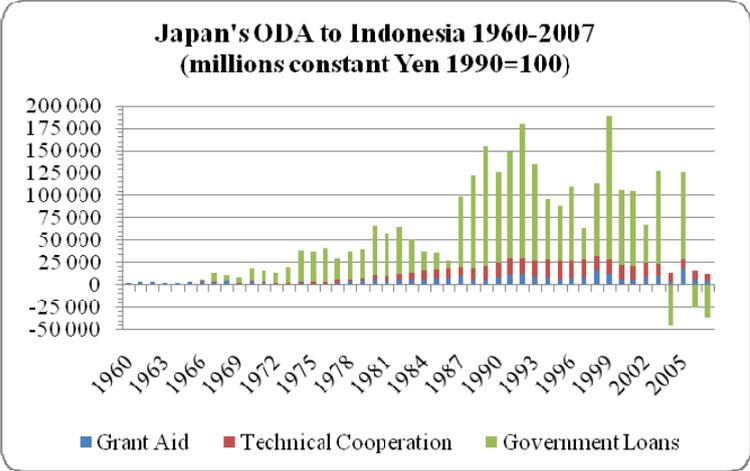
The next Asian country to sign formal war-reparation with Japan was Indonesia in 1958. Yet, it is not until 1968 that the framework for ODA is set up. Indonesia has been the main recipient of Japanese aid until China rose as the top recipient in 1993. Besides, from the 70’s onwards Japanese ODA outstripped US aid in the country. Malmström A. (1996) also observes that Japan became the leading donor in 1988, surpassing bilateral and multilateral commitments to Indonesia. At the end of the 90’s, Japanese assistance had financed, according to the author, about 45% of hydroelectric development and 17% of roads in Indonesia, as well as 76% of telecommunications equipments in Jakarta. Those aid flows have been determined by the macroeconomic conditions of the economy and structured like an integral part of the financing of Indonesia’s development.

On the period 1960-2007, chart n°4 shows that the major part of ODA is composed by loan aid, which started in 1968 and amounted 27 billion yen for ten specific projects. Orr (1990) indicates that

<sup>6</sup> See Ohno T. (1986) and Takahashi A. (1993).

in the 60's, aid policy was almost exclusively focused on the promotion of exports whereas from the 70's it started to focus on the development of natural resources, especially on large capital projects in the energy sector (p.79). Loans are composed by commitments undertaken within the framework of the Consultative Group on Indonesia (CGI which succeeded the Intergovernmental Group on Indonesia in 1992), and others, out of this frame, were distributed in an *ad hoc* way on specific projects after consulting the two governments. Such loans are generally allocated to large scale projects such as the industrial development that do not fall under the framework of the CGI. However, some infrastructure projects in the energy or transport sectors are financed under this frame.

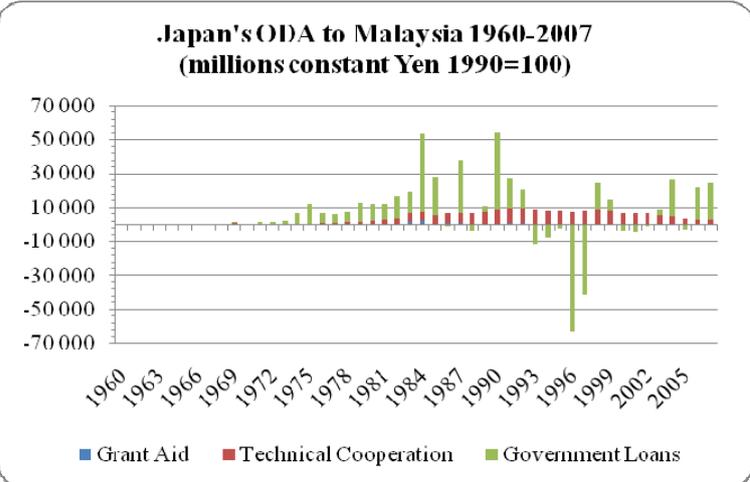
**Chart n°4**



Note: Ibid. Source: Ibid.

Reparation-like agreements were reached more tardily with Malaysia in 1967. The total budget of 8.2 million dollars was considerably weaker than for other neighbouring countries. Jomo (1964) notices that the benefices earned from the selling of Japanese properties were treated as reparation-like. He adds that this reparation effort was quite limited by the desire to see Japan giving support to the Cold War. Furthermore, such reparations were mainly paid to Britannic investors in Malaya rather than Malaysian who suffered most from the Japanese occupation<sup>7</sup>.

**Chart n°5**



Note: Ibid. Source: Ibid.

As highlighted in chart n°5, grant aid became significant in the 80's, when the Malaysian economy was suffering deficit and problems of balance of payments. Since 1976, Japan has been the

<sup>7</sup> See Hara (1993) on this issue.

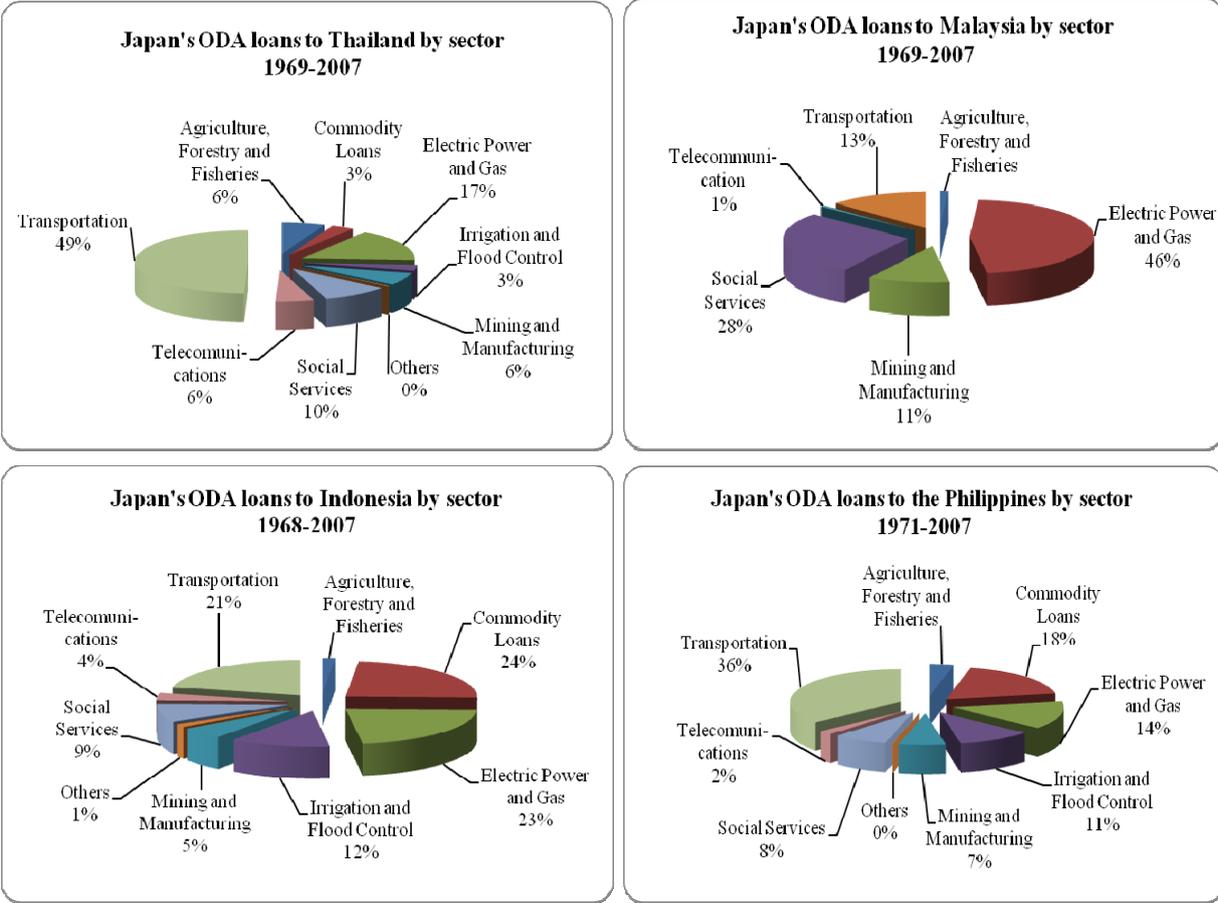
second largest source of external finance of the Malaysian economy (Jomo, 1994) and Malaysia has often been one of the top recipients of Japanese aid.

Furthermore, the increase in the Malaysian per capita income led the Japanese government to shift its aid to technical cooperation which significantly increased on the period. As pointed out by Orr (1990), Malaysia represents a particular case: its strategic position on the sea route leading to the Middle-East oil resources and it's relatively reconciling approach towards Vietnam, thus countering the dependence of Hanoi on the Soviet Union, brought continuous support from Tokyo to Malaysia. Moreover, the country has important essential natural resources and the Japanese government was particularly appealed by the "Look East" Policy of the Prime Minister Mahatir.

**b) An emphasis on economic infrastructures**

A look at Japanese loan aid to ASEAN-4 by sector confirms that the bulk of aid was allocated to economic infrastructure projects. In all countries, ODA loan primarily focused on infrastructure projects in the sectors of transport and energy production (Charts n°6). For instance, since the beginning of the 80's, Japanese ODA represents around 20 percent of investment in electricity production in Indonesia, 22 percent in Thailand, 50 percent in Malaysia ; 50 percent of investment in telecommunications in Indonesia and respectively 12 and 15 percent of investment in railway and motorway in Indonesia, 58 and 6 percent in Thailand, etc. (Gaimusho, 1996).

*Charts n°6*



Source: former JBIC online database, now available on JICA website.

In Thailand, aid was allocated to 28 execution agencies mainly in the transport sector. The largest share was assigned to the Department of the Motorways, which, along with the authority in charge of expressways, received almost 20% of loans (Söderberg, 1996). The second important sector is electric

energy and gas (17%), and social services' follow up (10 %). Soesastro (2004) observes that such strategy of infrastructure building was in keeping with the Thai development plan and largely beneficial to the economy, even if some projects did have negative social and environmental impacts<sup>8</sup>.

At the beginning of the 90's, the total amount of loan aid surpassed 100 billion constant yen, projecting Thailand at the third rank among Japan's top recipients, after Indonesia and China. Taking into account the fact that the Thai population was 56 million in 1991, against respectively 181 million and 1.15 billion in Indonesia and China, Japanese aid per capita is far higher in Thailand.

In other respects, Japan decided to stop grant aid<sup>9</sup> to Thailand in 1993, considering that the level of per capita income achieved after a sustained growth, had become inappropriate to the continuing of this type of assistance. However, some minor projects will be maintained in the environment sector as well as technical assistance and development studies. For instance, the JBIC has recently placed emphasis on the development of urban infrastructures (given the deterioration of urban conditions), the regional development (because of rising disparities) and the development of human resources.

Japanese loan aid to the Philippines has the same sectoral composition: cooperation is mainly linked to electricity and other energies as well as infrastructures such as roads and harbors. When the economy of the Philippines moved into a deep recession, as in the mid-80 and during the Gulf War in 1991, Japan provided loans for commodities. Under the Ramos government, aid was directed towards sectors such as transport (36 %, in particular roads and airports), water resources and electricity, which had worsened because of the financial difficulties of the previous administration.

In the agriculture sector, a sustained effort was provided to rural development and to land reform, with an emphasis on irrigation (though its share of total loans remains low). In order to redress regional disparities, funds were allocated to infrastructures such as roads and bridges and so that the integrated rural development creates a growth factor in local sectors. Japan has also worked on projects for the improvement of water supply and sanitation, for the basic electricity in some poor regions. In the environmental sector, apart from forest conservation and the control of pollution, cooperation attempts to reduce the damages due to disasters, for example following the eruption of Mount Pinatubo in 1991 and efforts for control of flood.

As far as grant aid is concerned, it was allocated to the sectors of education and the development of human resources, in particular health and medical care like in the agricultural sector. After the 1997 financial crisis, Japan significantly increased aid flows to the Philippines especially in the support of socio-economic infrastructures in local sectors. In fields such as education for the prevention of AIDS, the improvement in the condition of ethnic minorities, education and health, Japan attempted to make aid more flexible through its grants to grassroots projects. Tecson G.R. (2001) notes that the low share granted to the social development in total ODA is mainly explained by the reluctance of the Filipino government to use yen loan for human development projects because of recurrent problems of balance of payments. Lastly, technical assistance was implemented in various sectors such as agriculture, industrial technology, transport and health as early as in the 60's. In the agricultural sector, technical studies aiming at improving the productivity and rural development were undertaken, with the long term objective of improving the life of farmers. Volunteers from the Japan Overseas Cooperation Volunteers (JOCV) have played a significant role in the diffusion of agricultural techniques. In recent years, cooperation focused on economic and social infrastructures in rural areas, cooperation for local development and aid to the development of the private sector.<sup>10</sup>

The sectoral composition of Japanese loan aid to Indonesia reveals that 29% were allocated under the shape of commodity loans. Those were provided with the aim of slackening the constraints of balance of payments, especially for the imports of goods. As in other ASEAN countries, project aid massively focused on economic infrastructures, in particular in the transport sector (22%) and the electric energy and gas (17%). Soesastro (1991) notices that: *"This is exactly the areas that appears to the Indonesian government as well as to the public at large as most appropriate for Japan's participation in Indonesia's development."* He adds that there has not been any violent criticism from

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<sup>8</sup> He notably mentions social and environmental problems caused by some projects of dam construction.

<sup>9</sup> The allocation of grant aid by sector is presented in appendix n°1.

<sup>10</sup> Also see Potter D.M. (1996) on Japanese aid to Thailand and the Philippines.

the Indonesian public concerning projects financed by Japanese aid, contrary to some projects financed by the World Bank. However, some obvious problems arose in terms of aid effectiveness: in March 1998, *Mainichi Shinbun* reported that 80% of medical equipment provided in the framework of ODA since 1979 were not used because of insufficient electric power production. This explains why his sector has benefited from a significant part of loan aid over the period. Other problems linked to Japanese aid projects in Indonesia have been pointed out. On the 26<sup>th</sup> of March 2003, the *Japan Times* reported the doubling of plaintiffs involved in the legal action concerning the construction of Kotopanjang hydroelectric dam on Sumatra Island and the resettlement of about 3900 persons.

JICA administers around 10% of ODA to Indonesia under the shape of grant and technical cooperation since its establishment in 1969<sup>11</sup>. Those activities include project type technical cooperation, development studies, assignment of young experts, grant aid projects, emergency aid as well as a training program of participants in Japan. Malmström A. (1996) underlines that Japanese experts working in Indonesia are quite familiar with development plans and priority projects, and are often responsible for preliminary evaluations of selected projects.

Lastly, yen loans to Malaysia are also mainly allocated to projects of infrastructures' development and telecommunications. Contrary to the three other recipients, the sector of energy and gas is the largest one with 52% of total loans on the period. Social services have benefited from 20% of flows and the transport sector ranks third, after the mining industry sector and manufacture (12%).

In conclusion, this analysis shows that Japanese ODA to ASEAN-4 was mainly allocated under the shape of loan to projects of economic infrastructures. This permanent feature of Japan's aid policy reflects a logic based on the concept of "self-help", which is deeply rooted in Japan's own experience of economic development<sup>12</sup>. Underlying Japan's ODA is the conviction that economic development is only possible when the government and citizens of a developing country make unremitting efforts to improve their current conditions. Unless the people of a developing country take it upon themselves to make the necessary effort and sacrifices, neither aid nor development will ultimately be successful. Such philosophy explains the preponderance of loan over grant aid. It is also worth reminding that the request-based system of Japan's ODA is the most obvious outcome of the concept of self-help effort.

## II- Japan's FDI in ASEAN-4

Japan's financial flows to the developing world have not been limited to "aid monies" and other official and private flows expanded tremendously since the emergence of Japan as the top donor in 1989. Indeed, also deeply embedded in Japan's aid philosophy is the idea that public and private sectors must work not as adversaries, but as partners in development. As a consequence, Japanese public and private flows to developing countries have been institutionally and officially linked. Private flows reached \$23 billion in 1995, of which roughly \$10 billion were foreign direct investments (FDI). One should notice that the recent aid reform in Japan constitutes a significant departure from this system, and realignment towards the international community's so called "good practices" in providing aid.

Since the beginning of the 70's, Japanese FDI were concentrated on developing Asian countries. Lipsey (1999) notices that more than half of Japanese FDI stocks were implemented in those countries in the 70's and at the beginning of the 80's. After the yen revaluation, this share progressively decreased to 25% in 2000. Japan's FDI in the region reveal the same logic as aid flows: the so-called "flying geese" pattern. Indonesia is the only ASEAN country that received substantial FDI as early as in the 70's. In Thailand, Malaysia and the Philippines, the bulk of FDI flows was made later, in the 80's.

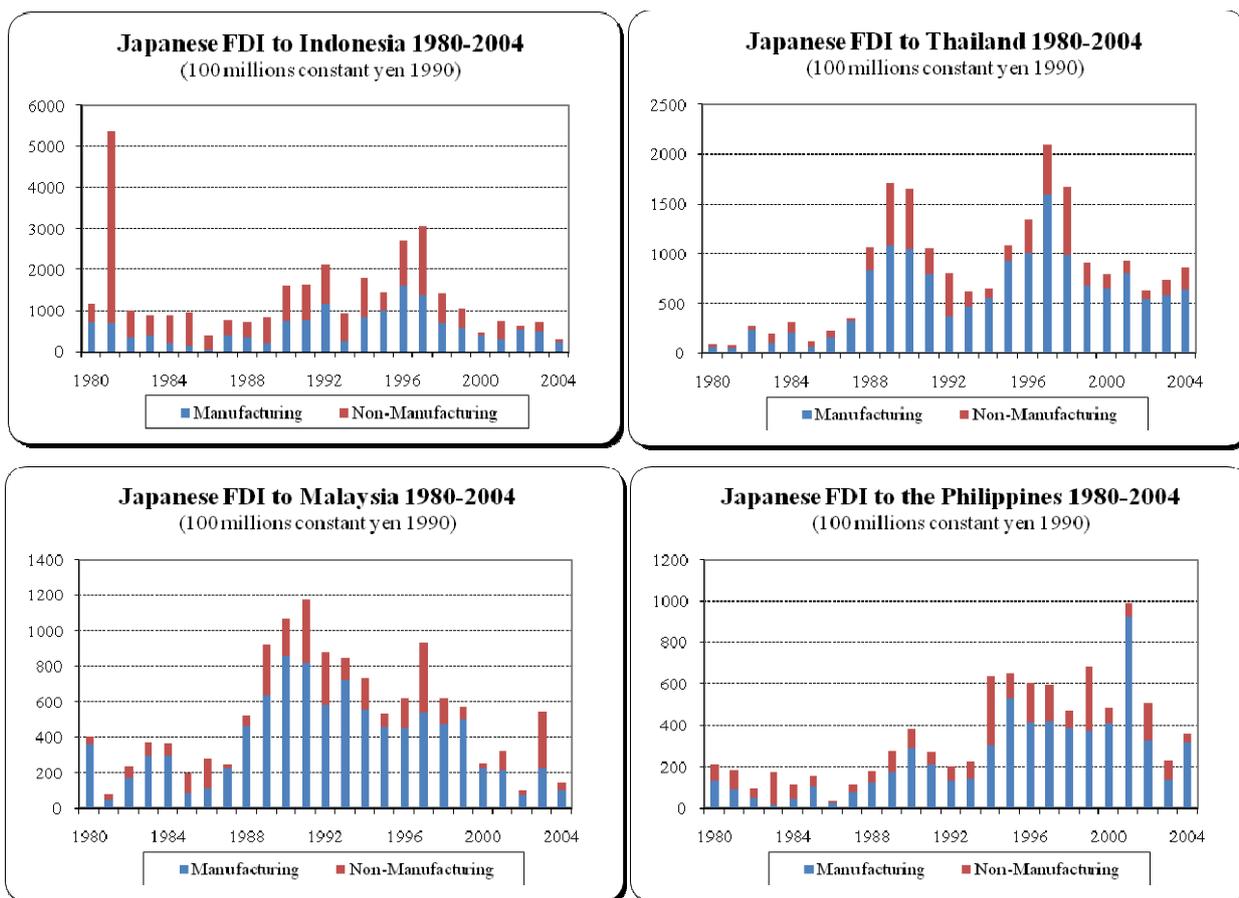
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<sup>11</sup> The Overseas Technical Cooperation Agency (OTCA) created in 1969, changed its name and became the Japan International Cooperation Agency (JICA) in 1974.

<sup>12</sup> See Blaise (2006).

Rapidly, Thailand also became highly coveted by Japanese investors: in 1989, it received the third largest amount of Japanese direct investment in the region with 171 billion constant yen. The integration of those investments in the productive structure of Thailand has been shown to be a vertical rather than horizontal integration. Milner *et al.*(2004) investigate the effects of both home country (Japan) and host country (Thailand) characteristics on the inter-industry pattern of FDI. For 85 manufacturing industries over the period from 1985 to 1995, they find a positive influence of industry variation in skill intensity and market size in the host country and a negative effect of transport costs on the amount of FDI. These results provide strong direct econometric evidence of vertical integration of production across the countries.

### Charts n°7



Source: *Financial Statistics*, Japan's Ministry of Finance, various issues (discontinued in FY2004).

Another substantial difference lies in the sectoral decomposition of investment flows: they were mainly allocated to the manufacturing sector, except in Indonesia, where many investments were directed towards the mining sector (table n°3).

Aoki (1992), Womack, Jones and Roos (1991) or Yamamura (1990, 1994) among others, show that Japanese multinational firms have unique specificities. Some of them may be largely beneficial to the host country, and especially those related to inter-firms relations or relationships between the domestic government and the multinational firm, such as:

- 'lean' production techniques ;
- 'just in time' sourcing ;
- total quality management ;
- quality control circles ;
- processes of collective decision (*Ringi sei*) which promote the participation of employees to management and allows the firm to consider a greater number of alternatives and to reduce implementation delay of a directive ;

- promotion by seniority system (*Nenko*) lifetime job, favoring the development of an internal job market and reducing staff rollover and the loss of skilled workers, etc (Ravenhill, 1999).

In addition, *keiretsu* type relations linking assemblers and suppliers and maximizing market shares rather than short term profitability, may also bring substantial benefits in that local firms are included in production networks.

**Table n°3: Japan's FDI to ASEAN-4 by sector (1980-2004, %)**

<i>SECTOR</i>	<i>Indonesia</i>	<i>Malaysia</i>	<i>Thailand</i>	<i>Philippines</i>
Food	0,7	2,2	3,0	11,0
Textile	4,3	1,7	3,8	0,4
Lumber & Pulp	2,9	2,5	0,7	0,4
Chemical	12,4	9,9	6,7	4,8
Metal	9,0	9,9	10,4	6,6
Machinery	0,8	4,7	6,7	4,1
Electrical	3,8	24,9	16,3	24,5
Transport	6,8	4,3	12,4	11,3
others	3,0	13,0	7,5	6,2
<b>Manufacturing Total</b>	<b>43,8</b>	<b>73,1</b>	<b>67,5</b>	<b>69,5</b>
Farming & Forestry	0,4	0,1	0,5	0,4
Fishery	0,8	1,1	0,1	0,3
Mining	36,2	1,9	0,1	2,4
Construction	0,6	1,7	2,6	0,8
Trade	0,8	5,5	6,4	1,3
Finance & Insurance	7,6	5,2	4,0	5,1
Service	4,6	5,4	3,9	5,4
Transportation	0,7	0,7	3,3	7,1
Real Estate	4,0	3,5	3,6	3,2
others	0,2	0,1	0,0	0,1
<b>Non-Manufacturing Total</b>	<b>55,9</b>	<b>26,6</b>	<b>25,3</b>	<b>29,6</b>
<b>Branches</b>	<b>0,3</b>	<b>0,2</b>	<b>7,2</b>	<b>1,0</b>
<b>TOTAL</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

Source: Ibid.

Those peculiarities engender different forms of investments (compared with US FDI for instance). Indeed, while US FDI in Asian manufacturing sector are generally undertaken in technologically sophisticated industries with differentiated products (therefore more costly), Japanese FDI are generally directed towards standardized products industries, which are more labor intensive (JETRO, 1995). Consequently, most Japanese direct investments are undertaken by small and medium size firms (Urata et Kawai, 1998), which implies that the level of technology and the transfer mode are noticeably different<sup>13</sup>.

In a comparative analysis of American and Japanese FDI in developing countries, Kojima (1991) shows that in most cases, Japanese FDI contribute to the development of recipient countries with a greater efficiency than US FDI and points out that Japanese FDI are pro-trade type investment whereas US FDI act as a substitute to trade.

Overall, this short review of the literature support the view that Japanese FDI flows in East Asian countries may be seen as a vector of industrialization and of trade promotion by fostering the replication of production networks in recipient countries and the strong involvement of the domestic private sector.

### **III- Aid: a pre-requisite for FDI?**

<sup>13</sup> See Kojima (1978) and Ravenhill (1999) on technology transfer issues.

### **a) A short review of the literature**

A number of works was carried out on the relationship between ODA and FDI in the case of Japan. Nevertheless, the causal relation that has been evaluated has often been the opposite. That is, to assert the impact of FDI as a determinant of ODA flows<sup>14</sup>. As far as we know, few studies have considered the possibility that ODA act as a prerequisite for future Japanese FDI. Among earlier studies, we find The International Development Center of Japan (1997), Yosioka *et al.* (1998), Inui (2000) and Nakamura *et al.* (2001).

More recently, Harms and Lutz (2006) and Karakaplan *et al.* (2005) examined the direct relation between foreign aid and FDI, using aggregate data on FDI and foreign aid for each recipient LDC. Harms and Lutz (2006) found that the effect of aid on FDI is generally insignificant but significantly positive for countries where private firms face heavy regulatory burdens. Karakaplan *et al.* (2005) also found an insignificant effect of aid on FDI. In contrast to Harms and Lutz (2006), their results suggest that good governance and developed financial markets have a positive effect on the aid-FDI nexus. Harms and Lutz (2006) and Karakaplan *et al.* (2005) both use governance indices developed by the World Bank Institute. A notable difference between these two studies is the time period covered: 1988-1999 in Harms and Lutz (2006) and 1960-2004 in Karakaplan *et al.* (2005).

Lastly, Kimura and Todo (2007) studied the impact of foreign aid on FDI by using disaggregated data on FDI and aid, *i.e.*, data for each source-recipient country *pair* during the period 1995-2002. This country-pair dataset allowed the authors to employ gravity equation-type estimation that is often used in recent studies on determinants of FDI.<sup>15</sup> They presumed that there are possibly multiple channels through which aid affects FDI: a positive “infrastructure effect” and a negative “rent-seeking effect” by encouraging unproductive rent-seeking activities. In addition, the study proposed that aid has a positive “vanguard effect” through which foreign aid from a particular donor country promotes FDI from the same country but not from other countries.

Kimura and Todo (2007) found that foreign aid in general does not necessarily promote FDI, a result consistent with Harms and Lutz (2006) and Karakaplan *et al.* (2005). They also found that the quality of governance does not significantly affect the effect of aid on FDI. As to the final role of foreign aid on FDI, the vanguard effect, their results show that foreign aid from Japan has a vanguard effect, while the effect of aid from all other countries on FDI is weak. In other words, aid from Japan promotes FDI from Japan to the same recipient country, while having no impact on FDI from other countries. The size of the vanguard effect for Japanese aid is substantial, since the study found that the increase in Japanese FDI in East Asia is mostly attributed to the increase in Japanese aid.

This short review of the existing literature reveals contrasting results, although the suggestion that Japanese ODA has had a positive impact on FDI inflows and more particularly Japanese FDI inflows seems well-founded. Still, these studies suffer a number of shortcomings ranging from misspecification for some, to invalid estimation methodology for others. More problematic is the fact that several studies use aggregated FDI data from the Ministry of Finance in Japan, which are based on notifications by firms and are known to be grossly inflated due to the fact that many projects never materialized (Ramstetter 1996, p.109-112). In this context, the originality of our work is to use more reliable FDI data from the Toyo Keizai surveys.

### **b) Methodology**

Our econometric evaluation of Japan's ODA and FDI nexus focus, as mentioned before, on the indirect effect of aid on Japanese FDI inflows. The previous empirical analysis showed that Japanese aid was mainly allocated to economic infrastructure and more especially to the transportation or energy sectors. Therefore, we assume that the direct effect of ODA is to hence the development of those infrastructures.

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<sup>14</sup> See for example Teranishi (1983), Okamoto and Yokota (1992).

<sup>15</sup> Egger and Winner (2006); Carr, Markusen and Maskus (2001), and Wei (2000).

The location decision of Japanese investors in ASEAN4 is analysed by means of a conditional logistic regression in which we introduce ODA along with other profit-maximizing factors. The aim is to analyse the effect of national characteristics on Japanese firm's location choice.

This model has been widely used in previous empirical studies of location choice. For example Head, Ries & Swenson (1995) examined the agglomeration benefit and location choice of Japanese manufacturing in the United States. Fukao & Yue (1997), analyzed the determinants of FDI by Japanese electronic firms. Belberdos & Carree (2000) also examined the location of Japanese Investment in China, focusing on agglomeration effects, Keiretsu and firm heterogeneity. Urata & Kawai (1999) studied the determinants of the location of FDI by Japanese small and medium-sized enterprises<sup>16</sup>. The conditional logit model was first developed in economic analysis by Mc Fadden (1973).

Our purpose is to verify if, in a given country, the amount of Japanese aid has an impact on the location choice of Japanese private investors, for instance through the development of infrastructure. To model the location of Japanese FDI in ASEAN-4, we assume that Japanese firms undertake FDI in a country where they can maximize their profit after evaluating relevant characteristics of alternative locations. By assuming that the firm has a production function of Cobb-Douglas form, let us describe the profit ( $\pi$ ) of firm  $i$  obtained from undertaking FDI in country  $j$  as (1).

$$\pi_{ij} = a_0 X_{1j}^{a_1} \dots a_m X_{mj}^{a_m} \cdot e^{\mu_{ij}} \quad (1)$$

where  $a_0, \dots, a_m$  are unknown parameters,  $X_{sj}$  ( $s=1, \dots, m$ ) are variables describing the characteristics of the country  $j$  ( $j=1, \dots, n$ ), and  $\mu_{ij}$  is a random disturbance term capturing country- and investment specific-heterogeneity in total factor productivity.

Given profit equation (1), if and only if  $\mu_{ij}$  is distributed as Type I extreme value (independent random variable) according to the Weibull distribution, then the probability that country  $j$  will yield investor  $i$  the highest profit among all the provinces is given by the logit expression (2) (McFadden, 1973).

$$P_{ij} = \frac{\exp\left(\sum_{s=1}^m a_s \ln X_{sj}\right)}{\sum_{j=1}^n \exp\left(\sum_{s=1}^m a_s \ln X_{sj}\right)} \quad (2)$$

We express the number of FDI selections made by Japanese firm  $i$  in the country  $j$  as  $W_{ij}$  ( $j=1, \dots, n$ ). This dependent variable takes the value 1 if the country is selected by the investor and 0 otherwise. Finally, we obtain the probability of observing such FDI pattern as equation (3).

$$L = \prod_i \prod_{j=1}^n P_{ij}^{W_{ij}} \quad (3)$$

The parameter ( $a_0, \dots, a_m$ ), which indicate the characteristics of potential host countries to Japanese FDI, are estimated by the maximum likelihood method, which maximizes the likelihood function (3).

In other respects, as pointed out in previous studies the location choice criteria may vary across different sectors. Therefore, the estimation is carried out in both *manufacturing* and *non-manufacturing* sectors. The following variables enter into consideration as independent variables:

- **Agglomeration effect:** economic activities of existing Japanese firms in one province that generate positive externalities for nearby firm engaged in similar activity. This is measured by the *number of existing Japanese affiliates before the venture began operation* (JAMc and JANmc, respectively for manufacturing and non-manufacturing sector).
- **Level of economic activity:** we control for economic size of the countries by including the *per capita GDP* (GDPc). The larger the economic size of a country, the more likely it will receive foreign investments.

<sup>16</sup> Other examples can be found in Fukao (1996), Fukao and Tei (1996).

- **Production cost:** labor cost is recognized as one of the most important factors. It is given by the *average wage level of workers* (Wage), which is expected to discourage investment especially in the case of manufacturing location.
- **Infrastructure:** a well developed transportation infrastructure reduces the costs of importing inputs and exporting or distributing output as well as a good communication infrastructure facilitates and reduces the cost of communication of affiliates. Consequently, one expect infrastructure indicator to have a positive impact on the location decision of private investors.  
We introduce the *distance from Japan* (DIST) as well as a measure of the quality of telecommunication infrastructure: *the number of telephone mainlines (per 1,000 people)* (PHONE). Finally, we introduce the *cumulative amount of Japanese aid* (ODAc), which is also supposed to hence the development of infrastructure, particularly in the transportation sector.
- **Human capital:** the level of education is expected to have a positive impact on the location decision especially in non-manufacturing sectors as it enhances the quality of human capital. The education level if measured by the *gross secondary school enrolment* (EDU).  
We use the log of all variables, except for the Distance variable.

The principal limitation of conditional logit models is known as the independence of irrelevant alternatives (IIA). This property implies that the relative odds between two alternatives are the same no matter what other alternatives are available. It is thus important to check whether the assumption of IIA is valid or not. This is done by the use of a Hausman test.

This evaluation is carried out on the period 1975-2007. Statistics for ODA are issued from DAC database. As far as FDI are concerned, we use Toyo Keizai "*Overseas Japanese Companies Data*" from 1990, 1999 and 2008 editions. Statistics for each ASEAN country are compiled from "*World Development Indictors*" published by the World Bank, as well as UNIDO industrial statistics (wage). At last, the distance from Japan is given by the shortest flight time.

### c) Results

Results are given in table n°4 and confirm the prevalence of the quality of infrastructures and agglomeration effects as the main characteristics influencing Japanese investors' location choice in ASEAN-4.

**Table n°4: Conditional (fixed-effects) logistic regression**

<i>Variable</i>	<i>Manufacture</i>	<i>Non-Manufacture</i>
LJAc	<b>0.96***</b> (7.96)	<b>0.54***</b> (3.87)
LODAc	<b>0.66***</b> (4.02)	<b>0.60***</b> (3.38)
LGDPc	<b>- 0.88***</b> (-3.70)	-0.36 (-1.37)
LWAGE	- 0.32 (-1.46)	0.16 (0.70)
LEDU	- 0.26 (-1.54)	<b>-0.42**</b> (-1.93)
DIST	<b>- 0.38***</b> (- 3.50)	<b>-0.21**</b> (-1.69)
LPHONE	<b>1.24***</b> (9.08)	<b>0.75***</b> (5.06)
Log likelihood	-3031.7848	-2190.7236
Hausman Test	0.9966	0.8694

\*, \*\*, \*\*\* mark the results which are respectively 10%, 5% and 1% significant.  
Hausman test:  $H_0$  = difference in coefficient not systematic.

In both sectors, agglomeration effects appear to have a strong positive impact on location choice, as it was the case in our previous study of China. This finding is in line with quoted previous studies of Japanese investors' location choice.

The level of economic activity, however, holds a negative and weakly significant coefficient in manufacturing sectors, and it is not significant for non-manufacturing activities. This is a noticeable difference with previous results obtained in the case of China, which might arise from the aggregate nature of statistics at national level.

As expected, high wage levels seem to discourage Japanese investors in the manufacturing sector, though this variable is very weakly significant. This finding may suggest that the cost of labour is of greater importance in manufacturing activities than in non-manufacturing ones. The negative impact of education level in the two sectors confirms that investors attach less importance to qualified labour force.

Most importantly, the cumulated amount of Japanese ODA attributed to each country is strongly significant in both sectors and confirms that aid has a spillover effect on the location decision of Japanese investors in those countries. As we suggested, aid projects acted as prerequisite for future investment through the development of infrastructure.

The distance from Japan is proved to have a significant negative impact on FDI location in both sectors. This impact is stronger in the case of manufacturing activities which implies greater international fragmentation of productive structures. Finally, the quality of communication infrastructures such as the number of phone mainlines is shown to be of particular importance in the location choice of both manufacturing and non-manufacturing activities. The coefficient value is much higher than coefficients of other variables, which is consistent with the view that the quality of infrastructures is decisive for FDI promotion. As far as the IIA is concerned, both models estimated on these data meet the asymptotic assumptions of the Hausman test.

## CONCLUSION

This econometric analysis allowed us to support the view that Japan's ODA has been quite effective in promoting Japanese FDI in ASEAN-4 countries, both in the manufacturing and non-manufacturing sectors. Even though other profit-maximizing factors such as agglomeration effects or the quality of telecommunication infrastructure had a leading role in location decision of Japanese investors, the allocation of aid projects did have a significant positive impact. The concentration of ODA projects on economic infrastructures, considered as high priority by most of the ASEAN-4 governments, aimed at resolving serious bottlenecks in those economies. This had an important "spillover effect" on promoting Japanese investors' activities.

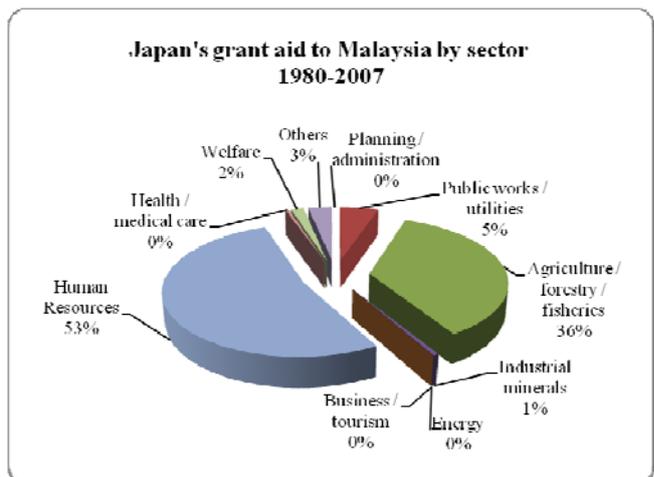
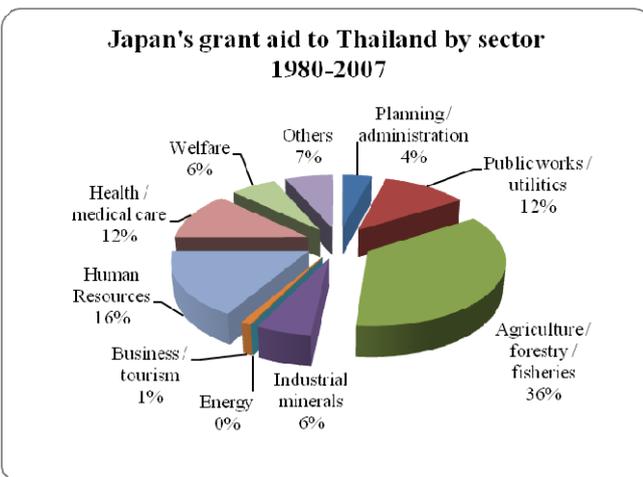
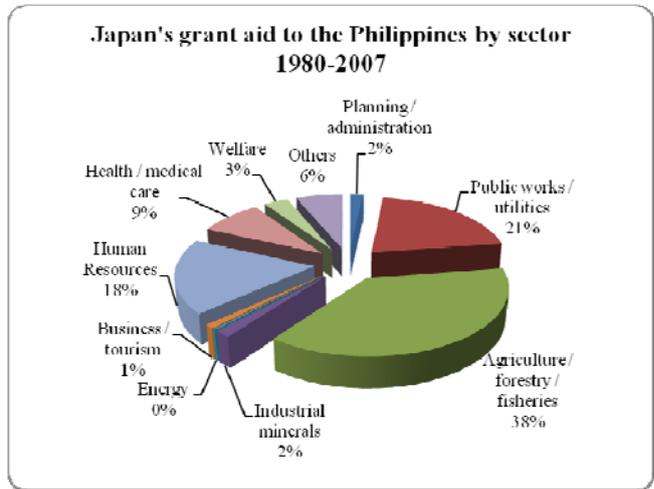
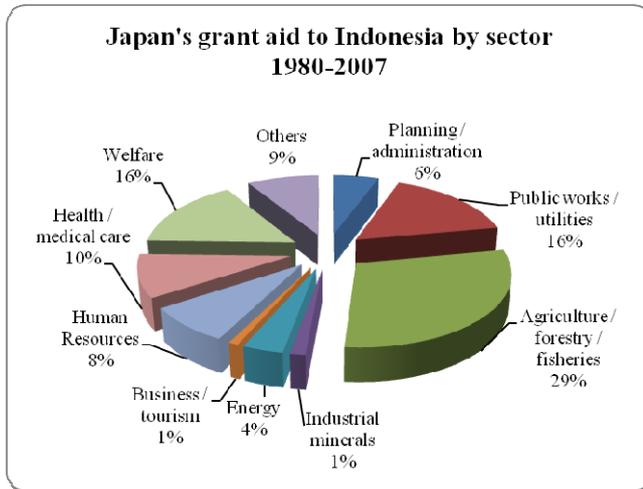
As far as the loan component of ODA is concerned, this finding confirms the idea that the incentive for future private investment and technology transfers not only allowed a high rate of reimbursement of loan aid, but that the duty to reimburse constitutes an indicator of solvability well perceived by private investors (Teboul and Bassino, 1999).

FDI flows remain concentrated on few developing countries, as they require a stable macroeconomic environment, strong legal and regulatory incentives as well as appropriate infrastructures. For that reason, this type of capital flows should not be viewed as substitutes for public flows, but rather as complementary (OECD, 2006). In a context of growing scarcity of aid funding, we wish at asserting the importance of such complementary process in which foreign aid is aimed at enhancing the development of infrastructures and improving the economic environment, acting as a pre-requisite for future direct investments. Japan providing an interesting case study, we stress the need for a better cooperation between public and private sectors in development assistance programmes.

This study also calls for further investigations on the different channels through which foreign aid promotes private investments inflows. A more detailed analysis, sector by sector, as well as case studies should allow us to capture the very nature of this spillover effect.

**APPENDIX N°1:**

**Japanese grant aid to ASEAN-4 by sector**



Source: Ministry of Foreign Affairs of Japan, *ODA annual reports*, various issues. Calculations by the author.

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