Occasional Paper

CHUNG-HUA INSTITUTION FOR ECONOMIC RESEARCH

75 Chang-Hsing St., Taipei, Taiwan

Republic of China

This paper is intended to provide economic information and stimulate further research. Any opinions expressed within are solely those of the authors and not those of the Chung-Hua Institution for Economic Research.

An Assessment of Taiwan's Indirect Investment Toward Mainland China

by
Lee-in Chen Chiu
and
Chin Chung

No.9201

January 1992

Occasional Paper

CHUNG-HUA INSTITUTION FOR ECONOMIC RESEARCH

75 Chang-Hsing St., Taipei, Taiwan

Republic of China

An Assessment of Taiwan's Indirect Investment Toward Mainland China

by
Lee-in Chen Chiu
and
Chin Chung

No.9201

January 1992

This paper is intended to provide economic information and stimulate further research. Any opinions expressed within are solely those of the authors and not those of the Chung-Hua Institution for Economic Research.

An Assessment of Taiwan's Indirect Investment Toward Mainland China

by
Lee-in Chen Chiu
and
Chin Chung

No.9201 *January 1992*

An Assessment of Taiwan's Indirect Investment Toward Mainland China

by
Lee-in Chen Chiu
and
Chin Chung

Chung-Hua Institution for Economic Research
75, Chang-Hsing St.
Taipei, Taiwan 106
Republic of China
TEL: 886-2-7356006
ext. 410 or 329
FAX: 886-2-7356035

Prepared for the International Workshop on the Emerging Pattern of Foreign Investment in East Asia, held in Honolulu, May 1992. Sponsored by the East-West Center, Honolulu, Hawaii.

An Assessment of Taiwan's Indirect Investment Toward Mainland China

Lee-in Chen Chiu*
Chin Chung**

The PRC began its open door policies in 1979 and designated four Special Economic Zones (SEZs) to attract foreign direct investment from overseas Chinese with particular emphasis on Hong Kong, Southeast Asia, and Taiwan. It soon attracted a great amount of direct investment from Hong Kong and a lesser amount from Southeast Asia. Due to the political hostility between Taiwan and the mainland authorities, the economic interaction between the two sides of the Taiwan Strait was not obvious and did not gain much attention either domestically or internationally for a long time. However, the insignificant economic ties between the two sides changed greatly after 1987 and gave rise to the attention of the international community. Questions frequently asked by scholars and policy-makers are: 1) What are the economic and noneconomic factors behind the recent surge of Taiwan's indirect investment toward the mainland; 2) Did government policies influence the private sector's investment behavior; 3) Is there any particular pattern in Taiwan's indirect investment toward the mainland; 4) How does such dramatic capital flow possibly impact the domestic and

* Associate Research Fellow, Chung-Hua Institution for Economic Research.

** Assistant Research Fellow, Chung-Hua Institution for Economic Research.

host economies? This paper seeks to address these issues in the above mentioned sequence.

I. The Economic and Noneconomic Factors Affecting Taiwan's Indirect Investment Toward the Mainland

Existing literature explaining multinational firms' direct foreign investment (DFI) focus majorly on the large firm-emanated types. Hymer (1960) and Caves (1971) find that the DFI firms normally possess some firm-specific skills or assets which can provide certain advantages in the international division of labor or marketing. Further extended theory from a firm-specific asset point of view was elaborated on by Buchley and Casson (1976). They believe that the asset-possessing firm chooses to engage in overseas operations in order to take advantage of the asset and to internalize it. The internalization theory implies the usage of internal transactions to replace the market. On the other hand, according to Vernon's (1966) product cycle theory, firms decide to engage in DFI when their products face strong price competition in the domestic market which normally occurs when a product life cycle moves from a growth stage into a mature stage. To lower the production cost so as to enhance the price competiveness, DFI toward low wage areas becomes necessary.

Regardless of which viewpoint is correct in explaining the DFI of major multinational firms, the first-wave of DFI in developed countries is normally initiated by larger companies, and then followed by medium and small-sized component suppliers or peripheral firms. Empirical studies on Japanese and European electronics industries have largely confirmed this pattern (Kotabe and Omura, 1989; Okamoto, 1989;

Yonekura, 1989). Nonetheless, the inauguration of Taiwan's indirect investment[1] toward mainland China reveals a completely different pattern. The first-wave was pioneered by small and medium firms and there were some unique economic and political factors fostering these special economic circumstances. The next section explores these causes.

Economic Factors Initiated Before 1987

During the past 40 years of economic development, Taiwan has been paradise for small and medium-sized enterprises (SMEs) for many reasons and the contribution of the SMEs in the export-oriented economy has been invaluable. SMEs have always been the key ingredient of the manufacturing industry. Even today they account for 98% of the total number of firms. SMEs export values comprise more than 70% of the total manufactured exports. The major factors providing SMEs with such an advantaged economic environment were of course the low labor wages and land cost. However, due to some important internal structural changes (including economic and noneconomic factors), these advantages gradually disappeared during the 80s.

The first obvious factor to threaten the continued prosperity of SMEs was the promulgation of the Labor Standards Law (LSL) in 1984. The high standards for minimum wage levels, pension and severance payments, overtime premiums, annual paid-vacations, and year-end bonuses which are comparable to the labor standards of many developed countries (San, 1989) created confusion and anxiety for employers. Obviously, the introduction of the LSL has raised the labor costs for SMEs. In tandem with the LSL, the labor supply could not meet the demands of the manufacturing sector. As well, many enterprises, regardless if labor-intensive or capital-intensive, faced

[1] Taiwan's investment toward the mainland is in fact direct foreign investment (DFI) via Hong Kong or third-party countries. The term "indirect investment" used here is to match the ROC policy of no direct contact with the mainland on any investment or trade deals.

various pressures from the environmental protection movement. As such, labor-intensive industries encountered great difficulties in competing with other low cost LDCs (especially ASEAN) in producing exportable goods. The first wave of outward investment was aimed at Southeast Asia for utilizing firm-specific assets and launched around 1987. The firm-specific assets for Taiwan's enterprises were their flexible OEM manufacturing technology, quality credentials through supply of components and parts, and tight control of marketing channels (Chen and Wang, 1991). Mainland China did not become the investment recipient simply owing to the political hostility at that time.

Another noticeable economic factor is that the accumulation of huge foreign exchange reserves resulted in the rapid appreciation of the NT dollar against the US dollar. The statistics from the Central Bank show that the appreciation level was more than 35% over the period from 1986 to 1987. The rapid NT dollar appreciation plus the relaxation of foreign exchange controls by the government in July 1987 caused a boom in real estate and the stock market and directly raised the operation cost of firms renting plants or factories. On the other hand, the escalation of land prices enabled those enterprises to sell their land at a considerable profit so as to engage in overseas investment or mergers (San, 1991).

Noneconomic Factors enhanced after 1987

All of above mentioned economic factors can only explain the rise of DFI toward ASEANs. The inauguration of investment toward mainland China was somewhat more relevant to the changes of the ROC's mainland China policies. The PRC used many strategies for promoting economic ties with Taiwan since 1980, including sending a mission to Hong Kong for buying US$80 million of Taiwanese goods, and abolishing the tariff on Taiwanese goods (though it soon ended due to many non-Taiwan goods

claiming to be Taiwanese flooding into the mainland market). Continuous announcements and actions for attracting economic and political interests of Taiwanese toward the mainland attracted very limited interactions and were mostly carried out in the form of indirect and unopen trade through Hong Kong before 1985. In July 1985, the ROC government initiated a non-interference principle of indirect exports and this was the first recognition of the necessary and acceptable economic ties with the mainland. The open and persistent economic interaction between the two sides of the Taiwan Strait had prevailed before the ROC government started to soften its hostile political relationship with the PRC in 1987. In that very year, two important mainland China policies were announced by the ROC. One was the nullification of Martial Law. The other was the permission for visits of relatives to the mainland. Taiwan's businessmen were smart to smell the change of political atmosphere between the PRC and ROC governments. Some trial cases of investment toward the mainland emerged at about the same time.

For attracting Taiwan enterprises' interests in investing in the mainland, the PRC State Council promulgated the famous 22 articles of Regulations on Encouraging the Investment of Taiwanese in July 1988. This document did work. Taiwan's investment toward the mainland started to increase. In October 1989, the ROC government promulgated regulations on sanctioning indirect trade, investment, and technical cooperation with the mainland. The increase of contracted investment items and volume with Taiwan's enterprises skyrocketed in 1990. It is quite obvious that the political climate dominates the stream of investment toward the mainland or ASEANs.

Facing the surge of indirect investment toward the mainland, the ROC government is now trying to guide the mainland investment boom rather than to reverse it. In September 1990, the Ministry of Economic Affairs requested a spontaneous registration and reporting of previous investment toward the mainland by April 8, 1991. About the

same time, 3,319 products were authorized for indirect investment (this was later increased to 3,679 items). Generally speaking, most labor-intensive industries that are no longer competitive in Taiwan are now allowed to invest indirectly toward the mainland.

Except for the above mentioned external economic and political factors influencing Taiwan SMEs' investment toward mainland China, there were also some other internal and not commonly perceived factors influencing SMEs' overseas location choices favoring the mainland. This is especially true for footwear SMEs.[2] Table 1 shows a motivation study for a Taiwanese shoemakers who ran both Taiwan and mainland factories. Among 11 selection items, "similar culture and language" and "under the request of foreign clients" are the second and fourth-most important factors. The language and cultural pulling effects are also applicable to explain the highest investment stream towards Malaysia[3] among the four ASEANs as shown in Table 2. As to requests by foreign clients, this is indeed the reflection of Taiwan's SMEs' firm-specific assets for flexible and high quality OEM technology. Their long-term clients do not want to lose a good OEM partner and encourage the transplantation of production sites to low-cost areas for maintaining and even expanding the market.

[2] It is estimated that 80% of Taiwan's shoemakers moved their factories to the mainland within three years. There are now hundreds of Taiwanese shoe factories scattered in Guangdong and Fujian.

[3] It is well known that Overseas Chinese are majorly residing in Southeast Asia, especially in Malaysia. For most Taiwanese and DFI, it is very common to hire overseas Chinese as core staffs in host countries.

Table 1 Motivational Factors Behind Investment Toward The Mainland for Taiwan's Shoe Industry

Motivational Factors	Freq	%
(1) For utilizing low wage labor	92	95.8
(2) Low-priced and easy acquisition land	56	58.3
(3) For expanding local market	25	26
(4) Securing raw-material supply	4	4.2
(5) Favorable investment treatment	30	31.3
(6) Similar culture and language	79	82.3
(7) Taking advantage of third countries' GSP	16	16.7
(8) Dispersing risk of parent company	32	33.3
(9) Re-utilizing the used or spared equipment	31	32.3
(10)Under the request of foreign clients	39	40.6
(11)Others	5	5.2

Total samples: 96
Sources:Yen and Lee(1990), Chapter 5, Table 5-3-5

Table 2 A Comparison of Taiwan's Investment Toward ASEANs and The Mainland

U.S.$ mn.

Year	1986		1987		1988		1989		1990		1991		Total	
Countries	Value	Items	Value	Items	Value	Items	Value	Items	Value	Items	Value	Items	Value	Items
Malaysia	4.07	15	91	37	313	111	815	191	2383	270	741	143	4347.07	767
Thailand	70	21	300	102	842	308	871	214	761	144	124.41	33	2968.41	822
Indonesia	18	0	8	3	913	17	158	50	618	94	902.70	39	2167.70	203
Philippines	0.35	8	0.9	43	109.87	86	148.69	190	140.66	158	6.90	2	407.41	487
SEAN Total	92.42	44	399.94	185	2177.87	522	1992.69	645	3902.66	666	1775.01	217	9890.59	2277
Mainland China	-	-	100	80	520	435	437	552	984	1117	-	-	2041	2184

Sources: 1.Statistics of ASEANs are from Industrial Development and Investment Center, Ministry of Economic Affairs, Oct. 1991.
2.Data of the Mainland were collected from various newspaper and PRC's official reports.

Notes : * The 1991 values for 4 ASEANs are recorded up to different months. The deadline is June for Thailand and Indonesia, July for the Philippines, and August for Malaysia, respectively.

II. The Stream and Pattern of Taiwan's Indirect Investment Toward the Mainland

From the comparison of Taiwan's investment stream toward the ASEANs and the mainland in Table 2, we can find some interesting phenomena: (1)There was a two year time lag for the wave of investment toward the ASEANs and the mainland, between 1988 and 1990. The reason behind this is obviously due to political barriers; (2)The average investment size toward the mainland (0.93 US$ million) is far below the ASEANs (4.54 US$ million); (3)The average investment size toward ASEANs is increasing, starting with 2.1 US$ million in 1986, and then increased to 2.16 in 87, 4.17 in 88, 3.09 in 89, 5.86 in 90, then 8.17 in 91. However, the average investment size toward the mainland has been hovering around 1 US$ million, and fluctuated at 1.25 in 1987, 1.20 in 88, 0.8 in 89, and 0.88 in 90.

The second and third phenomena infer the profitability of the ASEANs. Businessmen are profit-seekers and if the reward from the mainland was high, the investment flow would have been much greater[4]. The second and third phenomena also reflect the fact that the investors in the ASEANs are mostly medium to large-sized firms, and the investors in the mainland are largely medium to small-sized ones. This pattern reflects the fact that large firms are much more law-abiding and loyal to the country than smaller ones. In any case, the SMEs dominated the investment toward the mainland. However, from Table 2 we can also see the decline in investment toward ASEANs in 1991 due to the ROC legalization of mainland investment. This is an interesting issue remaining to be further observed.

[4] As a matter of fact, the realized investment volumes were estimated as only one third, to half, of the contracted volumes.

The location preference is majorly influenced by the Open Door policy of the PRC. The new trend of investment toward Shanghai began after the announcement of Shanghai's new open-door policies of the Pudong Development Plan in April 1990.

When the Ministry of Economic Affairs (MOEA) requested the spontaneous registration of mainland investment by April 1991, it was realized that the most favorite area for Taiwan's SMEs were Guangdong rather than Fujian which had been repeated by the PRC officials as the most favorite place for Taiwanese investment. Although we understand that the registered investment volume is lower than the PRC's record in comparison to amount, but higher in cases[5], the statistics of location distribution and industry classification in Table 3 and Table 4 can still provide a clear profile on the stream and pattern within the vast mainland.

It is noticeable (from Table 3) that most capital flowed into Guangdong and then Fujian. These two provinces accounted for 67.3% of the total investment amount, and 88% of cases. It is believed that investment locations are moving northward.

As to the industry distribution, according to the registration record of the MOEA, 2,503 firms belong to 60 industry associations. The 68 unidentifiable cases are believed to belong to the service sector and are not allowed to invest in the mainland or belong to an industry outside the 3,679 permitted items. Due to their illegal status, they did not report their industry classification. In fact, it is realized that there are still many investors who did not register with the MOEA. It is not surprising that the highest ten items in Table 4 are mostly labor-intensive and simple processing types of industry. The shoemaking industry is the highest in terms of contracted cases. In fact, due to the various economic factors mentioned in the last section, the shoemaking industry made a collective investment toward Guangdong and Fujian since 1988. They created

[5] The lower investment amount is probably due to the lag between contracted and realized value and many firms did not report to the government. The higher investment cases are due to some registered cases were in only business being conducted.

Table 3 The Rank of Registered Investment Amounts by Area

Areas	Invested Value (US$1000s.)	Invest Cases
1.Guangdong Province (*)	121,104	411
2.Shenzehn (*)	111,682	379
3.Xiamen Shi (**)	92,205	275
4.Shanghai Shi	87,032	78
5.Guangzhou Shi (*)	55,996	149
6.Fuzhou Shi (**)	44,903	119
7.Fujian Province (**)	42,415	204
8.Beijing Shi	25,029	30
9.Jiansu Province	24,696	56
10.Sandong Province	18,081	46
11.Dongguan Shi (*)	15,776	188
12.Hainan Province	15,023	49
13.Zhejiang Province	14,851	56
14.Shantou Shi (*)	12,040	39
15.Zhuhai (*)	11,301	42
16.Liaoning Province	10,092	45
17.Tianjin Shi	8,793	13
18.Other Areas	7,846	188
19.Jiangxi Province	7,273	16
20.Hubei Province	5,418	15
21.Hebei Province	3,547	11
22.Guangxi Province	2,983	15
23.Nanjing shi	2,961	20
24.Jilin Province	2,406	5
25.Hunan Province	2,173	13
26.Sichuan Province	2,103	6
27.Chongqing Shi	1,622	7
28.Henan Province	1,479	7
29.Gansu Province	1,254	4
30.Ningxia Province	430	2
31.Guizhou Province	400	4
32.Anhui Province	300	4
33.Heilong Jiang Province	240	1
34.Xian Shi	200	1
35.Harbin Shi	100	2
36.Xinjiang Province	91	2
37.Yunnan Province	50	1

Sources: Investment Commission, Ministry of Economic Affairs, May 1991.
Notes : (*) denotes the areas belonging to Guangdong Province.
(**) denotes the areas belonging to Fujian Province.

Table 4 The Rank of Registered Investment Amounts by Taiwan's Industry Associations Classification

Industry	Invested Values (US$1000s.)	Invested Cases	Industry	Invested Values (US$1000s.)	Invested Cases
1.Electric and Electronic Components	102,748	242	27.Paper Products	6,920	15
			28.Leather	6,680	58
2.Vehicles	78,923	202	29.Paper Making	6,680	11
3.shoemaking	58,751	306	30.Sanitary Products	6,675	36
4.Services	56,472	62	31.Zipper	6,490	10
5.Plastic Products	44,582	129	32.Rubber	6,478	31
6.Textile	31,995	74	33.Trade	6,393	37
7.Metal Products	30,400	85	34.Spectacles	5,593	14
8.Agri. Product and Livestocks	21,378	35	35.Toy	5,126	56
			36.Knitting	4,945	24
9.Athletic Products	20,348	59	37.Glasswork	4,920	10
10.Apparel	17,876	106	38.Froe Fishery	4,557	19
11.Lighting Products	17,566	67	39.Kichen & Toilet Equipment	3,761	22
12.Handbags, Suitcase	16,466	40			
13.Wood Processing	15,688	46	40.Medical Industry	3,007	11
14.Food Processing	13,807	39	41.Furniture	2,891	15
15.Electric Appliance	13,343	37	42.Printing	2,793	21
16.Woolen Textiles	13,012	62	43.Gloves	2,247	15
17.Handicraft	11,062	48	44.Motor Vehicle	2,185	7
18.Clock and Timer	10,989	12	45.Dyeing	2,030	5
19.Umbrellas	10,829	62	46.Fertilizers	1,800	1
20.Vegetable & Fruit Processing	10,609	36	47.Lacquer Painting Liquid	1,655	15
			48.Education Tools	1,518	6
21.Pottery & China Making	10,214	54	49.Fishery Euqipment	1,328	2
22.Bamboo Products	10,210	48	50.Hand Machinery	1,318	6
23.Machinery	9,461	30	51.Gift Products	903	14
24.Medical Equipment	9,251	10	52.Optics	751	4
25.Mineral & Stone Products	8,964	28	53.Pearl & Jewel	410	7
26.Petrochemical	7,158	37	54.Others (*)	1,759	75

Source: same as Table 3
Notes : (*) others includes 68 unidentifiable cases.

several famous Taiwan shoemaking specialization industry districts in Tongkwung, Kwanchou, Fusan, Zhenjen etc. and provided 250 thousand job opportunities in the mainland. Electric and electronic components are the highest investment industry in terms of invested values[6]. Their factories are largely located near Hong Kong in need of convenient material and components supply.

Due to the PRC's open door policy still constraining the foreign enterprises from entering the domestic market, the majority of Taiwan's investors can only produce their products in the so-called "Two ends out" production type which means the materials and parts are purchased from abroad and the products go for sale abroad as well. Furthermore, due to the planned economy, the non-domestic enterprises were very difficult to find a supporting system for (e.g. machinery parts, mould plate, materials or semi-finished parts, and even packaging) locally. Their production suppliers rely heavily on outside sources. This is why most successful investment cases were located near Hong Kong.

It is reported that 70-80% of Taiwan invested factories export 100% of their products and they rely heavily on the supply of materials and parts from Taiwan. Table 5 shows the top 20 commodities indirectly exported from Taiwan to the mainland. One can easily match the 20 fastest rising export commodities with the top 20 invested industries in Table 4. For instance, commodities such as woven, synthetic textile materials, knitted or crocheted fabrics, yarn, synthetic fibers, and polyester fibers are raw materials of the textile and knitting industry invested in the mainland; polyvinyl chloride in primary forms or plates, strip or foil, form plastic products in the petrochemical industries. Television picture tubes, cathode ray tubes, and parts, apparatus and equipment for TV, broadcasting cordless telephone....etc., are for electric appliances. Leather, parts of footwear, machinery for preparing, tanning, or working hides, skins or leather are the upstream semi-products or tools for the shoemaking industry. Parts, fittings, trimmings and accessories are shipped

[6] In fact, it is estimated that a quarter of the 2,503 registered firms perform their mainland production in the form of "contracted processing", and are not really cases of investment.

for the umbrella industry. The aforementioned items are just some examples. One can match many more related items from Table 4 and Table 5.

However, the commodity ranking in Table 5 and the invested industry ranking in Table 4 may not be in the same order. In fact, there are two noticeable industries which started in the mainland with DFI earlier and have accumulated the highest investment flow and have shown a lighter reliance on material supply from Taiwan. They are the electric and electronic components industry which has the highest industry investment in terms of value; and the vehicles industry which is ranked second. The low reliance on component and material supply from Taiwan is indicated by the ranking of electrical components (SITC 77311, wire, cable etc.) in eleventh place in Table 5, and parts for vehicles (SITC 78539) which is in nineteenth place. Are there any reasons which can explain such phenomena? Will such a pattern prevail in all other new industries? It will be interesting to observe the further development of the investment and trade relationships between the two sides of Taiwan Strait.

Table 5 reveals another interesting fact of Taiwan's investment toward the mainland. There were a lot of machines and mechanical appliances (such as the commodities of SITC 72842, 72480, 72848, 77129, 75990) re-exported to the mainland between 1989-91. This contributed to the equipping of the new subsidiaries in the mainland. Many of the investment projects use depreciated or spare machinery and equipment for the transplantation of the production sites. Once the investment stream rises, the indirect export of machinery from Taiwan to the mainland increases. In terms of two surveys conducted on the shoemaking and electronics industries' investment toward the mainland, 40% of the shoemaking investors reused spare or replaced equipment of the parent company[7]. As to the survey on the electronics industry, 67% reutilized their used machinery, though some of them adapted a mixed combination of new and used ones.[8]

[7] See Yen and Lee (1990), Table 5-3-17. Due to the ROC government encouraging upgrading industrial technology and equipment via tax deduction, there are many machineries which are fully depreciated in account, but are actually in very good working condition.

[8] See Chiu etc. (1991), Table 7-14.

Table 5 The Top 20 Commodities of Indirect Exports to The Mainland From Taiwan

unit: US$ 1000

STTC	COMMODITIES	1989		1990		Compared with the same period of last year(%)	1991(1-5)		Compared with the same period of last year(%)
		RANK	VALUE (USD)	RANK	VALUE (USD)		RANK	VALUE (USD)	
65315	Fabric,woven,containing 85% or more by weight of continuous synthetic textile materials	1	289,834	1	385,723	33.08	1	180,640	27.77
65732	Textile fabrics impregnated,coated,covered or laminated with preparations of cellulose derivatives or of other artificial plastic materials	2	175,716	2	239,733	36.43	2	127,228	45.93
65510	Knitted or crocheted fabrics	3	118,299	3	174,581	47.58	4	79,116	44.66
58343	Polyvinyl chloride in the form of plates ,strip or foil	4	89,188	4	127,186	42.60	5	61,671	37.74
58331	Polyvinyl chloride in primary forms	5	82,168	5	89,128	8.47	3	80,230	144.37
77610	Television picture tubes,cathode ray	6	81,128						
61140	Leather of other bovine cattle	7	78,728	8	67,336	2.17	7	36,004	36.18
72842	Machines and machanocal applicances for the rubber and artificial plastic materials industrials	8	77,227	13	46,780	(-)39.42	12	21,808	14.59
76493	Parts,n.e.s.of the appartus and equipment for (TV.broadcasting, cordless telephone...ect.)	9	61,160	9	53,074	(-)13.22	11	23,573	22.65
61230	Parts of footwear of any material except and metal and asbestos	10	60,577	7	71,045	17.28	8	35,962	26.05
77311	Insulated electric wire,cable,bars,and the like	11	51,359	12	48,230	(-) 6.09	14	18,962	(-) 4.67
72480	Machinery for preparing,tanning, or working hides ,skins or leather	12	48,794	16	39,397	(-)19.26	15	17,989	(-) 2.33
65148	Yarn containing 85% or more by weight of discontinuous synthetic fibres	13	43,699	14	45,653	4.47	13	18,962	(-) 1.85
65144	Yarn,textured,of continuous polyester fibres, not put up for retail sale	14	39,372	6	84,075	113.54	6	58,406	145.41
72848	Other machinery and applicances,having individual functions, n.e.s.	15	34,236				19	13,704	35.49
89949	Parts,fittings,trimmings and accessories of the articals falling within heading 89941 or 89942	16	34,189	10	51,270	49.96	9	25,532	27.65
77129	Parts, n.e.s. of the electric power machinery falling within heading 771	17	34,105	18	36,783	7.85			
65341	Fabric,woven,of discontinuous synthetic fibres, containing less than 85% by weight of such fibres mixed mainly or solely with cotton	18	34,039	15	40,223	18.17	16	17,777	(-) 0.85
78539	Parts, n.e.s. of the articles falling within heading 785 of the cycles,scotters,side-cars of headings 7851 and 7852 and of the invalid carriages of 78531(a)	19	29,871	11	48,654	62.88	10	25,162	73.86
58231	Alkyds and other polyesters in primary forms	20	26,527						
76499	Parts,n.e.s.of the accessories for the apparatus falling within headings 763142			17	38,948	72.58	17	13,892	(-) 9.69
89984	Slide fasteners and parts thereof			19	26,974	50.32			
58259	Polyurethanes in other forms			20	26,422	50.37	20	13,074	37.39
75990	Parts, n.e.s. of and accessories for the machines of heading 751.2 or group 752						18	13,720	66.35

Sources:"Re-export by commodity and by country of Origin and Country of Consignment", varions issues Census and Statistic Department, H.K..

III. Impacts on Domestic and Host Economies of Taiwan's DFI in Mainland China

If the above characterization of the current Taiwanese DFI toward mainland China is correct, that is, if these investments are basically "survival" in nature, one may expect to find a concomitant "export shift" from Taiwan to the mainland along with the transfer of production sites. Export levels, as well as the employment and output levels, in the heavily-invested industries will tend to shrink domestically while those for the mainland will expand. On the earnings side, however, since a better part of intermediate inputs has to be acquired from outside mainland China[9] which leaves little room for local spillovers, foreign exchange earnings for the host economy consist mainly in direct wage bills plus some possible rental payments on land and factory units. The lion's share of the export earnings will be kept in the hands of Taiwanese investors and, more often than not, remains outside the mainland economy.

For Taiwan in the past few years, output and employment did shrink for such labor-intensive industries as wearing apparel, leather products, wood products, and textiles. The manufacturing production index for these sectors, using 1986 as the base year, showed a steady decline after 1987 and plummeted to 63.48(Wood, bamboo, rattan) and 92.05(textiles) in 1990(see table 6). Even in the more strategic and dynamic sectors such as electronics and precision instruments there have been signs of stagnation after 1989. Recall also that Taiwan has experienced a severe problem of labor shortage in recent years, particularly in the manufacturing sector. The extent of

[9] According to a recent survey (Ouyang, Lin and Chou, 1991) conducted on 153 Taiwanese DFI firms across 61 different industries, on average 69.94% of the raw materials, semi-products, components and parts required in these firms' mainland operations were shipped in from Taiwan in 1990. The remainder was procured from a variety of sources, including upstream DFI firms originating from Taiwan, and only a minimum amount was furnished locally by mainland producers.

Table 6 The Manufacturing Production Index for Taiwan (1987-1990)

base year : 1986

Item	1987	1988	1989	1990
Total Manufacturing Production	111.19	115.39	119.28	117.28
1.Processed Food	104.57	105.77	103.54	108.57
2.Beverages & Tobacco	105.85	111.69	123.16	138.43
3.Textile Products	104.73	94.03	97.55	92.05
4.Wearing Apparel and Other Clothing Ornamenting Textile Articles	102.66	85.61	83.87	75.75
5.Leather, Fur and Articles Thereof	100.88	95.85	93.46	85.98
6.Wood, Bamboo and Rattan Products	103.48	93.20	86.75	63.48
7.Pulp, Paper Allied Products and Printed Matter	106.29	110.02	120.79	126.37
8.Chemicals	103.65	108.01	110.30	119.61
9.Chemical Products	117.66	127.89	136.45	129.55
10.Rubber and Plastic Products	112.35	118.05	115.30	107.89
11.Non-metallic Products	105.99	110.08	115.77	117.87
12.Basic Metals	107.46	120.34	126.99	129.67
13.Metal Products	111.50	120.01	126.64	122.41
14.Machineries	117.81	134.03	135.35	139.46
15.Electrical Machineries and Apparatus	123.68	136.27	142.60	141.15
16.Transportation Equipment	122.82	125.17	148.23	152.48
17.Precision Instruments and Equipment	114.72	131.71	147.31	144.51
18.Other Manufactured Products	110.88	116.44	111.13	100.29

Source : *Industrial Production Statistics Monthly*, Oct. 1991, Department of Statistics, Ministry of Economic Affairs, ROC

the problem is vividly addressed in Table 7. For the manufacturing sector as a whole, employment drops from 2,624 thousand people in 1987 to 2,260 thousand in 1990, rendering a net loss of 364 thousand jobs (or 14% of the 1987 total manufacturing employment) in three years. Particularly traumatized are the labor-intensive sectors, including textiles, apparel, leather and wood, plastic, non-metallic, and electrical and electronics industries, each suffering from a loss of 10-80 thousand workers during that period. Similarly, the export performance in these sectors has been on the decline. Table 8 shows the changing structure of exports for all manufactured products between 1987 and 1990. Aside from generating much smaller shares than before, some of the above-mentioned sectors (e.g. apparel and leather goods) actually went through an absolute contraction in export volumes during 1989 and 1990.

All of this, however, is not a consequence of surging Taiwanese DFI but rather part and parcel of its contributing factors. Indeed, the causation here runs both ways and one tends to reinforce the other. Moreover, there may be cyclical movements along an apparently structural transformation path such that short-run and long-run adjustments are intricately intertwined. What proportion, then, of the above observed aggregate changes may be attributed to the recent wave of Taiwanese DFI toward mainland China per se?

To answer this question, we conducted an industrial linkage analysis based on the officially registered investment volume of 754 million US dollars and the 1986 input-output table for the Taiwan economy. Our purpose is to gauge the potential impacts on both the domestic and host economies in terms of output and employment changes and the extent of subsequent "export shifts" in an essentially comparative static framework. Compared with the overall 2 billion US dollar investment from Taiwan (as of the end of 1990) released by the Chinese officials[10], our figure seems to be a severe underestimate. It may nonetheless serve as a good approximation for the "realized" capital input in view of another mainland China official report that the average

[10] cf. Table 2 on page 8 of this paper.

Table 7 Changes in Taiwan's Manufacturing Employment

unit:1000 persons

Item	1987	1988	1989	1990
Total Manufacturing Employment	2624.1	2580.7	2452.6	2260.1
1.Processed Food	127.0	119.1	115.4	116.3
2.Beverages & Tobacco	16.0	16.8	18.2	20.2
3.Textile Products	291.9	279.6	254.7	215.5
4.Wearing Apparel and Other Clothing Ornamenting Textile Articles	140.2	129.4	109.9	92.8
5.Leather, Fur and Articles Thereof	69.7	66.5	59.5	49.9
6.Wood, Bamboo and Rattan Products	120.8	114.9	103.7	84.2
7.Pulp, Paper Allied Products and Printed Matter	108.8	112.6	113.4	110.7
8.Chemicals	61.5	62.3	60.1	60.0
9.Chemical Products	66.2	67.6	70.5	71.0
10.Rubber and Plastic Products	334.6	331.0	301.5	253.8
11.Non-metallic Products	102.7	100.1	96.8	91.1
12.Basic Metals	78.4	80.3	80.1	75.1
13.Metal Products	232.6	237.3	237.7	228.3
14.Machineries	105.8	110.9	115.1	117.3
15.Electrical Machineries and Apparatus	446.6	439.4	418.2	397.5
16.Transportation Equipment	127.0	128.2	127.9	125.8
17.Precision Instruments and Equipment	39.7	39.8	38.6	37.4
18.Other Manufactured Products	154.6	144.9	131.3	113.2

Source: Monthly statistics of the Replubic of China, Oct. 1991, Directorate-General of Budget, Accounting and Statistics, Executive Yuan, ROC.

Table 8 Changes in Taiwan's Manufacturing Exports

unit: million US dollars, %

year / item	1987		1988		1989		1990	
	value	share	value	share	value	share	value	share
Total Expert of Manufactures	52,788	100.00	59,553	100.00	64,225	100.00	62,670	100.00
1.Processed Food	2,494	4.72	2,331	3.91	2,374	3.70	2,302	3.67
2.Beverages & Tobacco	19	0.04	22	0.04	22	0.03	20	0.03
3.Textile Products	3,499	6.63	3,859	6.48	4,880	7.60	5,504	8.78
4.Wearing Apparel and Other Clothing Ornamenting Textile Articles	5,489	10.40	5,155	8.66	5,339	8.31	4,481	7.15
5.Leather, Fur and Articles Thereof	1,645	3.12	1,857	3.12	1,829	2.85	1,389	2.22
6.Wood, Bamboo and Rattan Products	2,230	4.22	2,219	3.73	2,208	3.44	1,834	2.93
7.Pulp, Paper Allied Products and Printed Matter	316	0.60	448	0.75	520	0.81	630	1.01
8.Chemicals	974	1.85	1,593	2.67	1,804	2.81	1,976	3.15
9.Chemical Products	785	1.49	857	1.44	958	1.49	1,025	1.64
10.Rubber and Plastic Products	5,138	9.73	5,631	9.46	5,373	8.37	4,778	7.62
11.Non-metallic Products	1,156	2.19	1,249	2.10	1,197	1.86	1,114	1.78
12.Basic Metals	752	1.42	1,314	2.21	1,498	2.33	1,366	2.18
13.Metal Products	3,228	6.12	3,490	5.86	3,966	6.18	4,049	6.46
14.Machineries	2,377	4.50	3,190	5.36	3,851	6.00	4,232	6.75
15.Electrical Machineries and Apparatus	13,496	25.51	16,647	27.95	18,112	28.20	17,889	28.54
16.Transportation Equipment	2,370	4.49	2,521	4.23	3,022	4.71	3,434	5.48
17.Precision Instruments and Equipment	1,054	2.00	1,298	2.18	1,552	2.42	1,528	2.44
18.Other Manufactured Products	5,766	10.92	5,869	9.86	5,721	8.91	5,118	8.17

Source: *Monthly Statistics of Experts and Imports*, Aug. 1991, Department of Statistics, Ministry of Finance, ROC.

realization rate of DFIs from all sources has scored at roughly 45% of the contractual amount for the past decade[11]. More importantly for our purpose, the registration data from Taipei provides us with some information on the cross-industry distribution of investment projects, which is essential for the kind of exercise we're engaged in.

To clarify ideas, the transplantation of production activities immediately leads to an increase in overseas production at the expense of domestic output. The two quantities need not be the same, however, for at least two reasons. First, the productivity of capital may be different at home and abroad. Entrepreneurs carry out foreign investment projects in order to seek greater profits, so it is reasonable to assume a higher return on capital abroad than at home. The fact that DFI firms usually adopt more labor-intensive techniques of production[12] also tends to boost the average productivity of capital abroad. Second, as mentioned above, Taiwan's current DFI operations in the mainland involve very few local linkages and rely primarily on home sources for raw materials and intermediate input supply. Therefore, despite the displacement of "first-round" activities from a linkage analysis point of view, the second and third ... rounds of spillover effects are retained domestically as long as the "home purchase" policy prevails. This tends to mitigate the net effect on domestic output while accelerating export trade from Taiwan to the mainland. Given production technologies, employment changes at home and abroad are a direct result of variations in the respective output levels. And given the size of overseas production, the extent of "export shifts" within the DFI sectors is determined by the average propensity to export of the DFI firms.

Equations (1) to (6) succinctly summarize these theoretical considerations:

[11] *Almanac on China's Foreign Economic Relations and Trade*, 1990, Beijing.

[12] According to a recent survey on the Taiwanese electric and electronics companies who have made direct investments in mainland China (Chiu, et al, 1991), the average scale of the mainland operations in terms of invested capital is 650 thousand US dollars, or roughly one-fourth that for the parent companies (2,460 thousand US dollars). However, the average number of workers employed in the mainland (312 persons) is 1.5 times that of the parent firm (210 persons). This amounts to saying that the average labor-capital ratio in the mainland subsidiaries is 5.6 times that of the parent firms.

(1) $\triangle Y^* = \triangle K_i \ (Y_i^*/K_i)$

(2) $\triangle T = \delta D \triangle Y^*$

(3) $\triangle Y = B\triangle T - B[\ K_i(Y_i/K_i)]$

(4) $\triangle L = \triangle Y(L_i/Y_i)$

(5) $\triangle L^* = \triangle Y^*(L_i^*/Y_i)$

(6) $\triangle X^* = \alpha \triangle Y^*$

where $\triangle Y, \triangle K, \triangle T, \triangle L$ and $\triangle X$ stand for changes in output, capital, investment-induced exports, employment, and third-market bound export of the invested industries, respectively. D is the 29-sector domestic input coefficient matrix, $B = [I-(I- \hat{M})A]^{-1}$ is the 29-sector competitive industrial linkage matrix, Y_i/K_i and L_i/Y_i are the capital productivity and labor requirement ratios, and δ and α are the average propensities to purchase intermediate products from home and to export finished products to the third market, respectively. A "*" is attached when the term refers to a foreign concern.

We obtained the relevant figures on Y_i/K_i and L_i/Y_i for each sector i from the 1986 Industrial and Commercial Census Report for the Taiwan Area. Lacking reliable empirical data, we tentatively assumed, on the basis of our previous considerations, that overseas capital productivity, Y_i^*/K_i, is 1.2 times its domestic counterpart, and that overseas labor requirement per unit of output, L_i^*/Y_i, is 4-6 times that domestically (refer to note 12). As to the values of δ and α, previous experience from DFIs toward Southeast Asian countries indicates that overseas subsidiaries tend to maintain their former customer-supplier relationships during their first years of operations and start to divert to local suppliers only after they have firmly established themselves in the host economy. Since Taiwan's DFIs into mainland China are a relatively new phenomenon, we assumed $\delta = 1$ here for simplicity. Finally, α = .70 seemed to be a natural assumption to make for most of the export-oriented DFI operations in China today because a preferential tax treatment is being associated with this minimum export rule.

Table 9 presents our estimated results. From column 5 of that table we can see that, for Taiwan, the initial loss of GDP due to production transplantation together with its multiplier effects on other sectors of the economy adds up to a total of 4,646 million US dollars annually, which is nevertheless partly offset by the increased overseas demand for raw materials and intermediate products (column 3)[13] together with their backward linkages totalling 2,400 million dollars (column 4). As a result, the net loss for the home economy in terms of static output decline is 2,246 million dollars per annum, as shown in column 6 of table 10. This figure is roughly 1.4% of Taiwan's actual GDP of 164.1 billion US dollars in 1990.

On the other hand, Taiwan's DFI operations directly generated an output value of 2,647 million US dollars in the mainland in 1990, roughly 0.8% of the latter's gross national output of that year. This number is significant enough to account for more than 25% of all foreign contributions to mainland China's annual industrial production in 1990[14]. More importantly, the influx of Taiwanese DFI has generated thousands of new job-openings month by month for the coastal areas of mainland China. It is estimated that, as of the end of 1990, between 282 to 423 thousand mainlanders have received employment in the manufacturing sector due to Taiwanese investment (column 8), while the same flow of DFI has resulted in a net reduction of 53.9 thousand manufacturing jobs in Taiwan (column 7)[15].

The apparent asymmetry of the employment effect for the home and host economies arises from two sources. The first is the asymmetry embedded in the output effect, discussed previously, for the two economies. The other is the tendency of DFI

[13]It may be noted that these investment-induced exports (altogether 1,140 million dollars) account for about 35% of the actual export volume (3,287 million US dollars) from Taiwan to mainland China in 1990.

[14] In 1990, foreign-related industrial production in mainland China amounts for 10.4 billion US dollars, or 3% of the country's annual gross national output. See *Economic Daily News*, July 17, Beijing. Note that this figure does not include DFI's output value in the agricultural or the tertiary sector.

[15] The reduction of manufacturing jobs does not pose a threat to the unemployment situation, however. In fact, the unemployment rate in Taiwan has been at its lowest level around 1.7% ever since the mid 80's. What is really occurring is a gradual yet persistent reshuffling of employment from the manufacturing to the service sector as the economy undergoes a process of structural transformation.

Table 9 Estimated Results of DFI's impacts on the Domestic and Host Economies

Industrial Classification	(1) ΔK_i	(2) ΔY^*	(3) ΔT	(4) $B\Delta T$	5) $[\Delta K_i (Y_i/K_i)]$	(6) ΔY	(7) ΔL	(8) ΔL^* (i)	(8) ΔL^* (ii)	(9) ΔX^*
1.Agr. Products & Livestock	(2,137.8)	—	2,934.3	6,576.3	- 6,877.2	- 300.9	—	—	—	—
2.Forestry	(0.0)	—	330.3	595.9	- 679.4	- 83.5	—	—	—	—
3.Fisheries	(18.5)	—	454.7	723.8	- 767.6	- 43.8	—	—	—	—
4.Minerals	(0.0)	—	530.2	2,305.0	- 2,181.1	123.9	—	—	—	—
5.Processed Food	2,897.3	7,996.6	1,428.0	4,084.8	-12,286.0	- 8,201.2	- 1,454.9	5,674.4	8,511.5	5,597.6
6.Beverages & Tobacco	0.0	0.0	13.4	31.2	- 35.7	- 4.5	- 0.3	0.0	0.0	0.0
7.Fabrics	3,897.0	9,726.9	21,780.8	34,542.3	-37,029.5	- 2,487.2	- 576.1	9,012.6	13,519.0	6,808.8
8.Garments & Accessories	10,505.6	56,226.0	6,634.1	9,880.3	-55,156.0	-45,275.7	-17,340.4	86,137.1	129,205.7	39,358.2
9.Wood & Wooden Product	2,878.9	9,016.7	2,145.5	3,062.1	-10,559.0	- 7,496.9	- 3,438.9	16,544.4	24,816.6	6,311.7
10.Papaer & Prod., Ptg. &Pub	1,640.3	3,759.6	4,658.4	10,214.5	-12,074.6	- 1,860.1	- 466.5	3.771.9	5.657.8	2,631.7
11.Chemical Materials	180.0	423.4	3,980.3	14,752.8	-13,044.1	1,708.7	145.4	144.1	216.2	296.4
12.Art. Fibers, Plastics & Prod	5,146.0	21,798.4	19,536.5	40,172.4	-52,363.5	-12,191.1	- 2,987.3	21,365.7	32,048.6	15,258.9
13.Misc. Chemical Product	484.7	1,425.1	4,497.3	8,759.9	- 8,913.3	- 153.4	- 26.8	995.7	1,493.6	997.6
14.Petroleum Products	715.8	1,365.7	2,561.9	8,179.7	- 9,249.6	- 1,069.9	- 57.8	295.1	422.7	956.0
15.Non-metallic Minerals	2,409.8	3,730.4	1,357.4	2.523.3	- 5,620.6	- 3,097.3	- 826.8	3,983.3	5.975.0	2,611.3
16.Steel & Iron	0.0	0.0	7,741.7	22,001.1	-19,367.0	2,634.1	287.0	0.0	0.0	0.0
17.Misc. Metals & Metallic Prod.	3,171.8	9,134.8	10,567.9	17,281.2	-24,184.1	- 6,902.9	- 1,403.3	7,428.2	11,142.3	6,394.4
18.Machinery	946.1	2,656.7	1,387.5	2,472.3	- 4,349.5	- 1,877.2	- 594.2	3,364.0	5,046.0	1,859.7
19.Household Elec. Appliances	370.0	1,638.3	504.9	686.1	- 1,960.0	- 1,273.9	- 257.1	1,322.8	1,984.2	1,146.8
20.Electronic Products	964.3	4,269.9	2,722.9	391.6	- 6,710.4	- 6,318.8	- 1,275.2	3,446.9	5,170.4	2,988.9
21.Elec. Machinery & Apparatus	10,274.8	45,496.8	9,723.9	12,452.3	-47,480.8	-35,028.5	- 7,052.2	36,639.3	54,958.9	31,847.8
22.Transport Equipments	8,110.8	22,580.5	3,783.9	5,023.4	-24,260.5	-19,237.1	- 3,106.3	14,584.5	21,876.8	15,806.4
23.Miscellaneous Products	12,356.5	52,638.7	4,772.2	5,389.9	-47,390.1	-41,991.2	-13,471.7	67.550.5	101,325.7	36,847.1
24.Cinstruction	0.0	0.0	—	799.6	- 1,813.9	- 1,014.3	—	—	—	—
25.Electricity	0.0	0.0	—	6,418.4	- 9,930.3	- 3,511.9	—	—	—	—
26.Gas & City Water	0.0	0.0	—	216.9	- 436.4	- 219.5	—	—	—	—
27.Trans., Comm. & Warehousing	0.0	0.0	—	3,288.1	- 6,971.3	- 3,683.2	—	—	—	—
28.Wholesale & Retail Trade	639.3	537.1	—	6,320.1	-14,454.8	- 8,134.7	—	—	—	—
29.Miscellaneous Services	5,647.2	10,300.5	—	10,883.1	-28,456.0	-17,572.9	—	—	—	—
Total	75,391.5	264,722.1	114,048.0	240,037.4	-464,602.3	-224,564.9	-53,903.4	282,260.5	423,370.7	177,719.3

Note: In column(8), (i) are estimates based on the assumption that Y^*/L is four times Y/L, and (ii) are estimates based on the assumption Y^*/L is six times Y/L.

firms to revert to more labor-intensive methods of production in an attempt to fully exploit the comparative advantage element in the host economy. For Taiwan's DFI firms, labor-intensive production technologies are a familiar long-time friend from the "good old days" of Taiwan when labor abundance rather than labor shortage was the common fact of life. As they venture into the new territory of mainland China, Taiwanese entrepreneurs are quick to adapt these technologies to the new environment which they find rather similar to the one they experienced in Taiwan 15-20 years ago. This strategy of capitalizing on the crude labor of mainland China based on Taiwanese production proficiency has proved successful enough and promised to bring handsome returns to both the investing and the invested parties. It seems clear in retrospect that, aside from ample OEM experience and a firmly established market outlet, dexterity in the labor-intensive methods of production provides yet another special vantage point in the surging Taiwanese DFIs toward the low-wage countries.

As to the extent of the export shift, column 9 of Table 9 indicates that, as a result of the registered investment flow, the annual volume of exports designated "MIC" will increase (and those designated "MIT" will decrease) by 1.8 billion dollars. This amounts to a 2.8% drop in export performance for Taiwan evaluated at the latter's 1990 actual export level of 62.7 billion US dollars, or a 2.9% gain for the mainland evaluated at its 1990 export level of 62.1 billion dollars. As pointed out earlier, however, this transfer of export earnings is more transparent than real since the bulk of hard currency earnings fall in the hands of the Taiwan investors. Nevertheless, an estimated 294-420 million US dollars[16](approximately 11-16% of the annual overseas production value) still go to the mainland authorities in the form of workers' compensations stipulated by law to be paid in foreign exchange only. This and other miscellaneous expenses currently constitute the bulk of hard currency earnings for mainland China from Taiwanese DFIs.

Aside from the above assessed impacts on output, employment, and export shift to the mainland resulting from Taiwan's circuitous DFI, there are still some economic

[16] The estimation is based on a monthly wage rate of 350-500 RMB per worker and a total employment of 350 thousand workers due to Taiwanese DFIs.

impacts not mentioned due to the data unavailability and/or the incomplete environments or policies in mitigating such effects. There is at least one important effect which normally contributes greatly to the economic development of LDCs via DFI, nonetheless gave very little effect to the mainland: the technology transfer from the Taiwan SMEs' firm-specific assets on flexible OEM technology and credible quality for the mainland.

The reason for prohibiting such effects were majorly owing to the mainland authorities' Open Door policy restricting most Taiwanese investment to the "Two end out" type. As long as the DFI firms rely heavily on home supply of raw materials and intermediate inputs the backward linkage effects as well as the technology transfer of upstream products can not extend in the host economy. On the other hand, the Taiwan firms need the extra shopping cost of procuring supplies and the mainland economy losses the opportunities for learning high quality international OEM technology by the instruction of downstream Taiwan DFI firms who demand local supplies.

The technology transfer from Japanese DFI firms to Taiwan's SMEs played a crucial role during the process of Taiwan's industry development, especially the textile and electronics industries. Recalling the history of Taiwan's economic development, Taiwan's SMEs benefited greatly from control management and OEM skills. In the 1950s and 60s, a great amount of Taiwanese could speak fluent Japanese due to the fifty-one years of Japanese colonial rule. At that time, Taiwan's policies for a free economy system and many SMEs seeking the opportunities to be the parts supplies to the Japanese firms provided SMEs a flexible environment to utilize the same language advantages. Today the DFI between the two sides of the Taiwan Strait reveals similar advantages of language. However the technology transfer effect is not obvious due to the above mentioned inappropriate government interferences. This is really a big loss to the mainland. It is worthwhile for the PRC government to think over their policies for attracting Taiwan's DFI.

IV. Concluding Remarks

Taiwan's trend in DFI was started in the mid 1980s due to various economic pressures. However, the circuitous DFI toward the mainland did not begin until 1987 due to the political barrier. Up to the end of 1991, the stream of DFI toward the mainland was much smaller than toward the ASEANs. The investment toward ASEANs in 1991 slowed down, and it is interesting to study the indirect investment stream toward the mainland.

The geographical distribution of Taiwan's indirect investment shows a high concentration in Guangdong and Fujian provinces. As to the invested industry, electric and electronic components, vehicles, and shoemaking composed the three top items. A comparison between the recent rise in commodities of indirect exports to the mainland from Taiwan with the top ten major invested industries reveals the close relationship of home purchase of raw materials, semi-finished parts and machinery. This paper does not discuss unmeasurable impacts caused by Taiwan's indirect investment toward the mainland due to time and space limitation. The impact analysis here only focuses on the industry linkage effects and is on purpose to show quantitatively how the incomplete Open Door policies may hinder many valuable possible economic benefits. It is time for the PRC government to consider policy changes for attracting Taiwan investment. The adaptability of labor-intensive technologies is indeed the most valuable firm-specific asset of Taiwanese DFI firms. Many SMEs firms did their mainland investment under the request of foreign OEM clients.

Due to the flexibility in labor-intensive technology, Taiwan's DFI firms produce very little output and employment contraction in the Taiwan economy and nonetheless create noticeable output and employment effects in the mainland. However, the PRC's

Open Door policies do not encourage the integration of domestic firms with foreign or Taiwan DFI. The loss from the backward linkage effects by prohibiting the local supply of intermediate inputs to the DFI firms has been vast in terms of output, employment and technology transfer. The language advantages in transferring OEM technologies from Taiwan's DFI firms to local supplies has been suspended. It is indeed a great loss to the mainland rather than Taiwan. For utilizing such existing advantages, it is necessary to open the markets of material and intermediate inputs for Taiwan investors to pave a way for Taiwan investors to select appropriate technologies to train local mainland firms to become high quality OEM parts suppliers.

References

1. Caves, Richard, "International Corporations: The Industrial Economics of Foreign Investments", *Economica*, Vol.38 (1971), pp.1-27.

2. Chen, Tain-Jy and Wen-Thuen Wang, "Globalization of Taiwan's Electronics Industry", conference paper prepared for 1991 Sino-European Conference on Economic Development: Globalization and Regionalization, CIER, Taipei, May 23-24, 1991.

3. Chiu, Lee-in C., Feng-cheng Fu, Chin Chung, and Lyang-chan Chen ect., *A Feasibility Study of Integration Intra-Industry Investment Toward Mainland China-A Case Study of the Electronics Industry* (in Chinese), CIER, 1991.

4. Chung Chin, "Macroeconomic Impacts on the Domestic Economy of Recent Taiwanese DFIs toward Mainland China" (in Chinese), paper presented at the conference on Investment Strategies and Policy-Making in relation to Mainland China, Taipei, Sept. 17-18, 1991.

5. Hymer, Stephen, *The International Operations of National Firms: A Study of Direct Foreign Investment*, Ph.D. dissertation, MIT 1960, Cambridge: MIT Press, 1976.

6. Kamath, Shyam J., "Foreign Direct Invest in a Centrally Planned Developing Economy: The Chinese Case", *Economic Development and Cultural Chang*, 39(1), Oct. 1990, pp. 106-30.

7. Kuo, Wen-jeng, Da-nien Liu, Ker-yi Jing, *The Impacts of Outward Direct Investment on Taiwanese Economic Development--An ASEAN Regional Survey (in Chinese)* CIER, 1991.

8. Kotabe, Masaaki and Glenn Omura, "Sourcing Strategies of European and Japanese Multinationals: A Comparison", *Journal of International Business Studies*, Vol.20, No.1 (1989), pp.113-130.

9. Okamoto, Yasuo, "Takokuseki Kigyo To Nihon Kigyo No Takokusekika", (Multinational Enterprises and the Multinationalization of Japanese Firms),

Keizaigaki Ranso (Economics Essays), Vol.55, No.2 (1989), pp.43-76.

10. Ouyang, C. S., T. J. Lin and W. S. Chou, *Trade-Warning system for Monitoring Taiwan-China Economic Interdependence and Its Applications* (in Chinese), CIER, 1991.

11. San, Gee, "The Economic Development of Taiwan, R.O.C.: Experience and Challenges", occasional paper No.9112, CIER, 1991.

12. San, Gee, "An Evaluation and International Comparison of Labor Laws and Regulations which Affect Labor Cost in Taiwan, R.O.C.", *Proceedings of 1989 Joint Conference on the Industrial Policies of the ROC and the ROK*, CIER, Taipei, February, 1989.

13. Schive, Chi and B. A. Majumdar, "Direct Foreign Investment and Linkage Effects: The Experience of Taiwan", *Canadian Journal of Development Studies*, 11(2), 1990, pp. 325-42.

14. Schive, Chi, "The Foreign Factor: The Multinational Corporation's Contribution to the Economic Modernization of the Republic of China", in *Studies in Economic, Social and Political Change: The Republic of China*, Stanford, Hoover Institution Press, 1990, pp. xiv, 138.

15. Sung, Yun-Wing, "The Economic Integration of Hong Kong, Taiwan and South Korea with Mainland China", paper prepared for the 19th Pacific Trade and Development Conference on Economic Reforms and Internationalization: China and the Pacific Region, Beijing, May 27-30, 1991.

16. Vernon, Raymond, "International Investment and International Trade in the Product Cycle", *Quarterly Journal of Economics*, 80, 1966.

17. Yen, Zong-Tai and Hwei-Ming Lee, "An Industrial Impact Study of the Taiwan's Investment Toward the Mainland", (in Chinese), CIER, 1990.

18. Yonekua, Minora, "Chukan, Chusho Denki Kigyo No Kaigai Shinshutsu", (Overseas Operations of Medium and Medium-Small Electronics Firms), *Sekai Keizai Hyoron*, Vol.32, No.4 (1988).

Occasional Paper Series

1. Jia-Dong Shea & Ya-Hwei Yang, "Finalcial System and the Allocation of Investment Funds," December 1990. ***(No.9001)***
2. Li-Min Hsueh, "The Development of Small and Medium Sized Enterprises in Taiwan," December 1990. ***(No.9002)***
3. Jiann-Chyuan Wang, "The Informal Sector and Public Policy in Taiwan," January 1991. ***(No.9101)***
4. Tzong-Shian Yu, "An Analysis of the Present Taiwan Economy," March 1991. ***(No.9102)***
5. Jiann-Chyuan Wang, "The Changing Role of Taiwan in Pacific-rim Regional Development," March 1991. ***(No.9103)***
6. Tzong-Shian Yu, "A Trade-oriented Economic Development Model--The Case of Taiwan, R.O.C." April 1991. ***(No.9104)***
7. Li-Min Hsueh, "Land Policies Problems in Taiwan," June 1991. ***(No.9105)***
8. Tzong-Shian Yu, "Economic Policy-Making and The Stage of Economic Development -- The Case of Taiwan," June 1991. ***(No.9106)***
9. Tzong-Shian Yu, "Achievements in Taiwan's Economic Development -- A Miracle?" September 1991. ***(No.9107)***
10. Tong-Eng Wang, "Toward Regional Economic Cooperation in Northeast Asia," October 1991. ***(No.9108)***
11. Cherng-Shin Ouyang, "Some Policy Reflections on the Emergence of the Republic of China as a Newly Industrializing Economy," October 1991. ***(No.9109)***

12. Chien-Nan Wang, "The ASEAN Economic Co-operation -- Status and Challenges," November 1991. ***(No.9110)***

13. Jiann-Chyuan Wang, "Should Government Intervene in Civil Research and Development?--The Case of Taiwan," November 1991. ***(No.9111)***

14. San, Gee, "The Economic Development of Taiwan, R. O. C.: Experiences and Challenges," December 1991. ***(No.9112)***

15. Cherng-Shin Ouyang, "China's Rural Economic Reform - An Assessment," December 1991. ***(No.9113)***

16. Lee-in Chen Chiu and Chin Chung, "An Assessment of Taiwan's Indirect Investment Toward Mainland China," January 1992. ***(No.9201)***