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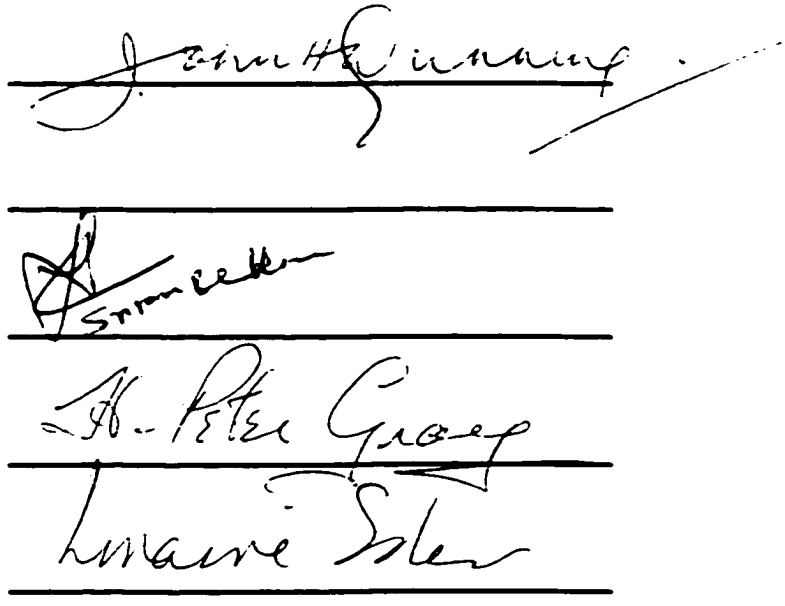
The Comparison of Geographic and Industrial Patterns of Japanese and US Foreign Direct Investment (FDI) from the 1970s to the 1990s: Toward Convergence?

By Zukweon Kim

A thesis submitted to
The Graduate School – Newark
Of
Rutgers, The States University of New Jersey
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy
Written under the direction of

Professor John H. Dunning

of the Faculty of Management
and approved by



Newark, New Jersey
October , 2000

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ABSTRACT OF THE THESIS

The Comparison of Geographic and Industrial Patterns of Japanese and US Foreign Direct Investment (FDI) from the 1970s to the 1990s: Toward Convergence?

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The soaring importance of 'created' competence and capabilities has stimulated the restructuring of FDI patterns in the past decades. In addition, international economic integration accelerates the free movement of created production factors across national boundaries and finally ruins the theory of international trade based on immobile factors. This current international business environment could be major causes of reshaping the geographic and industrial patterns of two giants' (Japan and the United States) FDI in the 1990s compared to those of the 1970s.

The converging patterns of Japanese and US FDI in the world and in Europe in terms of total FDI were not detected in the 1990s. However, the patterns of Japanese and US manufacturing FDI in the 1990s were clearly converging.

Our empirical studies by employing hierarchical linear model (HLM) and generalized least square (GLS) show that all OLI parameters of the eclectic paradigm played a significant role in shaping Japanese and US FDI. The interaction of the OLI factors

determines the level and pattern of foreign value-added activities of firms (Dunning, 2000).

In addition, our study provides strategic and/or policy implications for governments. National policies can encourage the creation of tacit capability through the support of education and training, and encourage local research by having a broader science base with which firms can interact. Especially, a nation's competitive position in technology-intensive industries is less a function of its national factor endowments (L) and more a function of strategic interactions (O) between its firms and government, and between them and the firms and government of other nations (Tyson, 92). As a result, governments should consider all possible factors, which could be represented by O, L, I of domestic and foreign MNEs, to establish more attractive locations for foreign MNEs.

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Zukweon Kim

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CH 1. INTRODUCTION

The importance of traditional factor endowments including unskilled or semi-skilled labor, in the value-added processes has become a less critical factor in foreign direct investment (FDI) decision by multinational enterprises (MNEs). In other words, the soaring importance of 'created' competence and capabilities has stimulated the restructuring of FDI patterns in the past decades. In addition, international economic integration accelerates the free movement of created production factors across national boundaries and finally ruins the theory of international trade based on immobile factors. This current international business environment could be major causes of reshaping the geographic and industrial patterns of two giants' (Japan and the United States) FDI in the 1990s compared to those of the 1970s.

According to the dynamic comparative-advantage theory by Kojima (1975, 1982, 1990), the patterns and determinants of Japanese FDI are different from those of US FDI because Japanese and US FDI are characterized as "trade oriented" and "anti-trade oriented" respectively. Also the major goals of Japanese and US MNEs are "welfare increasing" and "profit maximizing" respectively. Our study will elucidate some of the debates on the differences between Japanese and US FDI, which are argued by Kojima or the Japanese School and the Reading School, in the current FDI literatures by the comparing the FDI records of the two countries with up-to-date data.

Another motivation of our study is to investigate the influence of economic integration on the patterns and determinants of FDI within the integrated area. Regional economic integration is one of the most significant changes in the international business environments during the past two decades. The static and dynamic effects of economic integration modify the world production by providing new opportunities to MNEs.

In this regard, the purpose of our study is to provide answers to the following questions:

1. Are there any changes in the patterns of FDI and FDI determinants by major investing countries over the last several decades?
2. Which FDI theory (Japan or Reading) is more relevant to explain the current patterns if there are any changes?
3. How does the international economic integration impact the allocation of FDI by major investing countries within that integrated area?

Our study will identify the different geographic and industrial patterns of Japanese and US FDI, and then the differences will be compared to the patterns in Europe and the European Union (EU). The period of study and test begins in 1975 and ends in 1996.

Detailed research questions are as follows:

1. What are the overall patterns of Japanese and US FDI in the 1970s and 1990s? What are the determinants of their?
    1) Geographic distributions
    2) Industrial compositions

3) Motivation for FDI

4) Relationship between FDI and trade

2. What are the similarities and differences of the overall patterns of Japanese and US FDI in the 1970s and 1990s? How can they be explained?
3. What are the regional patterns of Japanese and US FDI in Europe in the 1970s and 1990s? What are the determinants of these?
4. What are the similarities and differences of the patterns of Japanese and US FDI in Europe in the 1970s and 1990s? How can they be explained?
5. To what extent have patterns of Japanese and US FDI converged or diverged over the past 20 years? How can they be explained?

The possible indirect impact of European economic integration on the allocation of Japanese and US FDI on the world will be examined by the hierarchical methodology. This study uses the two-level hierarchical linear model (HLM), which assumes that lower-level measures impact higher-level measures. HLM also provides the investigation of both within- and between-group effects on FDI in a host-country level. This hierarchical approach increases the reliability and the statistical results of Japanese and US FDI allocation all over the world. Also, due to the reliable statistical results provided by HLM, the impacts of European economic integration on the two giants' FDI patterns could be more clearly analyzed. Consequently, our study will provide more strategic implications not only for European countries, but also for other countries that were once major hosts for Japanese and US FDI, but have since lost their attractiveness.

Finally, our study tries to combine theories of international production and theories of international economic integration to explain the patterns of Japanese and US FDI in Europe.

Subsequent to this introduction in Chapter 1, Chapter 2 describes the geographic and industrial patterns of Japanese and US FDI in the world, and those in Europe from 1975 to 1996. Chapter 3 is the FDI theory chapter. In this chapter we list and critique all possible FDI theories based on OLI factors in the Eclectic paradigm. In particular, we pay more attention on Kojima's theory because one of our challenges is to test his theory. In Chapter 4, we explain not only the theory of economic integration, but also the complexity to combine the theory of FDI and that of economic integration. Chapter 5 reviews previous literatures and establishes a set of testable hypotheses on geographic and industrial patterns, and determinants of Japanese and US FDI in the world and in Europe. In Chapter 6, we explain our data, variables and statistical models to test hypotheses proposed in the preceding chapter. Chapter 7, 8, and 9 conduct empirical tests of the hypotheses on the FDI patterns. We conclude our study in Chapter 10 and make several implications for future research.

CH 2. HISTORICAL DESCRIPTIONS OF JAPANESE AND US FDI PATTERNS

2-1 INTRODUCTION

This chapter will describe the overall geographic patterns of Japanese and US FDI. The data will identify FDI in developed and developing countries separately and will also identify FDI in 6 regions: North America, Europe, Asia, Latin America, Africa, and the Middle East. In this study Mexico is included in Latin America. Although Mexico became a member of NAFTA in 1994, many changes were not apparent in Japanese and US FDI flows into Mexico from 1993 to 1996. Even though Mexico's share of Japanese FDI flow rose from 0.1 percent in 1993 to 1.5 percent in 1994, the share went down to 0.4 percent in 1995 and 0.2 percent in 1996.

In addition, overall industrial patterns of Japanese and US FDI will be described by six manufacturing sectors based on the International Standard Industrial Classification (ISIC) used by OECD. Because the availability or reliability of data is the most challenging or critical issue in our study, all FDI data used here are based on the home countries' statistics. Most of them will cover the years 1975 to 1996.

In the early years, Japanese FDI focused predominantly on local countries within its sphere of influence and was characterized as "natural resource seeking" or "efficiency seeking" in part. Most of US FDI was concentrated in Europe, which was characterized as "market seeking." Shorter psychic distance and different economic conditions account for its FDI pattern. However, Japanese FDI has changed its pattern to place more

emphasis on European and US markets as a market seeker. US FDI has placed more emphasis on Asian markets as an efficiency seeker. As a result, the geographic patterns of both countries' FDI flows have been reversed.

In any comparison of the patterns of Japanese and US FDI, there are three basic and intrinsic differences. The first is that the most important characteristic between Japanese and US FDI activities stems from their dissimilar economic conditions, different rates of economic growth, and unlike policies. An especially important fact is that, after its defeat in the Second World War, Japan resumed investing abroad from a zero base around 1950. This starting point is very different from that of the United States and the United Kingdom, which had larger amounts of accumulated tangible overseas assets and intangible managerial skills (Ryutaro, 1990). For example, since the late 1800s the United States has had a long history of FDI, for instance, in railroad investments in Canada, Panama and Mexico. In Canada some manufacturing investments especially in metal and drug industries existed (Davis & Cull, 1994). The second difference is related to FDI outflow data. It is clear that the United States is the biggest host country for FDI in the world. Although the huge amounts of investments by MNEs from both countries: the United States and Japan have flowed into the Unites States, Japanese FDI data include the investments and US FDI data does not because the US market disqualifies as FDI in US FDI data. As a result, it might be useful to eliminate the United States or Japan from host countries in each data set. However, because the heavy concentration of Japanese FDI on the US market since the middle of 1980s is one of the most important trends of Japanese FDI, our study includes the both countries as host countries. Third,

the data for Japanese FDI outflows are based on the records of the investments approved by or notified to the Ministry of Finance in Japan; however, the data for US FDI outflows represent the positions (net values) of FDI in different regions and industries. As a result, we treat the annual changes in the positions of US FDI abroad as FDI outflows, which make negative numbers.

PART I. JAPANESE AND US FDI IN THE WORLD

2-2 GEOGRAPHIC PATTERNS

Table 2-1 shows that the historic concentration of Japanese FDI flows to developing countries has changed since 1979. Annual FDI flows from Japan to developed countries started to exceed those to developing countries by US$ 34 million in 1979, and exceeded those of overall stocks by US$ 756 million in 1985.

In Table 2-3, the share of developed countries in Japanese annual FDI flows further increased during the 1980s and the 1990s in which the average FDI flows were 69 percent of the total Japanese FDI flows and 70 percent respectively. In terms of the total stocks of Japanese FDI, developing countries had 55 percent of the total stocks and developed countries had only 45 percent in 1979. But the portions were reversed in 1989. The total share of Japanese FDI stocks in developing countries decreased by 38 percent to 34 percent in 1989 and decreased by another 6 percent to 31 percent in 1996. On the contrary, the share of developed countries in Japanese FDI stocks maintained increasing trends in the 1980s and the 1990s. The share of developed countries was only

45 percent, which was 80 percent of the share of developing countries in 1979. However, the share of developed countries increased by 39 percent to 66 percent in 1989 and by 3 percent to 69 percent (US$ 387,608 million) of the total stocks in 1996.

In US$ millions

YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Developed Countries	1120	1926	2515	2621	3744	4202	3882	5638	7950	14902	23346	34113	53328	45652	31472	24039	24636	24819	35837	33254
Developing Countries	1686	2673	2481	2072	5188	3500	4264	4517	4268	7417	10018	12910	14213	11260	10111	10099	10550	15192	17379	17777

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE 2-1: Geographic Pattern of Japanese FDI Flows from 1977 to 1996

In US$ millions

YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Developed Countries	6899	12424	18196	18416	8313	-11016	1355	1725	15289	21530	38410	19959	21915	37622	34418	8006	55153	36467	69734	50573
Developing Countries	4641	6599	758	8292	4579	-7591	-1905	4067	4383	5603	9773	7951	12283	13781	5043	17709	22460	20294	26776	28367

SOURCE: The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-2: Geographic Pattern of US FDI Flows from 1977 to 1996

In US$ millions and percent

		1977-1979	1979		1980-1989	1989		1990-1996	1996	
		Ave. Flows	Stocks	%	Ave. Flows	Stocks	%	Ave. Flows	Stocks	%
Japanese	Developed Countries	1854	14173	45	15373	167899	66	31387	387608	69
FDI	Developing Countries	2280	17631	55	6837	85997	34	13195	176320	31
United States	Developed Countries	12506	138668	76	13590	274564	75	41710	566537	72
FDI	Developing Countries	3999	48092	24	4744	95527	25	19204	229957	28

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan
The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-3: Geographic Patterns of Japanese and US FDI from 1977 to 1996

Table 2-2 and 2-3 demonstrate that the geographic patterns of US FDI did not change as much or as drastically as that of Japan except for some increased emphasis on developing countries. The average share of US FDI flows into developing countries between 1977 and 1979 was US$ 5,158 million, which was about 41 percent of those into developing countries. However, in 1979 the share of the total US FDI in developing countries was only 24 percent, which was about 36 percent of that of developed countries. This fact shows that the historic concentration of US FDI on developed countries. This propensity of heavy concentration on developed countries by US FDI changed slightly during the 1980s and the 1990s. The US FDI stocks in developed and developing countries were 75 and 25 percent of the total respectively in 1989, and were 72 and 28 percent respectively in 1996. However, the differences of the average flows into the two regions between the 1980s and 1990-1996 were remarkable. Developed countries had 74 percent of the US FDI flows in the 1980s, but the share declined to 69 percent between 1990 and 1996. On

the contrary, developing countries had 26 percent of the US FDI flows in the 1980s, and the share increased to 32 percent between 1990 and 1996.

The geographic patterns of Japanese and US FDI flows within 6 host regions are detailed in Table 2-4 and 2-5. Between 1977 and 1996, the concentration in flows and stocks of US FDI in developing countries was 20-30 percent. Comparatively, Japanese FDI had been more heavily concentrated in the developing countries. Table 2-4 presents that about 61 percent of the total Japanese FDI flows in 1979 were invested in Asia, Latin America, the Middle East, and Africa. During the study period, Japanese FDI into the Middle East and Africa did not change considerably except for a slightly downward trend. Japanese FDI flows into Latin America peaked in 1979 to around 24 percent of the total Japanese FDI flows, decreased to 6 percent in 1990, and increased to 9 percent in 1996. This indicates that the relative attractiveness of the Middle East, Africa, and Latin America as destinations for Japanese FDI flows had been declining. Japanese FDI flows into North America and Europe increased during the 1980s, and then experienced a small decrease in the 1990s. The share of the North American markets in Japanese FDI flows peaked in 1989 in which it occupied 50 percent, whereas the share of European markets was 25 percent in 1990. Asian markets, which were the most important destinations for Japanese FDI in the 1970s, lost their attractiveness during the 1980s. Japanese FDI flows into Asian markets were 42 percent of the total Japanese FDI flows in 1981, decreased to only 15 percent in 1988, and then increased up to 26 percent in 1996. These data figures demonstrate that during the 1980s Japanese FDI flows moved from Asian markets to the North American and European markets.

In US$ millions and percent

YEAR	N.A.	%	L.A	%	ASIA	%	M.E	%	EUROPE	%	AFRICA	%	TOTAL
1977	735	26	456	16	1030	37	225	8	220	8	140	5	**2806**
1978	1364	30	616	13	1579	34	492	11	323	7	225	5	**4598**
1979	1438	29	1207	24	1558	31	130	3	495	10	168	3	**4995**
1980	1596	34	588	13	1634	35	158	3	578	12	139	3	**4693**
1981	2522	28	1181	13	3761	42	96	1	799	9	573	6	**8931**
1982	2905	38	1503	20	1805	23	124	2	876	11	489	6	**7703**
1983	2701	33	1878	23	2038	25	175	2	990	12	364	4	**8145**
1984	3544	35	2290	23	1785	18	273	3	1937	19	326	3	**10155**
1985	5495	45	2616	21	1960	16	45	0	1930	16	172	1	**12217**
1986	10441	47	4737	21	3319	15	44	0	3469	16	309	1	**22320**
1987	15357	46	4816	14	6281	19	62	0	6576	20	272	1	**33364**
1988	22328	47	6428	14	8238	18	259	1	9116	19	654	1	**47022**
1989	33902	50	5238	8	12856	19	66	0	14808	22	671	1	**67540**
1990	27192	48	3628	6	11220	20	27	0	14294	25	551	1	**56911**
1991	18823	45	3337	8	9214	22	90	0	9371	23	748	2	**41584**
1992	14572	43	2726	8	8831	26	709	2	7061	21	239	1	**34138**
1993	15287	42	3370	9	8672	24	217	1	7940	22	539	1	**36025**
1994	17823	43	5231	13	11131	27	290	1	6230	15	346	1	**41051**
1995	22761	45	3877	8	15059	30	148	0	8470	17	379	1	**50694**
1996	23792	48	4594	9	12930	26	246	0	7619	15	445	1	**49628**

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE 2- 4: Geographic Pattern of Japanese FDI Flows with 6 Regions from 1977 to 1996

Table 2-5 shows that US FDI was heavily concentrated in the developed countries during most of the study period. About 86 percent of the total US FDI in 1979 was invested into Canadian and European markets. European markets alone occupied around 69 percent of the total US FDI flows in 1979. During the study period, US FDI flows into the Middle East and Africa did not change except for an insignificant downward trend. US FDI into Latin America and Canada decreased during the1990s. There was 17 percent of the total

US FDI flows into Canada in 1979, but they declined to 8 percent in 1996. US FDI flows into Latin America were 36 percent of the total US FDI flows in 1977, but decreased to 20 percent in 1996.

In US$ millions and percent

USA	N.A.	%	EUROPE	%	ASIA	%	AFRICA	%	L.A	%	M.E	%	Un	TOTAL
1977	1471	13	4685	41	962	8	107	1	4203	36	127	1	-15	11540
1978	1673	9	8962	47	2102	11	569	3	4923	26	889	5	-95	19023
1979	3172	17	13069	69	2700	14	-209	-1	2394	13	1195	6	-3367	18954
1980	4397	16	13064	49	1497	6	1117	4	3219	12	3280	12	134	26708
1981	489	4	5828	45	4400	34	796	6	589	5	-289	-2	1079	12892
1982	-1618	9	-9065	49	1048	-6	-361	2	-10703	58	1558	-8	534	-18607
1983	828	-151	-271	49	1989	-362	-376	68	-4028	732	901	-164	407	-550
1984	2491	43	-161	-3	1952	34	152	3	1096	19	581	10	-319	5792
1985	-395	-2	14745	75	859	4	78	0	4250	22	95	0	40	19672
1986	4194	15	13962	51	3660	13	-824	-3	7372	27	-236	-1	-995	27133
1987	7748	16	25519	53	6498	13	496	1	8054	17	-302	-1	170	48183
1988	4279	15	10834	39	6953	25	-541	-2	8601	31	-783	-3	-1433	27910
1989	2892	8	18136	53	3978	12	-635	-2	9221	27	360	1	246	34198
1990	2883	6	28991	56	9210	18	-167	0	9740	19	589	1	157	51403
1991	422	1	29041	74	7666	19	-227	-1	3747	9	68	0	-1256	39461
1992	-421	-2	6144	24	7116	28	-924	-4	12646	49	991	4	163	25715
1993	1490	2	46346	60	14508	19	1951	3	11622	15	757	1	939	77613
1994	5065	9	24296	43	15404	27	61	0	11744	21	223	0	-32	56761
1995	10454	11	50963	53	17759	18	853	1	16026	17	875	1	-420	96510
1996	6146	8	38638	49	14568	18	1185	2	15957	20	1074	1	1372	78940

SOURCE: The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-5: Geographic Pattern of US FDI Flows with 6 Regions from 1977 to 1996

On the contrary, Asian markets have been receiving more US FDI flows than any other markets. In 1977 only 8 percent of the total US FDI were coming to Asian markets. However, Asian markets became the biggest market for US FDI flows in 1993 with 51 percent of the total US FDI flows. The level of attractiveness for US FDI flows was similar to that of European markets in 1994.

2-3 INDUSTRIAL PATTERNS

With the two breakdowns by manufacturing and non-manufacturing sectors in Table 2-6 and 2-8, total Japanese FDI consists of 30 percent in manufacturing and 70 percent in non-manufacturing in 1996 stocks. The shares of manufacturing and non-manufacturing in the total Japanese FDI stocks were 34 percent and 66 percent respectively in 1979. They were changed into 26 percent and 74 percent in 1989 with an average of 25 percent and 75 percent in flows during the 1980s. However, the emphasis on non-manufacturing sectors declined to 67 percent of the total Japanese FDI flows between 1990 and 1996. In manufacturing sectors, metal & mechanical products were the first 26 percent and office machinery & computers were the second 12 percent of Japanese manufacturing FDI stocks in 1979. However, these portions were changed into 20 percent and 23 percent in 1996. The office machinery & computers sector had an average of 27 percent of the total manufacturing FDI by Japan between 1990 and 1996, and then becoming the most important sector for Japanese manufacturing FDI in 1996. Table 2-7 and 2-8 show that total US FDI consisted of 34 percent in manufacturing and 66 percent in non-manufacturing in 1996 stocks. The portions of manufacturing and non-manufacturing in the total US FDI stocks were 48 percent and 52 percent in 1979, but were changed into 40 percent and 60 percent in 1989, with an average of 39 percent and 61 percent in flows during the 1980s. The emphasis on non-manufacturing sectors was further increased to 71 percent of the total US FDI flows between 1990 and 1996.

In manufacturing sectors, metal & mechanical products were first at 27 percent and vehicles & other transport equipment were second at 12 percent of US manufacturing

FDI stocks in 1979. However, in 1996 these portions were changed into 18 percent for metal & mechanical products and 11 percent for vehicles & other transport equipment. In 1996, food products, which were the second highest sector, had 15 percent of the total manufacturing FDI stocks by the United States, and office machinery & computers had 11 percent.

In US$ millions

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
TOTAL FDI OUTFLOWS	3280	3462	2806	4598	4995	4693	8931	7703	8145	10155	12217	22320	33364	47022	67540	56911	41584	34138	36025	41051	50694	49628
Manufacturing	924	1026	1074	2038	1693	1705	2280	2075	2588	2506	2351	3805	7832	13805	16283	15486	12312	10057	11132	13784	18622	21529
Food products	58	25	48	67	103	54	142	78	77	118	90	127	328	419	1300	821	632	517	825	1247	872	775
Metal & mechanical products	245	224	160	617	638	595	728	632	648	903	737	954	1473	2799	3353	2501	2191	1928	1905	2587	3557	4127
Office machinery, computers, radio TV, communication equipment	96	164	161	243	180	309	475	267	502	409	513	987	2421	3041	4480	5684	2296	1817	2655	2555	5581	6922
Vehicles & other transport equipment	100	93	86	114	150	176	381	436	486	437	627	828	1473	1281	2053	1872	1996	1188	931	1996	2085	4116
Other Manufacturing	425	520	619	997	622	571	554	662	875	639	384	909	2137	6265	5097	4608	5197	4607	4816	5399	6527	5589
Non-manufacturing	2356	2436	1732	2560	3302	2988	6651	5628	5557	7649	9866	18515	25532	33217	51257	41425	29272	24081	24893	27267	32072	28099
Trade & repairs	668	404	344	823	834	797	1174	1899	1164	1482	1550	1861	2269	3204	5148	6158	5247	3705	5029	4280	5537	5082
Financial activities	310	219	176	154	198	380	843	533	1167	2085	3805	7240	10673	13104	15395	8047	4972	4579	6157	6422	5669	8264
Services	113	124	109	95	244	251	623	702	622	681	665	1560	2780	3732	10616	11292	5413	6530	3481	6711	11129	4300
Other Non-manufacturing	1265	1689	1103	1488	2026	1560	4011	2494	2604	3401	3846	7854	9810	13177	20098	15928	13640	9267	10226	9854	9737	10453

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE2- 6: Industrial Composition of Japanese FDI Flows from 1975 to 1996

In US$ millions and percent

US	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
TOTAL FDI OUTFLOWS	14039	13031	11540	19023	18954	26708	12892	-18607	-550	5792	19672	27133	48183	27910	34198	51403	39461	25715	77613	56761	96510	78940
Manufacturing	**4714**	**5176**	**4542**	**8476**	**4560**	**10423**	**3323**	**-8934**	**-645**	**2346**	**10333**	**9515**	**21973**	**11651**	**10512**	**18983**	**12243**	**6813**	**4968**	**25172**	**32837**	**22311**
Food products	360	363	449	818	992	889	928	-1534	31	502	1134	2069	1629	286	183	12497	-8964	1414	7447	3073	3508	3740
Metal & mechanical products	1854	1554	1590	2889	-5402	2398	1042	-4025	-35	265	4666	3433	5681	1278	-457	4433	2894	-2178	-2419	2947	5937	2875
Office machinery, computers, radio		0	0	0	0	490	434	-174	36	900	618	-1797	2323	1275	1091	1903	2820	540	-159	3572	4828	4277
TV, communication equipment																						
Vehicles & other transport	663	1320	457	364	-130	1916	-584	-791	-456	189	1086	2198	2775	2388	3811	1053	-158	1725	-2622	6202	4813	-429
equipment																						
Other Manufacturing	1837	1939	2046	4405	9100	4730	1503	-2410	-121	490	2829	3612	9565	6424	5884	-903	15651	5312	2721	9378	13751	11848
Non-manufacturing	**9325**	**7855**	**6998**	**10547**	**14394**	**16285**	**9569**	**-9673**	**-5**	**3446**	**9339**	**17618**	**26210**	**16259**	**23686**	**32420**	**27218**	**18902**	**72645**	**31589**	**63673**	**56629**
Trade & repairs	1174	1186	1066	2583	5337	3075	2580	-7544	490	512	2032	2392	5165	2675	3176	4181	6491	3238	6394	9738	-50	5240
Financial activities	1958	1839	3580	4069	-17540	2882	678	-6748	-873	1612	7568	14282	16269	15302	22225	15566	18843	13885	48744	14024	41085	32850
Services		0	0	0	0	0	0	0	55	-45	635	-132	1280	1461	847	2123	4518	432	3700	2863	10417	3904
Other Non-manufacturing	**6193**	**4830**	**2352**	**3895**	**26597**	**10328**	**6311**	**4619**	**323**	**1367**	**-896**	**1076**	**3496**	**-3179**	**-2662**	**10550**	**-2634**	**1347**	**13807**	**4964**	**12221**	**14636**

SOURCE: The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-7: Industrial Composition of US FDI Flows from 1975 to 1996

In US$ millions and percent

	1975- 1979 Aver. Flows				1979 Stocks				1980- 1989 Aver. Flows				1989 Stocks				1990- 1996 Aver. Flows				1996 Stocks			
	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%
TOTAL FDI OUTFLOWS	**3828**		**16317**		**31804**		**186760**		**22209**		**18333**		**253896**		**381781**		**44290**		**60915**		**563928**		**777203**	
Manufacturing	**1351**	**35**	**5494**	**36**	**10896**	**34**	**78640**	**42**	**5523**	**25**	**7060**	**39**	**66126**	**26**	**147944**	**39**	**14703**	**33**	**17618**	**29**	**169048**	**30**	**272244**	**35**
Food products	60	2	596	4	532	2	9164	5	273	1	612	3	3265	1	13464	4	813	2	3245	5	8954	2	36179	5
Metal & mechanical products	377	10	497	3	2918	9	19888	11	1282	6	1425	8	15740	6	34134	9	2685	6	2070	3	34536	6	48623	6
Office machinery, computers, radio	169	4			1272	4	6542	4	1340	6	520	3	14676	6	11738	3	3930	9	2540	4	42186	7	29519	4
TV, communication equipment																								
Vehicles & other transport equipment	109	3	535	3	831	3	10427	6	818	4	1253	7	9009	4	22959	6	2026	5	1512	2	23193	4	33543	4
Other Manufacturing	637	17	3865	25	5343	17	32619	17	1809	8	3251	18	23436	9	65649	17	5249	12	8251	14	60179	11	124380	16
Non-manufacturing	**2477**	**65**	**9824**	**64**	**20908**	**66**	**108120**	**58**	**16686**	**75**	**11273**	**61**	**187770**	**74**	**233837**	**61**	**29587**	**67**	**43297**	**71**	**394880**	**70**	**504959**	**65**
Trade & repairs	615	16	2269	15	4611	14	22677	12	2055	9	1455	8	25159	10	37230	10	5005	11	5033	8	60197	11	72462	9
Financial activities	211	6	-1219	-8	2046	6	31523	17	5523	25	7320	40	57271	23	104720	27	6301	14	26428	43	101381	18	289717	37
Services	137	4	NA		1142	4	NA		2223	10	410	2	23375	9	8716	2	6979	16	3994	7	72231	13	36673	5
Other Industries	1514	40	NA		13109	41	NA		6886	31	2088	11	81965	32	83171	22	11301	26	7841	13	161071	29	106107	14

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE 2-8: Comparison of Industrial Composition of Japanese and US FDI from 1975 to 1996

Part II. JAPANESE AND US FDI IN EUROPE

2-4. GEOGRAPHIC PATTERNS

Table 2-9 and 2-10 show that Japanese FDI stocks in Europe occupied 27 percent of the total Japanese FDI stocks to developed countries in 1996. In 1979, Japanese FDI to Europe was 12 percent of the total Japanese FDI stocks and increased by 50 percent to US$ 44,972 million in 1989. At the same time, Japanese FDI stocks to other developed countries increased by the same 50 percent. These stocks went from 32 percent of the total Japanese FDI stocks, in 1979, to 48 percent, in 1989. The stocks to developing countries decreased from 55 percent of the total Japanese FDI stocks to 34 percent, in 1989. However, in the 1990s, Japan put more emphasis on Europe. The average Japanese FDI flows into Europe between 1990 and1996 was 20 percent of the Japanese FDI flows, which was 18 percent, in the 1980s. Also, the stocks to Europe increased by 6 percent to US$ 106,268 million, which was 19 percent of the total Japanese FDI stocks in 1996. During the same period, Japanese FDI stocks to other developed countries increased by only 4 percent and those to developing countries decreased by 6 percent. The data show that the emphasis of Japanese FDI moved from developing countries to developed countries, especially to Europe.

Table 2-11 and 2-14 show that in 1996, the most attractive destination for Japanese FDI to Europe was the United Kingdom, which had 39 percent of the total Japanese FDI stocks and 49 percent of the total flows. Although the United Kingdom was the most important destination for Japanese FDI to Europe in terms of stocks, the levels of concentration fluctuated.

In US$ millions and percent

		1977-1979		1979		1980-1989		1989		1990-1996		1996	
		Ave. Flows	%	Stocks	%	Ave. Flows	%	Stocks	%	Ave. Flows	%	Stocks	%
Japanese FDI	Europe	346	8	3893	12	4108	18	44972	18	8757	20	106268	19
	Other Developed Countries	1508	36	10280	32	11262	51	122927	48	22638	51	281397	50
	Developing Countries	2280	55	17630	55	6837	31	85996	34	13196	30	178371	32
US FDI	Europe	8905	50	82622	45	9259	50	175216	48	32060	53	399632	50
	Other Developed Countries	3601	20	56046	31	4331	24	99347	27	9651	16	166905	21
	Developing Countries	5158	29	44525	24	4757	26	92098	25	19072	31	225604	28

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan. The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-9: Comparison of Japanese and US FDI Flows and Stocks into Europe, Other Developed, and Developing Countries from 1977 to 1996

In US$ millions and percent

YEAR	Europe	% of Europe in Developed Countries	% of Europe in Total	Other Developed Countries	% in Total	Developing Countries	% in Total
1977	220	20	8	900	32	1686	60
1978	323	17	7	1603	35	2673	58
1979	495	20	10	2020	40	2481	50
1980	578	22	12	2043	44	2072	44
1981	798	21	9	2946	33	5188	58
1982	876	21	11	3326	43	3500	45
1983	990	26	12	2892	36	4264	52
1984	1937	34	19	3701	36	4517	44
1985	1930	24	16	6020	49	4268	35
1986	3469	23	16	11433	51	7417	33
1987	6576	28	20	16770	50	10018	30
1988	9116	27	19	24997	53	12910	27
1989	14808	28	22	38520	57	14213	21
1990	14294	31	25	31358	55	11260	20
1991	9371	30	23	22101	53	10111	24
1992	7061	29	21	16978	50	10099	30
1993	7800	32	22	16836	47	10550	29
1994	6098	25	15	18721	46	15192	37
1995	8837	25	17	27000	53	17379	34
1996	7835	24	16	25419	51	17777	36

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE 2-10: Japanese FDI Flows into Europe, Other Developed, and Developing Countries from 1977 to 1996

In US$ millions and percent

	B & L	%	France	%	Germany	%	Italy	%	Netherlands	%	Ireland	%	Spain	%	Switzerland	%	UK	%	Europe
1979	47	9	41	8	94	19	NA	NA	38	8	14	3	73	15	31	6	67	14	**495**
1980	67	12	83	14	110	19	NA	NA	41	7	14	2	22	4	28	5	186	32	**578**
1981	107	13	54	7	116	15	28	4	138	17	21	3	39	5	67	8	110	14	**798**
1982	64	7	102	12	194	22	19	2	73	8	6	1	19	2	79	9	176	20	**876**
1983	126	13	93	9	117	12	13	1	113	11	3	0	52	5	37	4	153	15	**990**
1984	71	4	117	6	245	13	22	1	452	23	140	7	229	12	71	4	318	16	**1937**
1985	84	4	67	3	172	9	32	2	613	32	91	5	60	3	84	4	375	19	**1930**
1986	50	1	152	4	210	6	23	1	651	19	72	2	86	2	91	3	984	28	**3469**
1987	70	1	330	5	403	6	59	1	829	13	58	1	283	4	224	3	2473	38	**6576**
1988	164	2	463	5	409	4	108	1	2359	26	42	0	161	2	454	5	3956	43	**9116**
1989	326	2	1136	8	1083	7	314	2	4547	31	133	1	501	3	397	3	5239	35	**14808**
1990	367	3	1257	9	1242	9	217	2	2744	19	49	0	320	2	666	5	6906	48	**14294**
1991	222	2	817	9	1115	12	322	3	1960	21	102	1	378	4	62	1	3588	38	**9371**
1992	281	4	456	6	769	11	216	3	1446	20	113	2	332	5	144	2	2948	42	**7061**
1993	151	2	636	8	884	11	220	3	2488	32	531	7	249	3	506	6	2946	38	**7800**
1994	913	15	438	7	761	12	183	3	1098	18	353	6	196	3	40	1	2259	37	**6098**
1995	353	4	1561	18	530	6	119	1	1439	16	343	4	49	1	102	1	3332	38	**8837**
1996	100	1	566	7	643	8	123	2	1238	16	448	6	358	5	65	1	3873	49	**7835**

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE 2-11: Breakdown of Japanese FDI Flows into European Countries from 1979 to 1996

Table 2-11 and 2-14 also demonstrate that in 1979, the United Kingdom had 47 percent of Japanese FDI stocks in Europe. The share decreased to 35 percent in 1989 and then increased to 39 percent in 1996. The Netherlands became the second most attractive destination for Japanese FDI in Europe by 1996. In 1979, the Netherlands had only 7 percent of Japanese FDI stocks in Europe. However, because of the heavy concentration of Japanese FDI flows in the 1980s, the share of the Netherlands in Japanese FDI stocks in Europe jumped to 22 percent. Especially in 1984 and 1985, the Netherlands was the most attractive in terms of Japanese FDI flows, which were 23 percent and 32 percent respectively. The case of Germany is interesting. In 1979, Germany was the second most attractive destination with 10 percent of Japanese FDI stocks in Europe, but lost some attractiveness in the 1980s. In 1989, its share was 8 percent, and in 1996, it was 9 percent.

France was the fourth country in terms of its share of Japanese FDI stocks in Europe in 1996. Its share was 8 percent in 1979, decreased during the 1980s, and came back to 8 percent in 1996. Although the average share of France in Japanese FDI flows into Europe was about 10 percent between 1979 and 1982, it went down to 3 percent in 1985. France slowly recovered its attractiveness for Japanese FDI until 1994 and then made a record 18 percent of Japanese FDI flows into Europe in 1995. Belgium & Luxembourg had 10 percent of Japanese FDI stocks in 1996. During the 1980s, its share increased by 150 percent, from 6 percent in 1979 to 15 percent in 1989, and then decreased by 33 percent to 10 percent in 1996. Italy, Ireland, Spain, and Switzerland kept relatively small shares of Japanese FDI in the all years of this study, between 1 percent and 4 percent in terms of Japanese FDI stocks in Europe.

Table 2-12 and 2-13 show that from 1977 to 1996, US FDI to Europe maintained an increasing pattern. In terms of FDI flows, the average US FDI into Europe was 50 percent of the total US FDI between 1977 and 1979. The average was the same 50 percent in the 1980s, and increased into 53 percent between 1990 and 1996. At the same time, the average US FDI flows into other developed countries were 20 percent of the total US FDI flows between 1977 and 1979, and then those flows were 21 percent, between 1990 and 1996. The changed patterns of US FDI in Europe and other developed countries were more distinctive in US FDI stocks. In 1979 Europe occupied 45 percent of the total US FDI stocks, and other developed countries occupied 31 percent. However, in 1996, Europe's share of the total US FDI stocks was 50 percent and the share of other developed countries was only 21 percent. The shares of developing countries were 24 percent in 1979 and 28 percent in 1996. The data clearly show that the emphasis of US FDI moved from other developed countries to Europe and especially to developing countries.

Table 2-13 and 2-14 present that the United Kingdom was also the most favored country in Europe for US FDI. The share of 36 percent in Japanese FDI stocks in Europe in 1996 was achieved from the consistent growth of its share from 1977. Germany and the Netherlands were in second place. Each of them had 11 percent of US FDI stocks in 1996. However, Germany's share consistently decreased since 1977. Its share decreased from16 percent in 1979 to 14 percent in 1989, and then decreased by 21 percent more between 1989 and 1996. On the contrary, Netherlands increased its share of US FDI in

Europe by 25 percent between 1979 and 1989, and then increased by 10 percent more between 1989 and 1996.

Both France and Switzerland had 9 percent of Japanese FDI stocks in 1996, and their shares consistently decreased since 1977. France and Switzerland were 10 percent and 12 percent respectively in 1979. Their shares decreased by 20 percent and 8 percent between 1979 and 1989, and recorded further decreases by 13 percent and 29 percent between 1989 and 1996.

Belgium & Luxembourg, Ireland, and Spain consistently kept their shares of Japanese FDI stocks in Europe at around 2 percent and 8 percent between 1977 and 1996.

In terms of FDI stocks in Europe, Japanese FDI in the Netherlands marked a huge increase of 214 percent in the 1980s and then decreased by 5 percent in the 1990s. US FDI in the Netherlands and the United Kingdom increased steadily during the whole period. Both Japanese and US FDI in Belgium & Luxembourg increased in the 1980s and then decreased in the 1990s. Japanese FDI in France, Germany, Ireland, and US FDI in France decreased in the 1980s and then increased in the 1990s. US FDI in Germany and Switzerland consistently decreased during the study period. In addition, Japanese and US FDI in Italy and Spain, Japanese FDI in Switzerland and US FDI in Ireland recorded consistent levels of their shares of Japanese FDI stocks in Europe. In terms of FDI flows, US FDI sustained similar levels between 1975 and 1996, but Japanese FDI fluctuated except in the case of Spain.

In US$ millions and percent

YEAR	Europe	% of Europe in Developed Countries	% of Europe in Total	Other Developed Countries	% in Total	Developing Countries	% in Total
1977	60591	56	45	47457	35	33706	25
1978	69553	58	45	50919	33	40400	26
1979	82622	60	46	56046	31	44525	25
1980	95686	61	46	61398	30	52683	26
1981	101514	61	47	63883	29	56183	26
1982	92449	60	47	61932	31	48058	24
1983	92178	59	47	63558	32	45746	23
1984	92017	58	46	65444	32	50132	25
1985	106762	62	48	65989	30	54474	25
1986	120724	62	48	73534	29	61073	24
1987	146243	63	49	86447	29	70676	24
1988	157077	62	48	95573	29	80059	24
1989	175213	64	48	99350	27	92098	25
1990	204204	65	49	107982	26	105721	26
1991	233245	67	51	113359	25	112020	25
1992	239389	68	50	115221	24	129566	27
1993	285735	70	47	124028	20	205193	34
1994	310031	69	46	136199	20	232627	34
1995	360994	70	51	154970	22	198609	28
1996	399632	71	51	166905	21	225604	29

SOURCE: The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-12: US FDI Flows into Europe, Other Developed, and Developing Countries from 1977 to 1996

In US$ millions and percent

	B & L	%	France	%	Germany	%	Italy	%	Netherlands	%	Ireland	%	Spain	%	Switzerland	%	UK	%	Europe
1975	3306	7	5743	12	8726	18	2679	5	3325	7	664	1	1763	4	5152	10	13927	28	**49533**
1976	3607	6	5954	11	10410	19	2944	5	3771	7	897	2	1971	4	5733	10	15696	28	**55906**
1977	4155	7	6093	10	11003	18	2969	5	4010	7	1151	2	2173	4	6193	10	17420	29	**60591**
1978	4555	7	6806	10	12731	18	3595	5	4685	7	1589	2	2003	3	7394	11	20416	29	**69553**
1979	6390	8	8024	10	13521	16	4381	5	6910	8	1798	2	2669	3	9699	12	23539	28	**82622**
1980	6915	7	9348	10	15393	16	5396	6	7948	8	2229	2	2665	3	11276	12	28099	29	**95686**
1981	6903	7	9132	9	15840	16	5275	5	8813	9	2701	3	2876	3	12509	12	30260	30	**101514**
1982	6647	7	7391	8	15463	17	4316	5	6760	7	2031	2	2350	3	12863	14	27537	30	**92449**
1983	5644	6	6614	7	15319	17	4461	5	6613	7	2460	3	2287	2	14099	15	27637	30	**92178**
1984	5001	5	6224	7	14794	16	4592	5	6201	7	2839	3	2186	2	14865	16	28635	31	**92017**
1985	5566	5	7835	7	16746	16	5644	5	7064	7	3748	4	2598	2	16230	15	33963	32	**106762**
1986	5808	5	8952	7	20932	17	7426	6	11643	10	4308	4	2707	2	16441	14	35389	29	**120724**
1987	7544	5	11771	8	24792	17	9008	6	14361	10	5135	4	3789	3	19518	13	42031	29	**146243**
1988	8342	5	13041	8	21832	14	9496	6	16145	10	5886	4	4966	3	18734	12	49459	31	**157077**
1989	9068	5	14069	8	24550	14	10294	6	18133	10	5522	3	6096	3	19209	11	59827	34	**175213**
1990	10581	5	17134	8	27715	14	12971	6	22778	11	6776	3	7480	4	23733	12	64983	32	**204204**
1991	12389	5	20798	8	34027	13	14775	6	19772	7	6635	2	2242	1	25604	10	78072	29	**266245**
1992	12634	5	23257	10	35393	15	23605	10	19114	8	7229	3	8165	3	28662	12	77842	33	**239389**
1993	17308	6	24312	9	36811	13	12748	4	20911	7	9019	3	6689	2	33056	12	109208	38	**285735**
1994	20325	7	27860	9	39622	13	14578	5	25127	8	10159	3	8316	3	34351	11	111255	36	**310031**
1995	23826	7	32950	9	44226	12	17587	5	39344	11	8400	2	10770	3	33532	9	122767	34	**360994**
1996	24981	6	34000	9	44259	11	18687	5	44667	11	11749	3	11393	3	35751	9	142560	36	**399632**

SOURCE: The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-13: Breakdown of US FDI into European Countries from 1975 to 1996

In US$ millions and percent

	1977- 1979 Aver. Flows				1979 Stocks				1980- 1989 Aver. Flows				1989 Stocks				1990- 1996 Aver. Flows				1996 Stocks			
	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%	Japan	%	USA	%
TOTAL Europe	346		70922		3893		82622		4108		117986		44972		175213		8757		295176		106268		399632	
B&L	36	10	5033	7	225	6	6390	8	642	16	6744	6	6736	15	9068	5	512	6	17435	6	10317	10	24981	6
France	39	11	6974	10	300	8	8024	10	260	6	9438	8	2899	6	14069	8	819	9	25759	9	8630	8	34000	9
Germany	60	17	12418	18	387	10	13521	16	306	7	18566	16	3448	8	24550	14	849	10	37436	13	9392	9	44259	11
Italy	0	0	3648	5	0	0	4381	5	62	2	6591	6	684	2	10294	6	200	2	16422	6	2084	2	18687	5
Netherlands	25		5202	7	257	7	6910	8	982	24	10368	9	10072	22	18133	10	1773	20	27388	9	22485	21	44667	11
Ireland	33	10	1513	2	135	3	1798	2	58	1	3686	3	565	1	5522	3	277	3	8567	3	2504	2	11749	3
Spain	24		2282	3	151	4	2669	3	145	4	3252	3	1546	3	6096	3	269	3	7865	3	3428	3	11393	3
Switzerland	15	4	7762	11	163	4	9699	12	153	4	15574	13	1829	4	19209	11	226	3	30670	10	3414	3	35751	9
UK	61		20458	29	1823	47	23539	28	1397	34	36284	31	15793	35	59827	34	3693	42	100955	34	41645	39	142560	36
Others	53	15	5631	8	260	7	5691	7	104	3	7484	6	261	1	8445	5	138	2	22680	8	1230	1	31585	8

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan. The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 2-14: Comparison of Japanese and US FDI into European Countries from 1977 to 1996

2-5. INDUSTRIAL PATTERNS

Table 2-15 shows the industrial patterns of Japanese and US FDI in Europe. In 1992 Japanese FDI stocks in European manufacturing was 23 percent of the total Japanese FDI stocks in Europe and 17 percent of the total Japanese FDI stocks in world manufacturing. Between 1989 and 1992, while the share of manufacturing in Japanese FDI stocks in Europe increased by 28 percent, from 18 percent to 23 percent, the share of Europe in Japanese FDI stocks in world manufacturing increased by 47 percent, from 12 percent to 17 percent. However, the dominant share of non-manufacturing sectors, 82 percent, in Japanese FDI stocks in Europe in 1989 decreased into 77 percent in 1992 while 20 percent share in the total Japanese world FDI stocks in non-manufacturing increased into 21 percent.

In manufacturing sectors, office machinery, computers, radio, TV, and communication equipment was 7 percent in Japanese FDI stocks in Europe, which was 21 percent in Japanese world FDI stocks in the same sectors in 1992. Although the share of these sectors was only 4 percent in those stocks in Europe, heavy concentration on these sectors, 11 percent between 1990 and 1992 FDI flows. Metal & mechanical products and vehicle & other transport equipment had kept their shares in Japanese FDI stocks in Europe, about 3 percent to 5 percent between 1989 and 1992, but the shares in Japanese world FDI stocks in the same sectors were changed a lot. The shares of metal & mechanical products and vehicle & other transport equipment rose by 45 percent, from 11 percent to 15 percent, and rose by 40 percent, from 15 percent to 21 percent respectively.

In US$ millions and percent

	1978- 79			Aver. Flow			1980- 85			Aver. Flow			1989			Stocks			1990- 92			Aver. Flow			1992			Stocks		
	Japan			USA			Japan			USA			Japan			USA			Japan			USA			Japan			USA		
Total FDI in Europe	**409**	**%**	**%**	**11016**	**%**	**%**	**1186**	**%**	**%**	**4023**	**%**	**%**	**44972**	**%**	**%**	**175213**	**%**	**%**	**10242**	**%**	**%**	**21392**	**%**	**%**	**76697**	**%**	**%**	**239389**	**%**	**%**
Manufacturing	**162**	**40**	**9**	**4007**	**36**	**61**	**234**	**20**	**10**	**969**	**24**	**34**	**7947**	**18**	**12**	**72842**	**42**	**49**	**3128**	**31**	**25**	**6984**	**33**	**66**	**17331**	**23**	**17**	**93733**	**39**	**60**
Food products	3	1	3	419	4	46	5	0	6	210	5	65	311	1	10	7157	4	53	95	1	15	406	2	25	597	1	11	8374	3	45
Metal & mechanical products	44	11	7	-109	-1	9	44	4	6	375	9	52	1734	4	11	19247	11	56	619	6	28	992	5	58	3592	5	16	22222	9	57
Office machinery, computers, radio	17	4	8	NA	NA	NA	55	5	13	77	2	20	2016	4	14	4251	2	36	1080	11	33	736	3	42	5257	7	21	6460	3	38
TV, communication equipment																														
Vehicles & other transport	23	6	17	-226	-2	-193	61	5	14	-81	-2	-36	1352	3	15	9032	5	39	550	5	33	626	3	72	3003	4	21	10910	5	43
equipment																														
Other Manufacturing	77	19	10	1244	11	72	69	6	11	442	11	65	2534	6	28	15960	9	50	783	8	16	1646	8	44	4882	6	34	20898	9	48
Non-manufacturing	247	60	14	7009	64	56	951	80	18	3055	76	63	37025	82	20	102371	58	46	7114	69	27	14428	67	55	58366	77	21	145656	61	49
Trade & repairs	120	29	14	2474	22	62	305	26	23	50	1	26	5404	12	21	21770	12	58	1297	13	26	2638	12	57	9296	12	23	29685	12	58
Financial activities	86	21	49	2410	22	42	499	42	34	1941	48	227	21258	47	37	52874	30	50	2447	24	42	7947	37	49	28598	38	38	76713	32	50
Services	NA	NA	NA	NA	NA	NA	26	2	4	456	11	52	2487	6	11	4998	3	57	851	8	11	1776	8	75	5039	7	11	10327	4	65
Other Industries	41	10	7	2125	19	78	122	10	7	608	15	21	7876	18	10	22729	13	32	2519	25	33	2067	10	67	15433	20	13	28931	12	36

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan. The various issues of Survey of Current Business published by the US Department of Commerce

Table 2-15: Comparison of Industrial Composition of Japanese & US FDI in Europe from 1979 to 1992

In non-manufacturing sectors, the share of financial activities in Japanese FDI stocks in Europe fell by 19 percent, from 47 percent to 38 percent while that in Japanese world FDI stocks in the same sector rose by 3 percent, from 37 to 38 percent. Trade & repairs had kept their share, 12 percent, in Japanese FDI stocks in Europe from 1989 to 1992, but their share in Japanese world FDI stocks in the same sectors increased by around 10 percent, from 21 percent to 23 percent. At the same time, services had kept their share, 11 percent, in Japanese world FDI stocks in the sector, but their share in Japanese FDI stocks in Europe increased by around 17 percent, from 6 percent to 7 percent. In 1992 US FDI stocks in European manufacturing was 39 percent of the total US FDI stocks in Europe and 50 percent of the total US FDI stocks in world manufacturing. Between 1989 and 1992, while the share of manufacturing in US FDI stocks in Europe decreased by 6 percent, from 42 percent to 39 percent, the share of Europe in US FDI stocks in world manufacturing increased by 2 percent, from 49 percent to 50 percent. However, the share of non-manufacturing sectors, 58 percent, in US FDI stocks in Europe in 1989 increased into 61 percent in 1992 while a share of 46 percent in the total US world FDI stocks in non-manufacturing increased into 49 percent.

In general, the shares of European manufacturing and non-manufacturing sectors in Japanese and US world FDI stocks had increased during the study period. However, the share of European non-manufacturing sectors in Japanese FDI stocks in Europe, and the share of US manufacturing sectors in US FDI stocks in Europe had decreased.

In manufacturing sectors, the dominant share of metal & mechanical products by US FDI stocks in Europe fell by 18 percent between 1989 and 1992, while its world share of US world FDI stocks rose by about 2 percent during the same period. The shares of office machinery, computers, radio, TV, communication equipment and vehicle & other transport equipment had been stable in terms of shares of US FDI stocks in Europe and the same sectors in the world between 1989 and 1992. However, while the share of food products in US FDI stocks in Europe was around 3 to 4 percent, the share of the sector in US world FDI stocks fell by 15 percent, from 53 to 45 percent.

In non-manufacturing sectors, the share of financial activities in US FDI stocks in Europe rose by 6 percent, from 30 to 32 percent while that in US world FDI stocks within the same sector had kept its share, 50 percent. The share of services in US FDI stocks in Europe increased by 33 percent from 3% in 1989 to 4 percent in 1992, and the share in US world FDI stocks in the same sector increased by 14 percent, from 57 to 65 percent. During the same period, trade & repairs had kept their shares, 12 percent and 58 percent, in US FDI stocks in Europe and US world FDI stocks in the sector.

CHAPTER 3. FDI THEORY

3-1 INTRODUCTION

For many centuries, the dominant form of international transactions was international trade between independent buyers and sellers in different countries. It was logical to look to the international trade theory as a framework for understanding and predicting international business patterns. However, because of the emergence of supranational business enterprises such as multinational enterprises (MNEs), which transmit international transactions in many new forms other than traditional exporting and importing, trade theory has proved to be too limited for explaining the current realities of international business. This limitation introduces international production theories, also called MNE theories.

There have been 2 streams of the theory on international production. One is micro-oriented and positive theory, in which the major objective is to explain why firms choose the location of a particular value-added activity to a particular country based on the absolute costs and benefits comparison in different locations (Dunning, 1993a). These theories are based on Hymer's market imperfect theory (1960). Caves (1974) develops the oligopolistic power theory of Hymer by adding the concept of transaction costs. Buckley and Casson (1976), Rugman (1980), and Hennart (1986) further elaborate the concept of transaction costs into internalization theory. And then the ideas of efficiency and strategic management develop these theories into more micro oriented ones. These micro-oriented theories are going to be classified into monopoly power-, efficiency-, and strategic management-oriented theories.

The other stream of the theory on international production is macro-oriented and normative. Its major objective is to explain which activities of firms are best undertaken in particular countries based on the comparative costs and benefits in different locations (Dunning, 1993a). These theories are based on Vernon's product life cycle (1966), developed from Hymer's thesis to add a dynamic dimension. Also, Aliber's macro-financial and exchange rate theory (1971) is based on a financial market imperfection identified by Hymer (1960). Kojima (1973, 1977, 1983) and Ozawa (1996) develop the concept of comparative advantage marked by Vernon (1966) into a normative dynamic comparative theory.

This study uses Dunning' Eclectic Paradigm (1977, 1988a, 1993a, 1997b) as a framework because of its comprehensive ability to connect the above two different streams of theory on international production and to explain the level and structure of a firm's foreign value-adding activities compared to other theories. All the analyses of theories in this chapter and the theory of economic integration in chapter 5 are based on the three factors of the Eclectic paradigm such as ownership specific advantage (O), internalization advantage (I), and location specific advantage (L).

3-2 MICRO-ORIENTED/POSITIVE THEORIES

The major objective of micro-oriented and positive theories is to explain which activities of firms are best undertaken in particular countries based on the comparative costs and benefits in different locations (Dunning, 1993a). The micro-oriented theories deal with

one commodity produced by one firm. These theories calculate everything in absolute terms such as price, cost, and profit of a product as well as its various inputs in the home country and abroad. It aims at finding the best location for the activity with the maximum profit. As a result, these theories tend to explain or focus on two of the three factors of the Eclectic paradigm ownership: ownership specific advantage (O) and internalization advantage (I).

3-2-1 Monopoly Power-Oriented Theories

1) **Market Imperfection Theory (Hymer, 1960; Kindleberger, 1969)**: Hymer was the first scholar to make the economic theory of the MNE apply to the world where neoclassical financial theory of portfolio investment in perfect markets covered up imperfect market conditions faced by MNEs in the real business environment. Hymer's theory is started from the distinction between FDI and portfolio investment. FDI is very different from simple capital movement because FDI transfers the control power over the investment to the investor who is always in pursuit of safety and maximum returns. In Hymer (1960) and Kindleberg (1969) the differences are further detailed. FDI does not have to have capital movement from the home country to host country because FDI can be financed locally by borrowing, issuing stocks, or using retained earnings. Also, FDI does not have to be one way transaction from a home country to a host country because both countries can be home and host simultaneously even in the same industries. FDI opts to focus on particular industries across countries except one in a situation where an interest rate differential between countries is a dominant determinant of FDI.

The market imperfection theory states that FDI takes place because of the existence of market imperfection. In other words, to undertake value added activities in foreign countries MNEs must posses offsetting advantages in terms of monopolistic competition derived from their differentiated products and/or scale economies that arise from production, distribution, and marketing because local firms have natural cost advantages based on location. It means that MNEs exploit counterbalancing advantages and ownership specific advantages originated from market imperfection. Thus, MNEs can undertake their value-added activities abroad when they could make more profits abroad than are at home and when they can produce higher profits than local firms in host countries (Hymer, 1960; Kindleberger, 1969).

However, to get more explanatory power in the current business arena Hymer's market imperfection theory needs modifications for the following reasons. First, Hymer's theory misses the differences between structural and transaction-cost market imperfection. Since his analysis is mainly based on structural imperfection to exploit and/or enhance the ownership specific advantages of MNEs, it cannot fully explain current MNEs' activities. For example, MNEs internalize their transactions to improve efficiency (Buckley & Casson, 1976; Rugman, 1980; Hennart, 1986) and to exercise strategic management advantages. MNEs can use international vertical integration as a competitive weapon against non-integrated firms rather than a monopolistic device for extra profits. According to Hymer (1960), the possession of ownership advantages in a particular industry by firms over its foreign competitors leads to the focus undertaking extensive overseas value added activities. It means his concept of the MNE is limited

into a product of structural market imperfection, which dominates markets by exploiting one or more of Bain-type advantages such as scale economies from production, distribution, marketing, knowledge advantages, and product diversification. Second, because his theory concentrates on the relationship between MNEs and local firms based on the assumption that MNEs are at disadvantages, Hymer overlooks the issue of globalism/multinationality itself, which gives special advantages to MNEs. The last reason is that Hymer pays no attention on the location matters of MNE activities. He does not include the importance of the geographical and spatial dimensions of the MNE activities into his theory. Location specific advantage should be considered as a major interdependent determinant with ownership specific advantage in the process of FDI decision-making process (Dunning, 1993a).

3-2-2 Efficiency-Oriented Theories

1) Transaction Cost Theory (Caves, 1971, 1974): Caves defines FDI as the entry into a national industry by a firm established in a foreign country (Caves, 1971, p71). This definition represents his approach, which combines the industry characteristics of FDI and some structural features of the markets where MNEs are operating. He answers the question: "Why do firms go overseas as direct investors?" by the possession of special assets by MNEs, which would have the characteristics of a public good within the firms. He specially pays more attention to intangible assets in oligopolistic industries, and to international horizontal integration. It is likely that specific to certain sectors that generate oligopolistic behavior based on the tendency to compare rates of returns between national markets in a certain industry, not between industries in a certain

national market. Also, Caves insists that a firm in a certain product can be successful if the firm is able to transfer its knowledge accumulated through the experience of domestic market to other national markets for the product at little or no cost (Caves, 1974).

Compared to his works in 1971 and 1974, Caves adds more concepts of transactional advantages of operating under common ownership across frontiers to his view in 1982. It implies that Caves expands Hymer's market imperfection theory by adding the concept of transaction costs. However, Caves still heavily concentrates on static ownership specific advantage without paying attention to location specific advantages and strategic management concept.

2) Internalization Theory (Buckley & Casson, 1976; Rugman, 1980; Hennart, 1986): Internalization theory is based on costs and benefits of internal and external transactions. Based on the pre-existed ownership specific advantages, firms try to minimize transaction costs derived from imperfection in intermediate product markets by using common ownership and control (Hennart, 1986). According to Coase (1937) there is an inconsistency between resource allocation in markets and that in reality. In market economies, resources are allocated by the price mechanism, but in a hierarchy by internal planning within the firm. Magee (1977) also argues that firms opt to exploit market opportunities as direct investors since it is the best way to appropriate maximum returns on its investment in new proprietary knowledge rather than through arm's length transactions.

Buckley and Casson (1976), Rugman (1981), and Hennart (1986) develop Coase's internalization approach to build up internalization theory. They argue that because knowledge is a public good within the firm and the market for knowledge is highly imperfect, there are many opportunities to reduce cost, to improve efficiency to transfer knowledge within the firm, and to induce benefits in internalizing abroad value added activities. In addition, the firms' desire to secure their properties and to maintain product qualities further motivates them to integrate cross-border transactions of intermediate products under common ownership. As a result, the basic hypothesis of internalization theory is that MNEs are likely to engage in FDI whenever they recognize any net benefits to use multinational hierarchies rather than to use market mechanisms.

Internalization theory treats ownership specific advantages derived from structural market imperfection as exogenous variables. It means that this theory can only explain foreign value added activities of firms, which already have ownership specific advantages before they decide to invest and try to internalize intermediate transactions to reduce costs. This theory can't explain other FDI motives such as strategic asset seeking and market seeking. In addition, Buckley and Casson (1976) argue that MNEs tend to invest in some countries where they have appropriate labor skills to use and exploit the investing firms' ownership advantages and where they have enough people to consume the knowledge-based products. At this point, they add location specific advantages into internalization theory; however, the location advantages by Buckley and Casson are not related to those of macro-oriented theories, but strictly related to MNEs' ownership specific advantages.

3-2-3 Strategic Management-Oriented Theories

1) Resource Based Theory (Wernerfelt, 1984; Ramanujam & Varadarajan, 1989; Mahoney & Pandian, 1992): The resource-based theory starts by emphasizing resources rather than products, which are two sides of the same coin in a firm (Wernerfelt, 1984). According to the theory, a firm's ability to attain and keep its competitiveness depends on its competence in firm-specific resources and its unique capabilities in terms of technical know-how and managerial ability. These resources, distinct competence, and unique capabilities contribute to MNE's diversification strategy (Ramanujam & Varadarajan, 1989).

In addition, a firm's resource heterogeneity and immobility generate value, rareness, imperfect imitability, and substitutability. These four outcomes are major factors to sustain the competitive advantage by a firm (Barney, 1991). Implications on MNEs' foreign value added activities through resource base approaches such as Penrose (1958), Mahoney & Pandian (1992) are that the choice of target markets and directions of diversification, whether related or unrelated by MNEs are determined by resource availability.

2) Evolutionary Theory (Nelson & Winter, 1982): This theory argues that a firm's success in international profit seeking is closely linked to the evolutionary acquisition and recombination of knowledge and the degree of efficiency by which knowledge is transferred globally through its network of subsidiaries and from parent to subsidiaries.

3) Oligopoly Theory (Knickerbocker, 1973; Cowling and Sugden, 1987):

Knickerbocker (1973) demonstrates that patterns of FDI flows are consistent with traditional oligopoly behavior. A firm producing in an oligopolistic industry is forced to follow a rival to foreign markets. This behavior does not rely on the firm's rational assessment of the profitability of the overseas value added activities, but based on the desire to maintain overall market share within the industry.

The product life cycle explains why the first firm engages in foreign direct investment (Vernon, 1966), and oligopolistic behavior theory answers why rivals are following the leader. According to Kinckerbocker (1973), a firm itself involves in new products and develops ownership specific advantage. This ownership specific advantage leads to oligopolistic market structure in terms of scale economies or special skills based on the advantage the firm expands its market from domestic to abroad. This exploitation of ownership specific advantage by the leading firm can change the competitive equilibrium and will eliminate other competitors in the same industry. As a result, rivals want to avoid these kinds of risks by using defensive foreign investments.

Cowling and Sugden (1987) emphasize firms' strategies to retaliate against a given rival by using firms' ownership specific advantages acquired through worldwide production and resources based on a realistic oligopolistc structure where collusion and rivalry coexist. They suggest that firms should have both strategies to prevent rivals gaining profits and to attack rivals by improving their own profits to the detriment of rivals.

It means that they try to explain firms' value added activities in foreign markets by firms' strategies to maintain their monopolistic power in a rivalry and collusion environment. To implement their strategies, firms should be transnational in order to develop their abilities to collect, process and use information (Cowling and Sugden, 1987).

3-3 MACRO-ORIENTED/NORMATIVE THEORIES

The major objective of macro-oriented and normative theories is to explain which activities of firms are best undertaken in particular countries based on the comparative costs and benefits in different locations (Dunning, 1993a). Macro-oriented theories are based on the theory of comparative advantage, which deals with at least two commodities in two trading countries under given tastes or demand conditions, factor endowments, and production functions, as typically shown by the Heckscher-Ohlin model. The major theories are starting from Vernon's product life cycle (1966). The currency-premium theory (Aliber, 1970) and the dynamic comparative-advantage theory (Kojima, 1975) are typical. These theories offer little in terms of an understanding of FDI among nations with relatively similar macroeconomic profiles or with the explanation of the allocation of a particular investment project to one country from among many potential hosts with similar national characteristics (Gray, 1982). These theories tend to explain or focus on the one of the tripod factors of the Eclectic paradigm: location specific advantage (L).

1) **Product Life Cycle (Vernon, 1966)**: Vernon (1966) added a dynamic dimension to Hymer's thesis. This is an attempt to link comparative advantages of locations to product differentiation. According to the product life cycle, MNEs can decide their locations of

foreign value added activities because the characteristics of a product should be matched to the characteristics of a country. In other words, any initial competitive advantage enjoyed by a firm might be eroded or eliminated by the superior competence of firms in other countries to produce the products based on them.

In other words, MNEs' foreign value added activities are sequential based on the product life cycle. In the early stages of introduction of a new product, locations of production could be limited into home countries where the product is invented, and foreign markets are served by exports. Because the product in this stage is characterized as unstandardized or invented, which means high price and limited markets, the location decision extends well beyond simple factor costs analysis and transportation costs. In the maturing stage, the product is becoming more standardized and introduced into more markets. Firms may change their strategies of production from limited production for limited markets based on home country production to mass production through achieving economies of scale for broader market based on foreign production. In this stage, foreign markets are served by local productions and production costs are more important criteria for locations of production. In the standardized stage, because the product is characterized as standard, the low cost of labor may be the initial attraction for location of production. Most markets are served by exports from subsidiaries in countries that have lower production costs.

2) Capitalization Rate Theory (Aliber, 1970): The pattern of FDI reflects on the disperse capabilities of firms with different nationalities to borrow or raise capital in

imperfect foreign capital markets. Firms from nations with strong currencies capitalize the same stream of expected earnings at a lower rate than other firms with weaker currencies. It means that the former firms can make foreign exchange gains through purchasing or selling assets in the latter firms or nations (Aliber, 1970; Dunning 1993a).

As a result, outflows of FDI will tend to move from nations with strong currencies to nations where indigenous nations have strong currencies to nations in which indigenous firms have relatively low rates of capitalization (Gray, 1995).

3) Dynamic Comparative-Advantage Theory (Kojima, 1975, 1982, 1990; Ozawa, 1985, 1990): Neo-classical trade theory that treats technology as a mobile intermediate product with no cost suggests that total world outputs can be maximized by the reallocation of each country's immobile resources based on comparative advantage theory. However, in the real world the principle of comparative advantage cannot always provide the desired pattern of resource allocation among countries. Natural and artificial barriers to trade and government intervention in terms of the pricing and output decisions of firms, the different objectives of firms, and imperfections of markets can introduce X-inefficiency and structural misallocation of resources and further deteriorate the applicability of comparative advantage theory. In addition, not only the efficiency of resource allocation, but also some other considerations such as equity and sovereignty may be critical criteria of governments' ultimate goals (Dunning, 1988b).
The principle of comparative advantage especially in terms of trade is that countries should export goods and services, which are produced more efficiently, derived from the

countries' resource endowments and import goods and services, which are produced more efficiently in foreign countries derived from their resource endowments. This principle can be adapted to FDI. A country's firms, which have comparative O advantages to produce some goods and services compared to foreign firms, should be stimulated to invest in overseas that have comparative L advantages in resources to produce those goods and services. Also inward investments should be encouraged to countries that have comparative L advantages to produce some products and services by other foreign countries who have comparative O advantages in resources to produce those goods and services (Dunning, 1988b).

In Kojima's dynamic comparative theory (1990) he used the concept of independent intermediate markets to transfer technology internationally. Because his major interest is limited to the impact of FDI on the productive efficiency of the host country, Kojima did not concern other benefits from intra-firm transactions by MNE. First, minimizing transaction costs of the international market in intermediate products and services is the most important reason for MNEs to internalize their foreign productions. Second, not only production costs minimization, but also other spillover effects on the firm or recipient country can be a factor in the MNE's integrated strategy. Third, when MNEs transfer their technologies internally, the levels and patterns of resource allocation could vary compared to those through external markets because MNEs' first concern is their parent's goals. As a result, in the real world the principle of comparative advantage does not perfectly explain the pattern of trade and value-added activities by MNEs because of

distortions to the free movement of goods and resources drawn from market imperfections and government intervention (Dunning, 1988a, 1988b).

Kojima (1990) states that the geographical patterns of US FDIs are quite uniform throughout the world. The levels of FDI's concentration in the world, developed countries, developing countries, Latin America, Asia, and Japan are all quite similar. In addition, this pattern is uniform with respect to time, too. He explains these phenomena with the following reason. The microeconomic interests of the MNEs mainly determine US FDIs without regard to the comparative trade advantage positions of host countries or the United States. US FDIs are heavily focused on industries in which US has oligopolistic power that can help to specialize or internalize in the production of differentiated products. On the contrary, Japanese FDIs are quite different according to geographical and time factors. Because Japan has considered macroeconomic impacts of FDI on patterns of comparative advantages, Japanese FDIs have contributed to the development of host countries with more efficiency than US FDIs have in most cases.

The share of Japanese FDI in developing countries in cumulative total increased to 54.8 percent in 1981, but subsequently decreased to 49.6 percent in 1985. On the other hand, the share of developed countries went from 49.7 percent in 1973 to 45.2 percent in 1981 and 50.4 percent in 1985 (see Table 2-9). This current change reflects a structural change in Japanese FDI in early 1985. It might say that Japanese DFI shifted its emphasis from developing to developed countries or has been shifting from the mining sector of

developing countries to the service and manufacturing sectors of developed countries (Kojima, 1990).

This structural shifting in the 1980s might indicate that Japan had ownership specific advantages in those exported manufacturing and service sectors to developing countries. In other words, Japanese emphasizing on the service and manufacturing sectors of development countries should mean that Japan is losing its comparative advantages in those industries. However, Japan actually does not have comparative advantages in those industries except in such as automobile or consumer electronics. Thus, this current movement cannot be fully explained by his theory (Lee, 1984; Mason, 1980).

i) Labor vs. Capital Intensive Industries: Kojima (1990) explains that the US producers of labor-intensive goods were preoccupied with defending what domestic markets they had and did not concern themselves much with international production because domestic output had already been reduced to a relatively small size. Although some producers have tried to switch to international production and procurement by turning themselves into merchandisers, these activities were not very significant as compared to the international investment activities of the producers of capital-intensive goods. As a result, US FDI activities have generally focused on capital or technology intensive industries in which United States has a comparative advantage. On the contrary, even though Japan's competitive advantage in the labor intensive sector were nearly comparable to those of the United States except some advantages in managerial skills, Japan had a lot more opportunities in the sector because the United States was not active

in the labor intensive sector. In addition, many developing countries tried to stimulate their economies by opening their markets and stressing export-led industrialization with many intentional deregulations from the 1970s. The above two conditions could be a major impetus to make the competitiveness in labor-intensive sector by Japan.

ii) Economic Growth and Wages: A relatively high-income level and high real labor costs in the United States further stimulated the needs for high-income products and labor saving processes, which also required more capital or research intensive activities. The needs have been achieved by more FDIs in search of high monopolistic profits by internalizing the appropriating mechanism for firm-specific assets. In light of wage increases, slowly rising wages in the United States and legal or illegal inflows of foreign work forces steered the United States away from any deteriorating productivity and a severe labor shortage (Kojima, 1990).

In the case of Japan, rapid economic growth put more pressure on resource-scarce Japan. The quickly rising dependence of Japanese industries on overseas resources stimulated more FDIs to secure vital supplies of overseas resources. Therefore, Japanese industries started to make investments in overseas resource development ventures. In addition, wages increased sharply. For example, Japan suffered from a severe shortage of young factory workers in the early 1960s. Also, tightening labor market made further disadvantages in labor-intensive good sector rather than capital-intensive good sector. As a result, Japan had no choice to escape from the problem of rising labor costs in certain labor intensive industries except looking for other location specific advantages in

overseas countries which have already comparative advantage in those industries and more abundant or cheaper labor supplies (Kojima, 1990).

Japanese FDIs are largely characterized as labor resource oriented and natural resource oriented to reduce production costs and then to maximize outputs by using foreign factor endowments. Through these activities Japan has been a price taker rather than a price setter who is expanding and controlling overseas markets with monopolistic ownership specific advantages (Kojima & Ozawa, 1984). However, technology is taking over the importance of unskilled or semi-skilled labor and natural resource on production costs in many manufacturing industries. As a result, Japanese MNEs no longer have significant incentives to look for supplies of cheap labor (Dunning, 1993).

iii) Industrial and Trade Policies: National policies can encourage the creation of tacit capability through the support of education and training, and encourage local research by having a broader science base with which firms can interact. National policies for innovation include schemes for local inter-firm cooperation in technological development and the international coordination of learning processes mainly through MNEs with a local base (Lipsey, 1995). Also, Hamalainen (1994) insists that because of the inherent specialization of industrializing economies, a dynamic accumulation of market failures leads to a much greater scope for government intervention.

Kojima (1982) states that the United States has had no long run industrial or trade policies to support private sectors at the national level. Most policies protect or support

its comparatively disadvantaged industries, which only have short-run political considerations. There has been no conscious national effort to foster new growth industries other than letting its defense and space programs spin off technologies to the private sectors.

However, Japan has adopted and implemented very strong industrial restructuring policies to keep abreast of a pattern of dynamic comparative advantage (Ozawa, 1985). For example, in the 1950s and the early 1960s, Japanese government strictly regulated many restrictions on FDI outwards and imports on grounds of the balance of payment which restrictions would be relaxed throughout the 1970s. The restarted Japanese FDIs were characterized into two limited areas. One was trade-related activity to support its trading companies, financial institutions, and other manufacturers in its trade-partner countries. It means that one of the ultimate goals of Japanese FDIs was to promote its overseas trade. The other was natural resource-related industry to secure natural resources such as Alaskan Pulp in 1953, Usiminus Steel with Brazil in 1957, Arabian Oil in 1958, and North Sumatran Oil with Indonesia in 1960 (Komiya, 1990). It means that Japan has many institutional arrangements and measures at the national level. These are designed specifically to help Japanese firms in comparatively disadvantaged industries to relocate corporate production overseas through the Japan Overseas Development Corporation, the Overseas Mineral Resource Development Corporation, the Overseas Fishery Cooperative Foundation, and the Japan External Trade Organization, Sogo Shosha. It also indicates that Japan has fostered and expanded its comparatively advantaged industries at home by discarding its comparatively disadvantaged industries

to some other countries who have comparative advantage in those industries (Kojima, 1990; Ozawa, 1990).

Moreover, the traditional importance of factor endowments does not so much influence current FDI, but more general economic environments such as created competence, capabilities, supporting industries, local market conditions, macro- organization and micro policies. It means that the government's role becomes critical (Dunning, 1992 & 1993b). Japanese FDI outflow patterns had different characteristics compared to those of US FDI. More concentration in developing countries and low-technologies, export-oriented, across industries and overtime had been articulated by Japanese government until 1980 (Huang, 1997). However, the more important point is that Japan has relaxed regulations to compete in the global market economy since the early 1980s (Casey, 1998).

Both sectoral and national effects can establish the pattern of the relationships between governments and firms. Even though the government controlled the relationship in the early period, the relationship is led by both parties because of changed global business environments such as the expanded marketing scope to global, technological changes, and industrial boundary erosion.

iv) Overvalued vs. Undervalued Currency: In 1972 and 1973 (the first upsurge), Japan recorded a remarkable increase in FDI outflows, which were US$ 5.8 billions compared to US$ 3.6 billions that was a total amount from 1951 to 1971. There were several

reasons. First, under the Bretton Woods regime, Japanese yen was appreciated from 360 yen per a US dollar to 308 yen in 1972 and further to 265 yen in 1973. This appreciation raised all production costs in Japan in foreign exchange and then stimulated FDI outflows. The next reason was the change of Japanese comparative advantages pattern in the world market. Based on the soaring real wages in Japan, Japan lost their competitiveness in labor-intensive industries in international markets. As a result, Japan exported those kinds of industries to other countries who had cheap and abundant labor forces. Complaints from BOP deficit countries, the third reason, accelerated Japanese FDI outflows. After the autumn of 1973, the first oil crisis, the Japanese economy was depressed until the beginning of the early 1980s. During this period, the Japanese yen was depreciated, the current account recorded deficits, and FDI outflows declined. This oil crisis was to help promote more restructuring of its pattern of exports especially in industrial composition. Japanese major exporting products that were labor intensive with medium-level technologies such as textiles were gradually replaced by higher value-added industries such as machinery. According to this restructuring, the exported value of motor vehicle left that of ships and tankers behind from 1975, and by the first half of the 1980s Japan's chief exports were automobiles, electronics, electric machinery, motorcycles, camera, audio equipment, communication equipment, apparatus, machine tools, and machinery with electric control (Komiya, 1990).

Until the early 1970s, the US dollar had become increasingly overvalued, while the Japanese yen was undervalued. Although an overvalued dollar made US exports difficult, the strong dollar subsidized its overseas investment and encouraged efficient

seeking investments, while an undervalued yen had exactly the opposite set of effects. The US firms in comparatively advantaged export industries were thus strongly induced to choose local production through FDI, rather than exporting, as a way of exploiting their ownership specific advantages. The currency-premium theory, therefore, does point to a currency-related, macroeconomic inducement for FDI in addition to a micro-economic inducement emphasized in the internalization theory of FDI (Kojima, 1990).

v) Types of FDI: The major actor to decrease the gaps of per capita GDP among the United States, Europe, and Japan in the postwar period was the United States. Although US MNEs' comparative advantages that derived from the large domestic market were eroded by reduction of trade barriers through the processes of GATT negotiations, the creation of the European Union (EU) and a decline in transport costs, allowed US MNEs to enjoy a technological superiority. This enabled them to launch foreign production. However, one major consequence of US FDI was to transfer high technologies to the host countries. There are other sources to make this convergence a technological catch-up.

Kojima (1982) argues that because the United States has usually secured resources through multinational corporations, US strategy has used a multinational corporation as a major vehicle to obtain a large area of natural resources. Also, the United States has treated its MNE as a concession to undertake exploration, development, and production through captive development ventures with vertical integration and wholly owned subsidiaries. However, Japanese has tended to be more willing to accept not only wholly owned subsidiaries, but also other investment modes such as joint ventures, production-sharing, turn-key operations, technology-licensing, management contracts, and other non-

equity arrangements. Also, compared to US's vertical integration is that Japan has tried to secure her resources through a trade-oriented investment in return for an assurance of a supply quota or production sharing, which is typically characteristic of Japan.

3-4 ECLECTIC PARADIGM

National factors and firm-specific attributes as they affected international trade and production patterns are combined by Dunning's eclectic paradigm (1988a & b, 1993a, 1997a & b) of international production and FDI. Dunning attempts to embrace the above two streams of international production theories by introducing the OLI model. He distinguishes different types of FDI and static or dynamic theoretical approaches. Ietto-Gillies (1992) insists that the eclectic paradigm attempts to interpret elements specific to firms not only with elements related to the macro-economy, but also with some other elements related to market structure. Because of this, the eclectic paradigm can explain international trade and production within the same analytical framework as well as micro and macro elements.

The eclectic paradigm sets up a generalized framework for explaining the level and pattern of foreign value-added activities of firms. It does not offer a full interpretation of all kinds of foreign value-added activities; however, it does give a generic set of variables that are critical to explain particular kind of foreign production. The paradigm supposes that, the stock of foreign assets owned and controlled by MNEs, is determined by the interaction of the tripod factors: ownership specific advantages (O), location specific advantages (L), and internalization advantages (I) (Dunning, 1993b).

Ownership specific advantages can be defined as firms' competitive advantages against other firms. This is a firm's capability to develop its unique skills or know-how, which could be tangible or intangible, but difficult to imitate by competitors (Rugman, 1980). Also, the ownership specific advantages of firms are assumed to be such that each firm creates and organizes themselves independently. These advantages are divided into two categories. The first one is called property rights and/or intangible asset advantages (Oa) that are asset specific advantages. The other is defined as advantages of common governance of organizing Oa with complementary assets (Ot), which are transaction cost minimizing advantages (Dunning, 1993a).

Location specific advantages are based on the different spatial distribution of natural and created resources endowments and market to firms to create or add further value to their competitive advantages. The comparative advantages of countries are assumed to reflect the scope and character of their unconnected immobile assets (Dunning, 1993b). Because factors of production are immobile by definition in perfect competitive markets and economic or non-economic conditions of foreign countries are exclusively related to the successful exploiting of firm competitive advantages in foreign countries, considerations of foreign locations' capabilities and other conditions are critical.

Internalization advantages are firms' capabilities to circumvent or exploit market failure. These show how much firms can internalize their foreign productions and how benefits firms can get from the internalizing intermediate products as opposed to using arm's

length transactions. Firms that can have more benefits from the internalization can engage in more foreign value-added activities (Dunning, 1997b).

CH 4. THEORY OF ECONOMIC INTEGRATION AND FDI

4-1 INTRODUCTION

One of the most significant changes in the international business during the past two decades is regional economic integration. The theory of economic integration is based on the broad study of Balassa (1961) that has been elaborated by other scholars such as Robson (1987, 1993), El-Agraa (1997). The theory of economic integration is originally developed from the traditional trade theory, which assumes the perfect competition and whose major concern is the location of production (Imbriani & Reganati, 1997). On the other hand, the theory of international production or MNEs introduces market imperfections in which the MNE as an organizational hierarchy, internalize the market for cross-border intermediate products and a major concern is the allocation of production efficiently (Dunning, 1993).

In addition, the major goals of economic integration are to escape from discriminations derived from trade-and-payment restrictions and government interventions, to relieve cyclical fluctuations, and to increase national income (Balassa, 1961). The major goals of MNEs are to produce goods more efficiently and to advance their long-term profitability by undertaking foreign direct investment (Dunning, 1997a).

The range of economic integration goes from non-reciprocal tariff concessions given by developed nations to exporters from developing nations, free trade area, custom union, economic union, and complete economic integration. The forms of integration have important implications for MNEs' FDI strategies of restructuring and reorganization of

production within an integrated area (UNCTC, 1990). Because of the removal of internal tariffs and/or non-tariff barriers, patterns of trade and FDI despite being a nonmember or member are restructured and reorganized.

Although the two theories are started from different assumptions, researchers have tried to integrate the two theories because the inter-relationships between economic integration processes and MNE activities. One of the studies is OLI in which the theory of FDI is concerned with the impact of international economic integration on the competitive advantages of firms of different nationalities, the locational attractiveness associated with theses competitive advantages, and the different ways to internalize these competitive advantages of firms and the locational attractiveness (Dunning, 1997a), which was detailed in the chapter 3. As a result, we explain the impacts of economic integration on FDI based on the Eclectic paradigm.

Most of the studies on economic integration and FDI have focused on the Europe or European Union (e.g. Scaperlanda & Mauer, 1969; Yannopoulos, 1990; Neven & Siotis, 1995; Yamada & Yamada, 1996; Dunning, 1997a, 1997b; Pain & Lansbury, 1997) and the North American Free Trade Area (NAFTA) (e.g. UNCTC, 1990; Eden, 1994; Dunning, 1994; Kogut, 1994, Vernon, 1994) that is for current years. However, the lack of availability or reliability as well as the short time-span of data limits researchers' contributions on only a few advanced countries and regions. Clegg (1992), Scaperlanda (1968), Wallis (1968), D'Arge (1969, 1971), Schmitz (1970), Goldberg (1972), Lunn (1980) investigated the relationships or effects between US FDI and EC. Dunning

(1971), Mayer (1983), Grant (1983) studied consequences of EC on UK FDI pattern and UK industries. Dunning (1997b), Srinivasan & Mody (1997), Buigues & Jacquemin (1994) compared Japanese and US FDI into EC. O'Farrell (1983) did one exceptional research that did not focus on the United States and the United Kingdom. He found that Ireland's FDI inflows remarkably increased through the Anglo-Irish Free Trade Agreement in 1965 and the EC in 1973.

4-2 EFFECTS OF ECONOMIC INTEGRATION ON LOCATION SPECIFIC (L) ADVANTAGE

According to the theory of international economic integration (Balassa, 1961; Robson, 1987), many effects of economic integration are derived from geographically discriminatory trading arrangements. The effects can affect particular industries directly and affect some industries by way of changes in the costs and prices of intermediate products or service inputs.

The static effects of the removal of trade barriers achieved by economic integration could be divided into production and consumer effects, which relate to a shift in the demand for goods produced by member and nonmember that modify world production and trade patterns (Balassa, 1961; UNCTC, 1990). The process of economic integration can enhance the location advantages of the markets of member countries by the distribution of location advantages across the markets, and then this enhanced location advantages can provide new opportunities to make more income through the production within the integrated area. However, it does not mean that all MNEs can earn more rents to produce

within the integrated area. According to Eden (1994) and Vernon (1994), the choice of location to produce will be determined by different characteristics of the products, firms, industries, countries, movements of rival firms or suppliers.

4-2-1 Trade Creation

The positive production effects shift production locations from expensive domestic to cheaper member countries to allocate resources efficiently, and the positive consumer effects shift consumer demand from domestic to foreign (member) goods. It is trade creation that exists when the elimination of internal trade barriers increases the volume of trade by making lower cost goods and services available (resource re-allocation effect). In other words, cheaper imports from a member replace expensive domestic productions (Balassa, 1961; Robson, 1987; Yannopoulos, 1990; UNTCMD, 1993; Imbriani & Reganati, 1994).

Especially, the trade creation cause the polarization effect, which means, intra-region FDIs are stimulated to encourage the reallocation of economic activity according to member states' comparative advantage - reorganization investments (UNTCMD, 1993). In addition, particular industries may be concentrated on particular member nations or a specific region. Because economies external to the firm and industry may have a downward influence on cost structures, some member nations can get more location specific advantages. This includes the cumulative decline in relative and absolute terms of the economic situation, and factors of production by economic integration (El-Agraa,

1997). Because the movement of FDI is within an integrated area, there is no FDI inflow from outside nonmembers, rather only increasing intra-FDI.

4-2-2 Trade Diversion

The negative production effects shift production locations from lower-cost foreign location (nonmember) to protected member locations with higher cost, which is new discrimination against foreign (nonmember) sources of supply of the same commodities. Also, the negative consumer effects shift consumer demand from foreign (nonmember) to member goods in response to the change in relative price consequent upon the tariff against nonmember. This also discriminates against nonmember goods that are different in kind from domestic or member goods. More expensive imports from a member replace cheaper initial imports from a nonmember (Bye, 1958). It is trade diversion that occurs when less efficient producers inside the market area replace more efficient external producers because the outsider still faces external tariffs (UNTCMD, 1993)

This effect stimulates investments derived from the increased location specific advantages of member countries by the tariff realignment in an integrated area. Because of a country's gap in tariffs between before and after joining the area, foreign firms are getting more difficulties to export from outside. As a result, FDI inflows are created by the foreign firms to shift their strategies from trade-based to investment-based for not losing their market shares within the integrated area (Dunning, 1997a)

4-2-3 Political Risk

Political risk can be defined as drastic changes in a nation's business environment by political forces, which seriously affect the profits and other goals of all foreign or typical countries economic activities in a nation (Robock, 1989). A country that especially used to have political instability could appeal to foreign investors to deduce its political risk by becoming a member of an integrated area. It means that a country's exclusive or dogmatic treatments to economic activities could be more reasonable or acceptable by adopting an integrated regime's general policies. As a result, foreign investors can escape from possible disasters such as confiscation, expropriation, operational restrictions, breaches or unilateral revisions in contracts and agreements.

4-2-4 Protection of Intellectual Property Rights

Intellectual property rights include patents, know-how, and trademarks. Legal protection patents are granted and trademarks are registered by national governments, but the limitation of the protection is valid only within the territorial jurisdiction of the granting government. Moreover the significantly different levels of the protection among countries make foreign investors hesitant to invest. In the case of developing countries that might be notorious with piracies, they can demonstrate or give more attractiveness to foreign investors to accept general policy of an integrated regime.

4-2-5 Others

Uncertainty of external commercial policy may encourage unnecessary higher levels of FDI because of the expectation of future restrictions in excess to the enlarged market of

an integrated regime. In addition, Helpman and Krugman (1985) said that some firms that try to enhance their market shares in the integration bloc by using oligopolistic power also create surplus capacity derived from unnecessarily high levels of FDI. Another possible outcome is especially for some countries that suffered from currency instability. Joining an economic integration would help to limit the instability and then provide stable macroeconomic condition to attract FDI inflow.

4-3 EFFECTS OF ECONOMIC INTEGRATION ON OWNERSHIP SPECIFIC (O) AND INTERNALIZATION (I) ADVANTAGES

Dynamic effects of economic integration such as economies of scale, cost-reduction effect, trade-suppression effect, and product efficiency increase competitiveness of member nations derived from larger market size, more opportunities, and larger scale economies. These effects result in higher level of income and more investments in R&D, and consequently improve ownership specific advantages of regional firms.

The removal of market fragmentation and the stimulus to growth from the dynamic effects of an economic integration create new opportunities for FDI to firms with strong ownership specific and internalization advantages. These opportunities will encourage new FDI inflow into member countries of an integrated regime. In addition, MNEs integrate international production within their systems by fragmenting activities more closely and narrowly based on the static comparative advantages of different locations. During these processes, MNEs' affiliates rather than local firms can adapt the newly

created firms' strategies such as changing from host market oriented to export market oriented.

4-3-1 Scale Economies

The increased size of the market by economic integration gives opportunities to maximize economies of scale to both member firms and industries that used to operate below optimum capacities (El-Agraa, 1997). The dynamic effects are cost-reduction and trade-suppression effects in order to obtain more fully economies of scale by the members who became more competitive suppliers of their own productions in an economic integration area. Enhanced competition and changes in uncertainty may also improve a firm's general economic efficiency. In other words, enhanced competition, income level, and market size can raise the profitability of R&D intensive investment (UNCTC, 1990).

Major parts of the advantages by an economic integration are also derived from cost reduction and efficient gain by the regrouping of production facilities in fewer locations where more favorable costs are found. Thus, outsiders' FDIs are coming to the area to look for those advantages. Baldwin (1989) said X-efficiency gains from reorganization investment with concentration in fewer plants, would attract rationalized investment, as the costs of intermediate inputs become relatively cheaper inside the integrated regime.

4-3-2 OLI Configuration

Dunning's theory of international production (1993a) gives helpful explanation to support increasing FDI inflow into the integrated area. Basically his theory of international production suggests that the tendency of a firm to engage in foreign production depend on its OLI configuration in the target market. Even though there are many different modes to enter foreign production by a firm, FDI is the main mode to capture a foreign market if a firm has the capacity to exploit all OLI advantages. The paradigm helps especially to explain not only how regional integration changes location advantages, but also how it affects the distribution of ownership advantages between firms of different origins and the configuration of both ownership and location specific advantages.

According to Yannopoulos (1990), Imbriani (1994), Dunning (1997b), dynamic effects of a regional integration provide new opportunities to member and/or non-member firms by expanding market size to exploit economies of scales. This kind of environment can give an impetus to conduct innovation activities by member and/or non-member firms within the integrated area and then stimulate technology transfer. It means that member firms can have new opportunities to develop ownership specific advantages. Consequently, newly created location and ownership specific advantages by economic integration make the integrated area more attractive for foreign MNEs.

4-2-3 Strategic Responses

FDI becomes strategic response such as strategic asset seeking, of firms coping with changes in relative competitiveness, location advantages and organizational forms

brought about through the realignment of tariffs from the formation of a trading bloc. Charles Kindleberger (1969) explained the strategic responses of MNEs to the regional integration with investment-creation and investment-diversion. Investment-creation and strategy to deal with trade diversion, increases FDI inflows into member countries from non-members, and investment-diversion, strategy to cope with trade creation stimulates reorganization of production inside the region by intra-region investments.

CH 5. Deriving the Hypotheses

5-1 INTRODUCTION

The preceding chapters have identified seventeen hypotheses classified into six subjects. The first fourteen hypotheses are about Japanese and US FDI patterns. These hypotheses are hierarchically divided into five subjects: overall patterns (H1aand H1b), geographic patterns (H2a to H2d), industrial patterns (H3a to H3c), each country's geographic patterns in the EU (H4), lastly each country's industrial patterns in Europe (H5a to H5c). Each subject consists of convergence/divergence and determinant hypotheses. The last category hypothesizes the relations between FDI and trade (H6a to H6d). This chapter reviews previous literature on the patterns of Japanese and US FDI and lays the basis for each hypothesis.

5-2 OVERALL PATTERNS (6 Regions-5 industries Level)

A substantial body of literature on FDI has focused on comparative studies on FDI patterns. Researchers have examined FDI patterns by emphasizing firm-specific factors, in which ownership specific advantages of MNEs such as technological superiority induce market failures and the market failures prevent arm's-length transactions. Consequently, firm-specific factors create FDI (e.g. Horst, 1971; Caves, 1974; Buckley & Casson, 1976; Bergsten et al., 1978; Lall, 1980; Rugman, 1980; Pugel, 1981; Caves, 1982; Caves & Mehra, 1986; Grubaugh, 1987; Morck & Yeung, 1991; DuBois et al., 1993). Researchers have also investigated the macro economic factors in home and/or host countries, in which location specific advantages are exchange rates, tax rates and industrial growth rates. (e.g. Yoshida, 1987; Burton & Saelens,1986; Lecraw, 1991;

Woodward & Rolfe, 1993; Loree & Guisinger, 1995; Blonigen, 1997; Mody & Srinivasan, 1998; Yamawaki, 1991, 1998). Some researchers added strategic issues to MNEs decisions to invest abroad based on oligopolistic competitions. (e.g. Knickerbocker, 1973; Flowers, 1976; Tsurami, 1976; Graham, 1985; Yoshida, 1987; Yu & Ito, 1988). Other researchers have examined the FDI patterns by employing more than one factor in the Dunning's eclectic paradigm (e.g. Hennart & Park, 1994; Kogut & Chang, 1991, 1996; Loree & Guisinger, 1995; Tan & Verkinsky, 1996; Huang, 1997)

There are some comparative studies, which exclusively examined the patterns of Japanese and US FDI. Hiemenz (1987) found that the patterns of Japanese and US FDI in ASEAN were different. Based on the sample, which included 7 industrial and 4 host country breakdowns from 1977 to 1983, he concluded that the focus of US FDI moved from market access to local market to export-oriented industries in the early 1980s while the opposite trends were detected for Japanese FDI. Chou (1988) investigated Japanese and US FDI in Taiwan by 15 different industries for the years, 1953-1985, and concluded that the patterns of the two countries in Taiwan were different. First, he compared some characteristics of Japanese and US firms in Taiwan based on the categories, which are market orientation (export intensity), firm size and the scale of production (capital, sales, total assets, net assets and employees), ownership control (ownership share) and factor-intensity (capital, labor, R&D expenditure and intermediate goods imported). He found that Japanese and US firms in Taiwan were different each other in all categories except in market orientation. It indicated that both Japanese and US firms in Taiwan were export-oriented. However, he explained the similarities in market orientation were not derived

from the similar strategies by Japanese and US firms, but from the requirement of the export ratio to obtain approval for a foreign investment project from the Taiwan government. Chou also found that the determinants of profitability between Japanese and US firms in Taiwan differed from each other by employing the F-ratio for the Chow-test.

Mody and Srinivasan (1998) conducted a generalized least squares (GLS) to find out the determinants of Japanese and US FDI within and between 36 host countries, and concluded that the factors to attract US and Japanese FDI in the second half of the 1980s were converged in certain respects. The dependent variable was the host country share of foreign investment outflow by Japanese and US MNEs in two time periods, 1981-1985 and 1986-1990. Comparison of the determinants of Japanese and US FDI between the two time periods with some explanatory variables that are home and host characteristics, they found some changes and stability in the determinants of Japanese and US FDI respectively from the first period to the second period induced similar patterns in the determinants of Japanese and US FDI in the second period. Although they didn't find equality of coefficients for the two countries by an F-test, some similarity in the signs of the coefficients was detected. Generally, Japanese and US FDI in the 1980s were attracted not only by some similar host country characteristics such as low wage, low country risk, good infrastructure, and an high educated work force, but also by past investment records in host countries. In addition, the adjusted R^2 in their empirical study reached to 0.98, which are similar to those in UNTCMD (1993), Pain and Lansbury (1995, 1997) and Huang (1997). Huang (1997) examined the patterns of Japanese and US FDI flows extensively based on a comprehensive and up-to date data for 1975-1994.

Based on the distributions of each FDI flows among 48 host countries and 6 regions, he described the growing similarity of the patterns of Japanese and US FDI flows in recent years; however, the data were not used for statistical tests.

The movement toward globalization[1] is defined as a process by which an economic entity in a country establishes close economic linkages and interdependence in terms of trade, investment, and other economic activities with other economic entities throughout the world (McGrew & Lewis, 1992; Dunning, 1994b, 1995, 1997a). Globalization can be expected to lead to similar FDI patterns by major investing countries in the 1990s. The pressures on firms by the expectation of global consumers, the emergence of global competitors, and other phenomena such as escalating R&D costs and shortening product life cycle, are among the common causes, which lead MNEs to establish global interdependencies (Dunning, 1994a). In addition, the liberalization and deregulation of markets, improvements in communication technology since the 1980s have given MNEs further opportunities to integrate transborder economic activities. As a result of the globalizing economic environment in the 1990s, such factors as created assets, competence, capabilities, and supporting industries replace the traditional importance of factor endowments and become the major influences on FDI patterns (Dunning, 1997a).

The increased degrees of international involvement of MNEs are major forces to lead towards globalization by transferring proprietary assets internationally at lower costs and by practicing global-based strategies (Gray, 1999): these behavior patterns may be expected to lead similar FDI patterns by major investing countries. Multinationalization

or transnationalization is defined as a function of the extent to which a firm's economic activities are located outside its national boundary (UN, 1998). According to UN (1998), the average transnationality index[2] of the world's 100 largest MNEs increased from 51 percent in 1990 to 55 percent in 1996. Multinationalization is recognized as one of the most important strategies to sustain firms' competitiveness in the world business environment. Higher involvement or higher levels of firms' capabilities to deal with overseas markets are broadly accepted as a major means of increasing their performance in the deeply inter and intra-active world competition (Wolf, 1977; Rugman, 1979; Miller & Pras, 1980; Michel & Shaked, 1986; Morck & Yeung, 1989). Particularly in the 1980s when Japanese firms caught up with US firms, the degree of Japanese firms' multinationality increased considerably due to internal or microeconomic factors such as the restructuring and reengineering of firms and external or macroeconomic factors like the yen appreciation and integrated EU (Tejima, 1993).

The trend macroeconomic convergence in terms of living standards, working conditions, income patterns, and industrial structures among major developed countries (Imbriani, 1997; Dunning, 1995) can also provide possible theoretical backgrounds to support similar FDI patterns by major investing countries in the 1990s. The emergence of the 'new growth theories' has been applied to endogenous growth in the economic development process both theoretically and empiritically (Button, 1998). The common foci of macroeconomic policies among countries on economies of scale, agglomeration effects, and knowledge spillover give more evidence on macroeconomic convergence

[1]Globalization is measured by the ratio of FDI stocks to GDP in our study.

(Button, 1998; Romer, 1986). In addition, the differences between the values of Japanese yen and US dollar have become smaller in the 1990s compared to those in the 1970s, which could also be a possible reason to make converging patterns of Japanese and US FDI in the 1990s. (see Figure 5-1).

Dunning's eclectic paradigm (1976, 1981, 1993a, 1997a) assumes that at any given time, the stocks of foreign assets, owned and controlled by MNEs, are determined by the interaction of the OLI factors. Comparing the OLI configurations of Japan and the United States between the 1970s and 1990s (see Table 5-1) clearly shows the possibility of the converged FDI patterns between the two countries. In this table, ownership specific and internalization advantages represent the sum of MNEs' advantages of Japan and the United States. In the 1970s, each country's OLI configurations are based on historical differences and asymmetric sources of competitiveness such as the ownership specific advantages in labor or capital-intensive industries, location specific advantages in low real labor costs or abundant natural resources, and internalization advantages in government intervention or advanced infrastructure. However, these configurations were changed during the 1980s and were characterized as the liberalization period. Because the movements of production factors were relatively relaxed by liberalization, the importance of FDI determinants did not have to rely heavily on traditional forces such as the importance of factor endowments (UNCTC, 1996). In short, in the 1970s, Japanese and US MNEs had different kinds of OLI configurations. However, in the 1990s both countries' FDIs were based on similar kinds of location specific and ownership

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[2]It is measured by combining three ratios: foreign assets to total assets, foreign sales to total sales, and foreign employment to total employment.

advantages with internalization advantages. As a result, the OLI configurations of Japanese and US MNEs in the 1990s placed an emphasis on gaining greater access to technological information and specialized management skills, on creating new technologies, and on the harmonizing macro and micro policies of governments (Dunning, 1993b). These developments support the following hypotheses.

H1a) The differences on the overall distributions of Japanese and US manufacturing FDI were smaller in the 1990s than they were in the 1970s.

H1b) The basis is the expectation that the overall distributions of Japanese and US manufacturing FDI were more determined by the variables of ownership or location specific advantages of their MNEs in the 1970s, and that in the 1990s by the variables of not only ownership and location specific advantages but also internalization advantages of countries and/or their MNEs.

Table 5-1: Some illustrations of OLI characteristics of Japanese and US FDI overseas in the 1970 and 1990s.

	1970s		1990s	
	Japan	**The United States**	**Japan**	**The United States**
Ownership Specific Advantages (O)	1. Competitiveness in labor intensive industries* 2. Financial asset advantages in labor intensive industries* 3. Quality control 4. Flexible production method 5. Managing idiosyncratic human-intensive transactional relations	1. Competitiveness in capital & technology intensive industries* 2. Financial asset advantages in capital intensive industries* 3. Technological capacity (Ability to innovate new products & to take advantages of technology)* 4. Technological intensity* 5. Experiences in FDI* 6. Economies of firm size* 7. Organizational culture & wealth-creating ethos 8. Ability to foresee & take advantage of global production & marketing opportunities 9. Entrepreneurial drive & vision 10. Managing technical & standardized transaction relations	1. Competitiveness in capital & technology intensive industries* 2. Financial asset advantages in capital intensive industries* 3. Technological capacity (Ability to innovate new products & to take advantages of technology)* 4. Technological intensity* 5. Skilled workforce (Skill content of employment)* 6. Product composition and differentiation (Ability to innovate new products & production process)* 7. Management efficiency 8. Ability to adjust to structural change 9. Gov. policy toward innovation, competition, education, training, and industrial structure 10. The organization culture & wealth-creating ethos 11. The nature of corporate governance and inter-firm rivalry and/or cooperation	1. Competitiveness in capital & technology intensive industries* 2. Financial asset advantages in capital intensive industries* 3. Technological capacity (Ability to innovate new products & to take advantages of technology)* 4. Technological intensity* 5. Economies of firm size* 6. Gov. attitude toward protection of innovation, proprietary rights, competition 7. The organization culture & wealth-creating ethos 8. The nature of corporate governance and inter-firm rivalry and/or cooperation 9. Organizational structure of multiple overseas activities
Location Specific Advantages and Disadvantages (L)	1. Low real labor costs* (A) 2. High labor productivity* (A) 3. Gov. intervention to assist own & foreign MNEs (Industrial restructuring period) (A) 4. Current account surplus (A) 5. High savings rate (A) 6. Tariff & non-tariff barriers on Japanese exports (D) 7. Lack of natural resources (D) 8. Constraints on corporations expansion within domestic market (D) 9. Physical & psychic distance with world major markets (USA and Europe)* (D)	1. Large & affluent domestic market* (A) 2. Abundant natural resources (A) 3. Physical & psychic distance with world major market (Europe)* (A) 4. Lower distance cost (A) 5. High degree of industrialization (A) 6. High real labor costs* (D) 7. Tariff & non-tariff barriers on imports (D) 8. Low country risk (D)*	1. Large & affluent domestic market* (A) 2. High rate of return on investment (A) 3. Relaxed regulations toward outward investments (A) 4. Skilled employment ratio* (A) 5. High labor productivity* (A) 6. High degree of industrialization (A) 7. High real labor costs* (D) 9. Emergence of clustering in hosts (D) 10. Needs to gain access to foreign created assets (D)	1. Large & affluent domestic market* (A) 2. High rate of return on investment (A) 3. Favorable domestic economic conditions 4. Abundant natural resources (A) 5. Liberalization of markets (A) 6. Emerging efficiency seeking FDI (A) 7. High degree of industrialization (A) 8. High real labor costs* (D) 9. Needs to tap into foreign assets (D) 10 Low country risk* (D)

Internalization Advantages (I)	1. Gov. intervention & extent to which policies encourage MNE to internalize transactions (transfer pricing) 2. Relationship b/w Japan & hosts (generalized system of preference) 3. Buyer uncertainty 4. Differences in market structure 5. Keiratsu System (Quasi internalization)	1. Need of seller to ensure quality of intermediate or final products 2. Adequacy of technological educational and communications infrastructure* 3. Increasing multinationality of US firms*	1. Gov. intervention & extent to which policies encourage MNE to internalize transactions 2. Need of seller to ensure quality of intermediate or final products 3. Adequacy of technological educational and communications infrastructure* 4. Increasing multinationality of Japanese firms* 5. Host gov. policies toward FDI inflows*	1. Gov. intervention & extent to which policies encourage MNE to internalize transactions 2. Need of seller to ensure quality of intermediate or final products 3. Adequacy of technological educational and communications infrastructure* 4. Increasing multinationality of US firms* 5. Host gov. policies toward FDI inflows*

*: Possible independent variable in this study
(A): Advantage; (D): Disadvantage

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
GDP (US$ b)	500	562	691	971	1011	1059	1170	1086	1186	1265	1343	1991	2418	2918	2899	2970	3402	3719	4275	4689	5134	4600
Exchange Rate	204.98	204.81	185.45	145.34	151.35	156.60	152.32	172.03	164.04	164.04	164.75	116.39	99.90	88.51	95.28	100.00	93.04	87.47	76.80	70.59	64.96	75.13
Exports (US$ b)	56	67	80	98	103	130	152	139	147	175	165	191	221	267	291	276	314	331	341	378	447	422
Imports (US$ b)	58	65	71	79	111	141	143	132	127	140	122	116	144	189	223	226	236	227	227	263	339	358

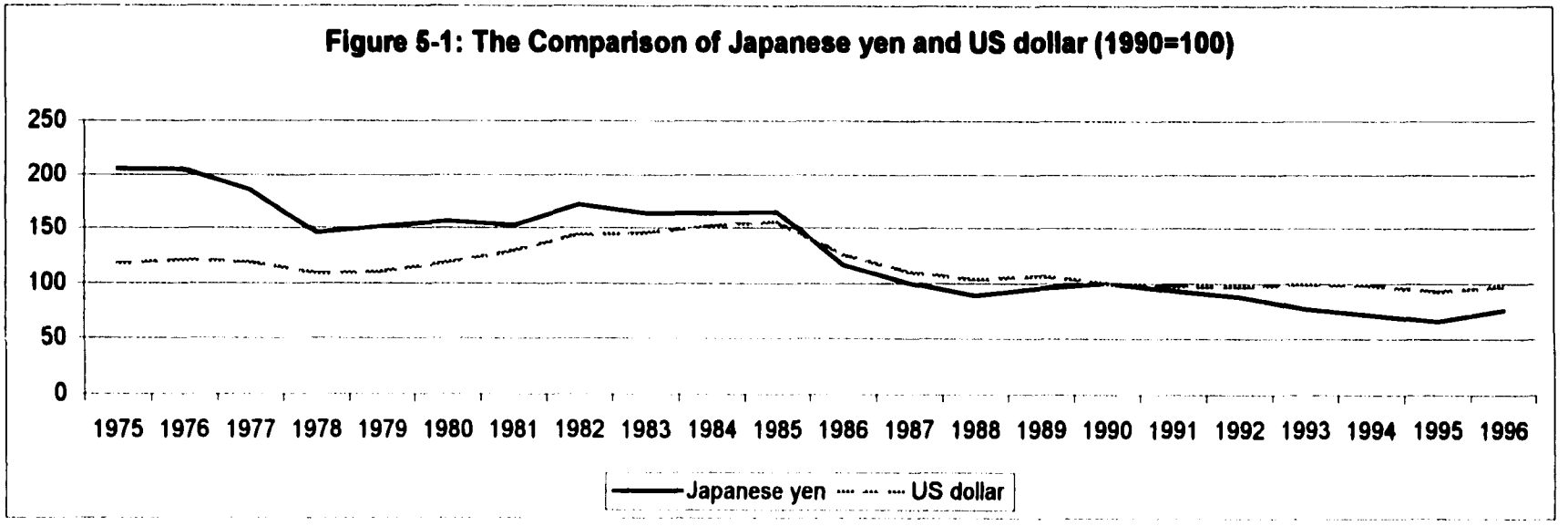
SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan

TABLE 5-2: Economic Indicators of Japan

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
GDP (US$ b)	1631	1819	2027	2291	2558	22784	3116	3242	3515	3902	4181	4422	4692	5050	5439	5744	5917	6244	6553	6936	7254	7576
Exchange Rate	117.6	120.6	118.6	108.8	109.9	118.4	128.7	144.1	144.9	151.8	155.8	125.9	109.8	103.1	106.3	100	97.7	96.4	99	97.9	92.6	96.9
Exports (US$ b)	109	117	123	146	186	226	239	216	206	224	219	227	254	322	364	394	422	448	465	513	585	625
Imports (US$ b)	106	133	160	186	222	257	273	255	270	346	35246	382	424	460	493	517	508	554	603	689	771	822

SOURCE: The various issues of Survey of Current Business published by the US Department of Commerce

TABLE 5-3: Economic Indicators of the United States



5-3 GEOGRAPHIC AND INDUSTRIAL PATTERNS

There are many empirical studies focused on the pattern of Japanese FDI. Two subjects can briefly classify the studies. First one is keiretsu system. Keiretsu system is an important source of competitive advantage for Japanese MNEs by providing financial capitals, foreign market information and by using experience through keiretsu networks. As a result, Japanese MNEs tend to invest in particular regions with other members from the same vertical assembler-suppliers group-keiretsu (Caves & Uekusa, 1976; Imai, 1988; Horiuchi, 1989; Hoshi et al., 1991; Gerlach, 1992; Tan & Verkinsky, 1996; Belderbos & Sleuwaegen, 1996; Sakakibara & Serwin, 1997; Berry, 1998). The other subject is about the managerial superiority of Japanese MNEs and other economic factors to make FDI patterns (Rapp, 1973; Pugel, 1981; Abbeglen & Stalk, 1985; Gregory, 1986; Kimura, 1989; Kogut & Chang, 1991, 1996; Urata, 1991; Drake & Caves, 1992; Hennart & Park, 1994; Yamawaki 1994; Beamish et al., 1997, Huang, 1997).

Micossi & Viesti (1991) and Head et al. (1995) found that Japanese FDI have predominantly flowed into industries where host countries have already built up comparative advantages. This finding supported Kojima's dynamic comparative theory. Belderbos & Sleuwaegen (1996) employed a multinominal logic model to compare the determinants of Japanese electronics FDI in Southeast Asia, Europe and North America based on all FDI up to June 1989 by the total of 204 Japanese MNEs. They found that firm related variables such as R&D intensity, marketing expertise are positive in Europe and North America, and keiretsu system and human resources are positive in Southeast Asia. An important influence of the Japanese firm-level variables on foreign direct

investment decision was also empirically proved by Kogut & Chang (1991) and Hennart & Park (1994). In addition, Kogut & Chang (1991) discovered that the relationship between technology competence and Japanese electronics FDI in the United States was negative in the 1970s, but positive in the 1980s.

The empirical studies on US FDI have a long history. However, most of studies have focused on US FDI in Europe, which are detailed in the later part of this chapter, or FDI in the United States. Kwack (1972) found that US FDI was mostly determined by macro economic variables such as the size of market and/or economic growth in the host country. Yu & Ito (1988) conducted a logit model to compare the determinants of FDI by US tire (oligopoly) and textile (non-oligopoly) industry between 1972 and 1982. They found that the FDI pattern of US tire industry was determined by not only other competitors' FDI activities, but also firm and host country specific factors. However, US textile industry, in which more competition existed, was not motivated by other competitors' FDI activities. Wheeler & Mody (1992) found that country specific factors such as the quality of infrastructure, the degree of industrialization and the level of inward FDI were major determinants of US FDI. In addition, Loree & Guisinger (1995) and Barrell & Pain (1996) added policy variables such as tax rate, and factor costs, respectively to the major determinants of US FDI.

Based on the empirical studies reviewed briefly above, the factors to determine the patterns of Japanese and US FDI have become multidimensional and varied from country to country and/or from industry to industry (Casey, 1998)

5-3-1 Geographic Patterns (6 Regions Level)

According to Dunning (1993a, 1997a), the different FDI geographic patterns between the 1970s and 1990s can be explained by the changes in the competitive advantage of firms, changes in the locational attractiveness of countries, and in changes the organization of the competitiveness of firms. First, the core competencies of MNEs were the resource endowments of their home countries or their privileged access to specific intangible assets (Oa) in the 1970s. However, since the 1980s, these competencies have changed the capability of MNEs to govern and coordinate their own specific assets along with the assets of other MNEs and with the location specific advantages of host countries or regions where MNEs have value added activities (Ot). Second, the quality and cost of factor endowments or semi-skilled labor, which were the critical determinants of FDI in the 1970s, have been replaced by the availability of the favorable business environments such as supportive industries and infrastructure. Third, the location specific advantages of countries in the 1970s were primarily based on the country-specific costs of factor endowments such as their possession of natural resources, cheap labor, the size of local markets, and market openness for final products. However, since the 1980s, the upgraded local physical infrastructure including transport, communications, and other related industries, has provided more opportunities to achieve economies of scale, scope and the integration of production at the regional or global level. As a result, infrastructure has become a major FDI determinant. Fourth, because of the changed nature and characteristics of the competitive advantages of firms and the location attractiveness of countries, inter-firm collaborative arrangements have become major FDI

modalities to exploit and augment ownership specific advantages over the last two decades.

In other words, the major determinants of the geographic patterns of FDI by investing countries reflected the different structures of the natural and created assets and home countries' market conditions in the 1970s. Although the nature and characteristics of home countries partly explain geographic patterns of FDI in the 1990s, MNEs have placed more emphasis on establishing globally integrated production systems such as vertical or horizontal integration, practicing global market strategies (Dunning, 1997a), and utilizing international or regional division of labor. It indicates that the MNEs themselves emphasize a global strategy of production and marketing, and home country characteristics diminished in importance (Gray, 1995).

The salient change is that Japan has altered its major FDI destinations from less developed and developing countries to developed countries. There are many factors underlying this important shift in the pattern of Japanese FDI make these changes. First, not only Japan's deregulation of its foreign exchange controls in December 1980, but also the further development of the Euromarket such as Euro-currency and Euro-bond market and other financial deregulation in developed countries. These events gave impetus to the integration of financial markets on a global scale and then to increase Japanese FDI outflows. Second, the Japanese current account surplus since 1983 and the appreciation of yen (see Table 5-2) were due in part to a fall off in portfolio capital exports, and the excessive domestic savings rate over investment deriving from the declining Japanese

economic growth rate promoted large FDI flows. Third, trade barriers such as voluntary export restraints (VER) and orderly marketing arrangements (OMA) by the United States and European countries turned the destinations of Japanese FDIs from LDCs and developing to developed countries. Some Japanese labor-intensive industries had been exported to developing countries to cope with bilateral trade friction because Japanese firms could integrate their productions by using use lower wages and enjoying a lower tariff rate under the Generalized System of Preference (GSP) of GATT for developing countries. However, developed countries tried to place more restrictions on those kinds of Japanese export strategies and further to eliminate the GSP tariff rates. As a result, Japan had to consider developed countries as its own FDI destinations. Fourth, there was another large appreciation of the Japanese yen after the G-5 meeting in 1985. The Japanese yen appreciated from 164.75 yen per US dollar in 1985 to 99.90 yen in 1987 (see Table 5-2 & 5-3). Fifth, LDCs were no longer very favorable places for Japanese firms. In the first half of the 1980s, most developing countries suffered from accumulated debt, wars, civil wars, political instability, and unfavorable economic conditions by the worldwide stagnation (Komiya, 1990; Davis & Cull, 1994).

In contrast to the pattern of Japanese FDI in Asia, the increased income levels in Asian countries created new demands for US products. To supply the new demand US MNEs expanded their production in Asia and the expanded production increased the demands for intermediated inputs. As a result, Asian market provided more incentives for US MNEs to invest in Asia (Ramsteter, 1991). These events lay the bases for the following hypotheses.

H2a) The differences on the geographical distributions of Japanese and US Total FDI are smaller in the 1990s than they were in the 1970s.

H2b) The differences on the geographical distributions of Japanese and US manufacturing FDI are smaller in the 1990s than they were in the 1970s.

H2c) The basis is the expectation that the geographic distribution of Japanese manufacturing FDI was more determined by variables of resource seeking in the 1970s, and that in the 1990s by variables of market, efficiency or strategic asset seeking.

H2d) The basis is the expectation that the geographic distribution of US manufacturing FDI was more determined by variables of market seeking in the 1970s, and that in the 1990s by variables of efficiency or strategic asset seeking.

5-3-2 Industrial Patterns (5 Industries Level)

When firms have accumulated managerial resources within them, they can use the resources in the most profitable and efficient ways; FDI can take place (Penrose, 1959). After the two oil crises of 1973 and 1979 industrial structure changed remarkably in Japan from industries relying heavily on cheap unskilled labor to engineering industries. As a result, since the latter half of the 1970s, Japan has had competitiveness in industries such as: automobiles, electronics, electric machinery, motorcycle, audio equipment,

communication equipment, machine tools and machinery with electric controls. These industries can be characterized as assembly-type, component-intensive manufacturing, mass production of standardized products, strict quality control, differentiated products, and cooperation and coordination among firms (Komiya, 1990; Ozawa, 1996). On the other hand, Japan has been less competitive in industries in which R&D, large-scale fixed plant, linkage with natural resources, cheap labor, and energy are the most critical factors. These industries are airlines, chemical industry, pharmaceuticals, petrochemicals, paper and pulp, steel (Komiya, 1990). According to Anderson (1992) and Ozawa (1996), there was a significant change in the composition of Japanese FDI during the1980s. Japanese FDI concentration in light industries such as food, beverage, and tobacco, textiles, and apparel and leather products during the 1970s shifted to components-intensive, assembly-based manufacturing and service industries.

There are external and internal reasons to stimulate the restructuring the industrial pattern of Japanese FDI outflows. A major external reason in the1980s is that according to the Plaza agreement in 1985, appreciation of Japanese yen, 238.54 yen per US dollar in 1985 and 168.52 yen per a US dollar in 1986 (see Table 5-2). Increased production costs in Japan stimulated market-seeking FDI outflows. At this time, labor-intensive industries, which had been transferred other NICs, were replaced by high technology and high-value added manufacturing industries in Japanese domestic production. A major internal reason was that according to the interlocking shareholding system in Japanese capital markets, the influence of general shareholders on investment decision was restrained. Japanese main banks placed emphasis on building the volume of business activities rather

than on increasing profits when issuing loans to its companies. This particular bank system delivered Japanese MNEs' lower ratios of profits to sales and returns on capital compared to other countries. These two systems accelerated more aggressive Japanese FDI outflows in 1980s (Nakatani, 1992). However in the 1990s when Japanese domestic economy was cooling down compared to that in the 1980, Japanese FDI had dropped sharply, and Japanese flexible internal systems helped to adjust its industrial structure of FDI outflows.

In addition, Japan tended to have comparative advantages in industries that required inter-company cooperation with long-term business relationships while the United States in industries that needed individual talents or technology. Because Japanese-corporate behavior emphasized building close coordination and networking with many companies, the Japanese production system was suitable to industries such as autos, electronics, and machinery in which many companies must work together. On the contrary, the US production system was appropriate for industries such as computer software, pharmaceuticals, petrochemicals, and space development because the US-corporate behavior focused on individual talents and large-scale specialized equipment with a short-term and market-oriented thinking. Also, in terms of the effectiveness of production and technology innovation, the Japanese system characterized by flexible corporate networking, proved to be more effective than the US system, which was less flexible in the 1970s and the early 1980s (Nakatani, 1992).

The traditional importance of factor endowments has declined as a factor influencing current flows of FDI, and more general aspects of economy such as created competence, capabilities, supporting industries, local market conditions, macro- organization, and micro policies have grown in importance. It means that government's role becomes critical (Dunning, 1992 & 1993a). The Japanese different characteristics of FDI outflow patterns from those of US FDI such as more concentration in developing countries and low-technologies, export-oriented, across industries and overtime had been articulated by Japanese government until 1980 (Huang, 1997). However, Japan has relaxed regulations to compete in global market economy since the early 1980s (Casey, 1998).

H3a) The differences on the industrial distributions of Japanese and US manufacturing FDI are smaller in the 1990s than they were in the 1970s.

H3b) The basis is the expectation that the industrial distribution of Japanese manufacturing FDI was more determined by variables of resource seeking in the 1970s, and that in the 1990s by variables of market, efficiency or strategic asset seeking.

H3c) The basis is the expectation that the industrial distribution of US manufacturing FDI was more determined by variables of market seeking in the 1970s, and that in the 1990s by variables of efficiency or strategic asset seeking.

5-4 JAPANESE AND US FDI PATTERNS IN EUROPE AND OTHER REGIONS

Most of empirical studies on FDI in Europe in the early years have examined on the impact of European integration on US FDI (Yannopoulos, 1990) because the United States was the most important investing country in the EEC and Japan was not important until the middle of the 1980s (e.g. Balassa, 1961; Bandera & White, 1968; Scaperlanda & Mauer, 1969). Scaperlanda & Mauer (1969) found that US FDI in the EEC was more motivated by market size, economic growth and tariff discrimination in the host country based on the data from 1952 through 1966. Researchers have also examined the impact of the different integration states on US FDI (D'Arge, 1969; Schmitz, 1970; Scaperlanda & Reiling, 1971; Scaperlanda & Balough, 1983; Clegg, 1992).

After Japanese FDI in Europe became considerable, researchers started to examine the impact of European integration on Japanese FDI (e.g. Balasubramanyam & Greenaway, 1992, 1993; Yamada & Yamada, 1996) and to compare the patterns of Japanese and US FDI in Europe (e.g. Buigues & Jacquemin, 1994; Petri, 1994; Neven & Siotis, 1996; Dunning, 1997; Pain & Lansbury, 1997; Srinivasan & Mody, 1997).

Srinivasan & Mody (1997) based on the data, Japanese and US FDI in ten EC countries from 1977 through 1992, found that host country variables (market size, cost of labor), agglomeration factors (previous level of FDI, infrastructure), the degree of openness of an economy, and country risk were strongly impact on Japanese and US FDI in the EC countries. Neven & Siotis (1996) found that a major determinant of Japanese and US

FDI in four large EC countries (France, Italy, Germany and the UK) for the years 1984-1989 was the variable, technology sourcing that represented by the difference in R&D intensity between Japan or the United States and the host county. In the study of Buigues & Jacquemin (1994) with the data including seven or nine manufacturing breakdowns from 1980 through 1990, the complementary relationships between FDI and trade were common for the both Japanese and US FDI. However, non-tariff barriers were a significant determinant for Japanese FDI in the EC, but a minor one for US FDI in the EC.

The impact of European economic integration on FDI by non-members into EU member countries can generally bring a considerable level of geographic and/or industrial restructuring through industrial specialization and the exploitation of comparative advantage within Europe. Firms tend to move to a single location to exploit any economies of scale derived from the expanded European market, which can be served by trade (Emerson et al., 1988). Firms tend to move to other places to take location specific advantages such as labor intensive industries to countries that have relatively lower real labor costs within Europe (Pain & Lansbury, 1997).

As a result, Japanese and US FDI patterns in the EU can be better explained by combining the theories of trade and international production (FDI). The major concern of trade theory is the location of production of different kinds of goods. Trade theory tries to decide which markets within the integrated area can be supplied by exports or by local production without any consideration of the characteristics of foreign owned production

such as the nationality of ownership and MNEs' strategies. However, the major concern of FDI theory is the allocation of production efficiently. The theory of FDI is concerned with the impact of international economic integration on the competitive advantages of firms of different nationalities, the locational attractiveness associated with these competitive advantages, and the different ways to internalize these competitive advantages of firms and the locational attractiveness (Dunning, 1997b).

5-4-1 Geographic Distributions

MNEs, which are major actors in the process of international resource allocation, reorganize the regional division of labor within an economic integrated area by moving production locations within the area based on the distribution of comparative advantage (Andres, 1996).

The dynamic effects of economic integration present greater economies of scale, derived from larger market size, larger scale economies and increase competitiveness of member nations. These effects result in a higher level of income and more investments in R&D, and consequently improve ownership specific advantages of regional firms and/or foreign-based MNEs (UNCTC, 1990).

Major parts of the benefits derived from an economic integration are also derived from cost reduction and efficiency gains from the regrouping of production facilities in fewer locations within member countries, in which more favorable costs are found. Thus, FDI by non-members will examine the integrated area seeking those advantages. Baldwin

(1989) argues that X-efficiency gains from reorganization investment with concentration in fewer plants would attract rationalized investment because the costs of intermediate inputs become relatively cheaper inside the integrated regime. Foreign subsidiaries within the integrated countries, which were initially motivated to escape from existing or prospective import restrictions, tended to be smaller than the optimal scale of production. These subsidiaries can be stimulated to reorganize their locations of production within the member countries especially according to the expansion of the integrated area. It means that foreign subsidiaries that are only for local markets in member countries will be closed, and make a cluster of rival firms in a common location (increasing levels of concentration) to exploit economies of scale. In addition, the decreased risks for FDI in new member countries will be a part of region to encourage the reorganization FDI within the integrated area (Vernon, 1994).

In addition, according to Dunning's theory of international production (1993a), the dynamic effects of international economic integration improve competitive advantages of MNEs established within the area by expanding market size, creating opportunities for scale economies, and increasingly high levels of innovation activities. These effects can add more O advantages to those inside MNEs, which obtain newly created L advantages compared to other MNEs outside of the integrated area. The improved advantages would be main attractiveness to foreign investors.

While the shares of Europe in Japanese FDI stocks increased by 50 percent and 6 percent between 1989 and 1996 respectively, those of developing countries decreased by 38

percent and 6 percent. On the other hand, while the shares of Europe in US FDI stocks increased by 7 percent and 4 percent, those of other developed countries decreased by 13 percent and 22 percent between same periods (see Table 2-9). It indicates that the changes between Europe and developing countries by Japanese FDI and between Europe and other developed countries by US FDI have some correlation because of the integration effects on Japanese and US FDI.

H4a) The differences on the geographical distributions of Japanese and US total FDI in Europe are smaller in the 1990s than they were in the 1970s.

5-4-2 Industrial Patterns

Industrial patterns of Japanese and US FDI in Europe will be determined with some other factors derived from European integration processes. Different industrial characteristics of each country's FDI in Europe will be the major reason for different industrial patterns to develop. Dunning (1997b) argues that integration effects are industry specific. He classifies five industrial characteristics, which stimulate further the industrial concentration within Europe. The industrial characteristics are high levels of R&D relative to sales, technically advanced intermediate products, highly differentiated products, information sensitive, and lower coordination costs in intra-firm transaction within Europe. Also, the difference between manufacturing and non-manufacturing provides an explanation of the different industrial patterns. Because non-manufacturing sectors, especially service sectors, are less easily tradable than manufacturing goods, FDI

should be used as an entry mode instead of export. The composition of FDI and trade in the commercial relationship with Europe is another determinant for the industrial patterns because there are different patterns between trade-based and investment-based commercial relationship in the European integration processes (UNCTC, 1990).

Because the United States has a long investment history in the European market, most of US FDI flows in Europe in the early 1960s were characterized as defensive import-substituting investments based on transaction cost theory and oligopolistic power theory, to supply local markets. However, at the end of the 1980s, 85 percent of the market for US goods and services in the EU is accounted for by the US affiliates in the EU, and exports from the United States took care of the rest of them (UNTCMD, 1993). As a result, the economic integration processes in Europe have turned the type of US FDIs into rationalized investments and offensive export substituting investments. The former is to specialize one or a reduced range of product with reduced production locations to supply all European markets and the latter is for strategic asset seeking (Dunning, 1988b, 1993a; UNCTC, 1990).

On the contrary, Japan is a latecomer. So, Japanese FDI in Europe aimed at exploiting the European market as a whole beginning from the early 1970s (Dunning, 1994a). Also, Japanese MNEs had trade-based rather than investment-based commercial relationship with the EU. At the end of the 1980s, 20 percent of the market for Japanese goods and services in the EU is accounted for by the Japanese affiliates in the EU and 80 percent is exported from Japan (UNCTC, 1990). In consequence, the economic integration

processes in the EU have turned the type of Japanese FDIs into defensive export substituting investments in industries where Japan has already O and L advantages such as automobile, electric and electronic equipment and offensive export substituting investments to upgrade and rationalize operations in the EU.

H5a) The differences on industrial distribution of Japanese and US manufacturing FDI in Europe are smaller in the 1990s than they were in the 1970s.

H5b) The changing industrial distribution of Japanese manufacturing FDI in Europe has been more influenced by its changed overall manufacturing FDI, from resource seeking to market, efficiency or strategic asset seeking than by European integration *per se* because the effects of European economic integration on Japanese manufacturing FDI is not significant.

H5c) The changing industrial distribution of US manufacturing FDI in Europe has been more influenced by European integration *per se* rather than its changed overall manufacturing FDI, from market seeking to efficiency or strategic asset seeking because the effects of European economic integration on US manufacturing FDI is significant.

5-5 RELATIONSHIPS BETWEEN FDI AND TRADE

Trade theory has tried to encompass the comprehension of trade patterns derived from the emergence of MNEs during the last few decades. Trade theory cannot embrace FDI into its theoretical reasoning because it assumes firms produce goods and services in one location. On the other hand, although FDI theory has well explained new trade flows, coming from different kinds of MNEs, it cannot fully construe all patterns at the aggregate industry or country levels because of its individual firms' perspective of the nature of the analysis. As a result, the integrated theory between trade and FDI is needed to verify current international business activities especially by MNEs. For instance, MNEs have replaced and complemented traditional trade activities with their FDI activities such as sales by their foreign affiliates, internalization, and the direct involvement in arm's-length trade (UNCTC, 1996; Gray, 1992). It means that in the traditional trade model, FDI and trade were substituting each other because the major objectives of the traditional model were finished goods (Markusen, 1995; Berry & Sakakibara, 1999). However, the introduction of intra-firm trade goods expanded the trade model to embrace the possibility of complementarities between FDI and trade (Brainard, 1997)

Although during the 1960s and 1970s FDI has often been regarded as substitute for trade under the product-cycle paradigm with a single product view, value-added activities by foreign affiliates has often generated demand for other products such as intermediate goods, capital goods, and other related services. In the case of market-seeking FDI in manufacturing industry, it can complete or replace trade in a particular product at the

industry and country levels (UNCTC, 1996). Bergsten et al (1978) finds out a positive correlation between the expansion of US FDI and the expansion of its trade. In addition, Lipsey and Weiss (1981) argues that the level of production by US foreign subsidiaries in a host country creates a positive impact on US exports in an industry to that host country. Kojima (1990) interprets more US FDI stocks compared to Japanese at the end of 1981, as US FDI is often a substitute for trade and Japanese FDI is complement to trade. However, the size of Japanese and US FDIs since the 1980s has shown an exactly opposite result. Although the Japanese cumulative FDIs are much less than US FDIs because Japan is a latecomer, Japanese FDI flows have a higher growth rate than those of US FDI (UNCTC, 1996; Casey, 1998). In consequence, Huang (1997) finds that there is a strong negative correlation between FDI and trade in the Japanese experience and a positive in the US experience. It means that the relationship between FDI and trade is substitute in Japan and complementary in the United States.

Since the mid-1980s, the world's liberalization and globalization represents the environment for trade and FDI in the world economy. Improvements in technology have reduced production costs and stimulated the dispersion of production and service networks. Liberalized trade policies, which began in the post-war years, have further accelerated the processes with GATT and WTO. Unilateral liberalization of national FDI policies derived from bilateral investment treaties and the creation of sectoral, multilateral, and regional agreements, have been prevalent phenomena. In addition, most MNEs have established their foreign affiliates, which are almost stand-alone through the results of sequential processes. For example, manufacturing firms supply foreign market

exports at first and then engage in international production through the intermediate processes such as using intermediate markets and non-equity contracts. These kinds of liberalization of trade and FDI have provided many implications to MNEs. First, MNEs have more choices in terms of the types of trade and FDI by the ameliorated access to foreign markets and to foreign factors of production. Second, MNEs, which can capitalize on the tangible and intangible assets by using their own intra-firm systems, can maximize overall efficiency. Third, newly created large markets by the liberalization processes press MNEs to be more competitive. Fourth, the importance of different factors, which had determined the destinations of FDI, is changed. It means that because of relatively relaxed movements of production factors, FDI location decision does not have to rely heavily on traditional objectives: seeking national markets for manufacturing goods and services or seeking a destination for location-specific resources at the right price (UNCTC, 1996).

Dynamic business environments in a global context transform the traditional relationship between trade and FDI. First, although MNEs still need to develop and accumulate O advantages to engage in foreign production in host countries, the normal sequential processes, which are from domestic production to FDI through export, are much shorter. Hedlund and Kverneland (1985) find out Swedish MNEs used direct FDI to get into Japanese market instead of using exports or other entry strategies. Especially this kind of 'leapfrogging' over steps is more likely to be prevalent in high-technology firms using M&A strategy. Second, the sequence does not have to start from home countries, but rather from anywhere in MNE system. It means that innovation and production can be

done by foreign affiliates by utilizing foreign resources and capabilities in foreign countries. Third, MNEs integrate international production by vertical or horizontal integration strategies, and then create a network of intra-firm or inter-firm relationships based on product characteristics and market portfolios and the type of FDI. The growing importance of efficient-seeking FDI by MNEs requires that more complicated regional or global strategies be based on specialization and geographic dispersion of activities. As a result, the relationship between trade and FDI is more interconnected in the framework of efficiency oriented, integrated and international production strategies led by MNEs (UNCTC, 1996; Gray, 1999).

There are three possible sources to develop and/or increase intra-firm trade. First, the initial motive for FDI was market seeking, but the changes in target country's and/or region's conditions require more rationalization. Second, developments or expanded capabilities of subsidiaries can stimulate intra-firm trade. Third, initial motive for FDI is efficiency-seeking to supply the parent and/or other subsidiaries in other countries (Gray, 1999).

H6a) Japan has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996.

H6b) The United States has more complementary relationships between manufacturing FDI and trade in 1975-1986 than they were in 1986-1996.

H6c) Japan has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996 in Europe compared to other areas because of the effect of European economic integration.

H6d) The United States has more complementary relationships between manufacturing FDI and trade in 1975-1985 than they were in 1986-1996 in Europe compared to other areas because of the effect of European economic integration.

CH 6. DATA and METHODOLOGY

6-1 Introduction

This chapter provides information on the data sources, and the way in which the study matches Japanese and US data in the first section. In the second section, we provide the detailed explanations on the hierarchical linear model (HLM), which is used to test convergence/divergence hypotheses. A two-stage estimation process, which is to test the determinant hypotheses, is explained in the last section.

6-2 DATA

6-2-1 Dependent Variables

Dependent variables in our study are the shares of Japanese and US FDI stocks in host countries (or regions) and/or industries. The major reason to use the share of FDI stocks instead of FDI flows is that the distributions of FDI stocks are less volatile than the distributions of FDI flows. We use two different measures: total FDI, manufacturing FDI from 1975 to 1996. The measures of total FDI are classified into the shares of FDI to 28 or 29 host countries, which are presented in Table 6-1 and those to 6 host regions. Some host countries have not been reported as separate entities since the year 1975 or 1977 such as Venezuela, Israel Egypt, South Africa for Japanese data, and Iran, Kuwait, Liberia for US data. The measures of manufacturing FDI are divided into 6 host regions and 5 different manufacturing industries. The difficulty of obtaining reliable and consistent FDI data on more than two countries is well known to all scholars. Japan and the United States are using different industrial standard classifications, and international institutions, which are using the same classification, do not provide old data. Therefore,

our study matches Japanese and US FDI data using International Standard Industrial Classification (ISIC) from 1975. Table 6-2 describes the names of industries and the code numbers of Japanese and US data, which are included in ISIC.

Table 6-1: List of Host Countries for Japanese & US FDI

Region	Country	Data Available for
North America (2)		
	Canada	Japan & USA
	U.S.A	Japan
Latin America (5)		
	Brazil	Japan & USA
	Mexico	Japan & USA
	Panama	Japan & USA
	Peru	Japan & USA
	Venezuela	USA
Asia & Oceania (11)		
	Hong Kong	Japan & USA
	Indonesia	Japan & USA
	Japan	USA
	Rep. of Korea	Japan & USA
	Malaysia	Japan & USA
	Philippines	Japan & USA
	Singapore	Japan & USA
	Taiwan	Japan & USA
	Thailand	Japan & USA
	Australia	Japan & USA
	New Zealand	Japan & USA
Middle East (4)		
	Iran	Japan
	Saudi Arabia/Kuwait	Japan
	Israel	USA
Europe (9)		
	Belgium/Luxembourg	Japan & USA
	France	Japan & USA
	Germany	Japan & USA
	Ireland	Japan & USA
	Italy	Japan & USA
	Netherlands	Japan & USA
	Spain	Japan & USA
	UK	Japan & USA
Africa (4)		
	Egypt	USA
	Liberia	Japan
	Nigeria	Japan & USA
	South Africa	USA

Table 6-2: Industrial Classification

OECD (ISIC)	JAPAN	USA
Food products **31**	Foodstuffs Country Code: 12, 13 ISIC: 31	Food and kindred products ISI - 20 ISIC: 311.2, 313
Textiles and wood activities **32-34**	Textiles / Lumber and pulp Country Code: 14-19	Apparel & other textile products / Lumber & Wood products / Paper & allied products / Stone, clay & other nonmetallic products
Petroleum, chemical, rubber and Plastic products and **Pharmaceuticals** **35**	Chemicals Country Code: 20-25 ISIC: 35	Petroleum & coal products / Chemical & allied Products/ Rubber products / Miscellaneous Plastic products ISI - 28 ISIC: 351, 352
Metal and mechanical products **37, 381, 3829**	Iron and nonferrous metals / Machinery Country Code: 26-29, 32, 34 ISIC: 37, 381, 3829	Primary & fabricated metals / Industrial Machinery & equipment ISI - 33, 34, 35 ISIC: 37, 381, 3829
Office machinery, computers, radio, **TV and communication equipment** **383, 3825**	Electric appliances Country Code: 30 ISIC: 383, 3825	Electric & other electric equipment ISI – 36 ISIC: 383, 3825
Vehicles and other transport **Equipment** **384**	Transport equipment 31, 33 ISIC: 384	Transportation equipment ISI - 37 ISIC: 384

For the United States, we obtained all data from the various issues of Survey of Current Business published by the US Department of Commerce. For Japan, all data were obtained from various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan.

6-2-2 Independent Variables

To employ the eclectic paradigm, which is a most comprehensive explanation of FDI determinants (Urata, 1991), which was described in detail in chapter 4, explanatory variables include ownership, internalization, and location advantages in Table 5-1 with the interaction between home and host characteristics, and are classified into natural resource, market, efficiency and strategic asset seeking in Table 6-3. One important point is that because there is no clear cut to distinguish variables especially between L and I or between market and strategic asset seeking, some variables are used for more than one advantage or motivation. For example, tax rates can be treated as L and/or I. For MNEs, which try to integrate regional production by using lower tax rates of a host country within a region, tax rates can be I advantages for the MNEs. However, for MNEs, which use lower tax rates to reduce production costs, tax rates can be L advantage.

Globalization rates (GLOB) are ownership advantages of home countries' MNEs. Labor cost (LC) is location of host countries related to home countries. Gross domestic productions (GDP), gross fixed domestic investments (GFDI), inflation rates (INF) and tax rates (TAX) represent location and/or

Table 6-3: Some Variables Influencing Motivations for FDI in the 1970s and 1990s

Type of FDI	In the 1970s	In the 1990s	Variables
Natural Resource Seeking	1. Supplies of cheap and unskilled or semi-skilled labor 2. Natural resources (Oil, rubber, tin, copper etc)	1. Supplies of cheap and unskilled or semi-skilled labor 2. Natural resources (Oil, rubber, tin, copper etc)	1. Wage 2. Natural resource capacity
Market Seeking	1. Domestic & adjacent markets 2. Real wage costs, material costs 3. Transport cost, tariff & non-tariff trade barriers	1. Large & growing, and adjacent market 2. Availability & price of skilled & professional labor 3. Presence & competitiveness of related firms 4. Quality of national & local infrastructure and institutions 5. Less spatially related market distortions, but increased role of agglomerative spatial economies & local service support facilities 6. The macro-economic & macro-organizational policies pursued by host governments 7. Increased need for close presence to users in knowledge intensive sectors 8. The growing importance of actions by regional or local development agencies	1. Market size 2. Growth rate 3. Real labor costs 4. Infrastructure 5. Skill content of employment 6. Skilled employment ratio
Efficiency Seeking	1. Production cost related 2. Freedom to engage in trade in intermediate and final products 3. Presence of agglomerative economies 4. Investment incentives	1. Availability & price of skilled & professional labor 2. Presence & competitiveness of related firms 3. Quality of national & local infrastructure and institutions 4. Less spatially related market distortions, but increased role of agglomerative spatial economies & local service support facilities 5. Increased need for close presence to users in knowledge intensive sectors 6. Increased role of governments in removing obstacles to restructuring economic activity & encouraging the upgrading of human resources by appropriate educational and training programs 7. Opportunities for dynamic improvement of investing firms, an entrepreneurial environment and one which encourages competitiveness enhancing cooperation within and between firms	1. Real labor cost 2. Host government policies toward FDI 3. Skill content of employment 4. Technical capability 5. Technical intensity 6. Labor productivity 7. Skilled employment ratio 8. Infrastructure 9. Intra-firm trade 10. Multinationality of firms
Strategic Asset Seeking	1. Availability of knowledge related asset & markets necessary to protect or enhance O of investing firms at the right price. 2. Institutional and other variables influencing ease or difficulty at which such assets can be acquires by foreign firms.	1. Geographical dispersion of knowledge based assets. 2. 'Synergistic' assets to foreign investors 3. Interactive learning 4. Access to different cultures, institutions and systems; and different consumer demands and preferences.	1. Host government policies toward FDI 2. Technical capability 3. Technical intensity 4. Infrastructure 5. Intra-firm trade 6. Multinationality of firms

SOURCE: Dunning (1988)

internalization advantages of host countries. In addition, export intensity (EXFDI) represents the effect of economic integration.

1) Globalization (GLOB): Many researchers have studied the positive impact of the multinationality of firms on FDI because multinationality may represent less internal organizational obstacles to create new FDI. For example, higher involvement or higher levels of firms' capabilities to deal with overseas markets are broadly accepted as a major means of increasing their performance in the deeply inter and intra-active world competition (Wolf, 1975; Rugman, 1976; Miller & Pras, 1980; Thompson, 1985; Michel & Shaked, 1988; Morck & Yeung, 1989). In our study, we assume that the globalization variable, which is measured by the ratios of FDI outward stock to GDP of the home countries, can represent the multinationality of all MNEs in a home country. We obtained the data from Survey of Current Business published by the US Department of Commerce and from the various issues of Financial Statistics of Japan published by the Department of Finance in Japan

2) Market size (GDP): The possible correlation between the market size of a host country or region and the volume of inward investment has supported in most empirical studies (Dunning, 1974; Agarwal, 1980; Davison 1980; Nigh, 1985; Yu & Ito, 1988; Jalillian, 1996; Kumar, 1998). In our study GDP in US dollar of the host as the proxy of market size and is carefully calculated. Because each of Japan and the United States is included as a host country in each data set, GDP of Japan or the United States is subtracted from the total GDP of the host countries for Japanese or US FDI. This

measure is the sum of total gross domestic production of the host countries or regions, and represents location specific advantage of the host. The data is obtained from World Tables, World Bank and International Financial Statistics: International Monetary Fund.

3) Labor costs (LC): Labor cost is one of the major indicators of location specific advantages. The higher levels of labor cost in the home country stimulate FDI outflows to look for lower labor cost sites for production (Lall, 1980; Karavis & Lipsey, 1982; Meredith, 1984; Maki & Meredith, 1986; Culem, 1988, Morsink & Molle, 1990; Huang, 1997; Mody and Srinivasan, 1998). The variable for labor costs is a measure of the ratio of the average labor costs of host countries to those in home country for 5 industrial sectors in 6 regions in which labor costs are measured by wages and salaries paid to employees in US $ divided by number of employees. According to Pain and Lansbury (1997) the relative labor costs also provide the influence of the real exchange rate and differentials in productivity. We obtained the data from the OECD Stan Database for Industrial Analysis, OECD.

4) Tax Rate (TAX): The differences of tax rates between home and host countries are one of the well-known determinants of FDI. Because taxes are directly affecting MNEs profits, a place that has lower corporate tax rates could be the first location for all MNEs (Snoy, 1975; Root & Ahmed, 1978; Morsink & Molle, 1990; Devereus and Pearson, 1989; Loree and Guisinger, 1995; Mody and Srinivasan, 1998). The average tax rates of host countries are measured by total tax revenue divided by and are obtained from International Financial Statistics, IMF.

5) Infrastructure (GFIGDP): The quality of infrastructure of a host country is a factor to enhance productivity of the investment undertaken and becomes more important determinants of FDI. Mody and Srinivasan (1998) find that Japanese FDI was more related to host country's infrastructure than US FDI was. We used the average ratio of the gross fixed domestic investment to GDP of host countries and regions. Data are obtained from OECD Stan Database for Industrial Analysis, OECD.

6) Inflation Rates (INF): The volatility of inflation rates in the host countries is concerned as one of the risk factors. We measured the inflation rates by the average inflation rates of the host countries and regions and obtained the data from International Financial Statistics, IMF.

7) Export Intensity (EXINT): This variable is used for economic integration effect. The variable indicates the relative importance of international trade between home countries and economically integrated areas. Because international linkage by economic integration seems to have proceeded faster through FDI than trade (UN, 1998), the more negative relationship between FDI and EXINT represents the more integration effect. This measure is the ratios of the export shares to FDI shares of the home countries and obtained from International Financial Statistics, IMF.

6-3 Hierarchical Linear Model (HLM)

"Despite the prevalence if hierarchical structures in behavioral and social research, past studies have often failed to address them adequately in the data analysis. In large part, this neglect has reflected limitations in conventional statistical techniques for the estimation of linear models with nested structures. In social research, these limitations have generated concerns about aggregation bias, misestimated precision, and the "unit of analysis" problem. They have also fostered an impoverished conceptualization, discouraging the formulation of explicit multilevel models with hypotheses about effects occurring at each level and across levels" (Bryk & Raudenbush, 1992, pp. 2-3).

This study is using hierarchical linear model (HLM) developed by Bryk and Raudenbush, which is also called as multilevel linear models.

The major purposes to use HLM are to get better estimations of regression parameters, to model cross-level effects, and to part variance and covariance components within nested data. Because HLM uses the general Baysian linear model (Lindely & Smith, 1972), considering the information of higher levels or groups to estimate the regression parameters in lower levels or individuals can induce better estimations (Vancouver et al., 1994). HLM provides the iterative maximum likelihood estimates of the regression coefficients. Because the random errors are dependent and not constant in the prediction equation in which the intercept and slopes in the lower level model become outcome variables at the higher level, ordinary least squares (OLS) cannot be used (Bryk & Raudenbush, 1992; Hofmann, 1997).

Traditionally, most FDI studies have used aggregate measures. For example, a host country's FDI, which is the major dependent variable in FDI studies, aggregates host country- or host region-level FDI to form a host country-level FDI. It means that most studies conduct analyses at the higher level only which methodology often has statistical power problem to concern relations among the aggregate variables (Klein, Dansereau &

Hall, 1994; Kidwell et al., 1997). In addition, these studies assume that there are no effects of lower-level measures on higher-level measures. For instant, there are no impacts of FDI in a host country on FDI in a host and other regions or of FDI in a host region on total home country's FDI. Because the traditional assumptions, the HLM has not been used by FDI researchers, but by organization management researchers (Snell & Dean, 1992; McFarlin & Sweeney, 1992; Deadrick et al., 1997; Kidwell et al., 1997; Griffin, 1997; Vancouver, 1997). However, the concepts of the effects of within and between units are adopted by Mody and Srinivasan (1998) to study different determinants of Japanese and US FDI from 1977 through 1992.

6-3-1 The framework of Analysis

The unit of our analysis at the first level is the share of a host county, a host region or an industry in the total FDI or manufacturing FDI out of the two home countries, Japan and the United States, at the end of a year. At the second level, the shares of host countries are added to make regional shares, and the shares of host regions and industries are added to make the shares of the two time periods, 1975-1979 and 1990-1996.

Because we conduct a country level study, we assume that FDI by Japan and the United States can represent all investments by their MNEs (Barrel & Pain, 1996; Mody & Srinivasan, 1998), and all the MNEs are motivated by the same OLI characteristics.

In the section to find determinants of FDI, we used the generalized least squares (GLS) because HLM is very sensitive to multicollinearity problems (Bryk & Raudenbush, 1992)

and the predictor variables are correlated especially in many non-experimental situation in business economics (Neter et al., 1989). Although the host countries, regions or industries are pooled in the analysis to find FDI determinants by employing the generalized least squares (GLS), separate equations are estimated for Japan and the United States in the two time periods, 1975-1979 and 1990-1996.

FDI data in our study have a hierarchical structure. Repeated observations are included within 28 or 29 host countries and/or 6 host regions. We employed the simplest HLM, which is equivalent to a one-way ANOVA with random effects. To make a clear explanation on this HLM we used the overall geographic patterns of total FDI (H2a) at this section. The rest of models are detailed under each table of HLM results.

Level-1 Model: $Y_{ij} = \beta_j + r_{ij}$

At the level-1 model, we assume that each level-1 error r_{ij} is normally distributed with a mean of zero and a constant level-1 variance, σ^2 for i = 1, ..., nj observations in region j, and j = 1, ..., 6 regions. We refer to σ^2 as the variance within regions. Notice that this model FDI shares in each host region (Y_{ij}) with just an intercept, β_{ij}, which in this case is the mean for the host region j.

Level-2 Model: $\beta_j = \gamma + u_i$

At the level-2, each region's mean FDI share, β_j, is represented as a function of the grand mean, γ which is the mean of the population, plus a random error, u_i, which is associated with unit j, and is assumed to have a mean of zero and variance τ. We refer to τ as the regional variance.

Substituting the above two equations yields the combined model:

Combined Model: $$Y_{ij} = \gamma + u_i + r_{ij}$$

The combined model is the one-way ANOVA model with grand mean γ; with a regional effect, u_i; and with a country effect, r_{ij}. It is a random-effect model because the regional effects are constructed as random.

The HLM also provides variance-covariance components, intraclass correlation and the reliability of the sample mean in any region j.

$$\mathbf{Var}\,(Y_{ij}) = \mathbf{Var}\,(u_i + r_{ij}) = \tau + \sigma^2$$

τ and σ^2 represent level-2 (regional) and level-1 (country) variance, respectively.
The intraclass correlation, which represents the proportion of variance in the outcome that is between the regions (level-2 units) and is estimated by the formula:

$$\rho = \tau / (\tau + \sigma^2)$$

An estimation of the reliability of the sample mean in any region j in derived by the formula:

$$\textbf{Reliability } (Y_j) = \tau / (\tau + (\sigma^2 / \tau))$$

In general, the reliability of the sample Y_j as an estimation of the true regional mean, β_j, will be vary from region to region because the sample size. n_j, varies. However, an overall measure of the reliability is the average of the regional reliabilities:

$$\lambda = \Sigma \lambda / J$$

6-4 Generalized Linear Regression Model

In the model, there are a few assumptions. First, we assume that all MNEs are motivated by the same set of location specific advantages. Second, all MNEs are equally influenced by the world and/or regional economic environment. Third, MNEs decide on the extent of FDI at first (Barrell & Pain, 1996) and then on the distribution of the FDI across regions and/or countries (Mody & Srinivasan, 1998).

In our study, we use the error component model, which is one of models using pooled cross-sectional and time series data. The basic assumption in a error component model is that the stochastic disturbance is consist of three independent components: one component is associated with a particular cross-sectional unit (host countries and/or industries in our study), the second with time and the final one varies with both cross-sectional unit and time. Each separate component is also assumed to have the properties

of the disturbance term in the classical linear regression model, nor are the components correlated with each other (Neter et al., 1989). Specifically,

$$u_{it} = v_i + w_t + z_{it} \quad (i = 1, 2, \ldots, N;\ t = 1, 2, \ldots, T).$$

where u_{it} represents the disturbance for the ith unit at time t, v_i is a cross section error component, w_t is a time series error component, z_{it} is a combined error component.

with

$$v_i \sim N(0, \sigma^2_v)$$

$$w_t \sim N(0, \sigma^2_w)$$

$$z_{it} \sim N(0, \sigma^2_z)$$

and

$$E(v_i, w_t) = E(v_i, z_{it}) = E(w_t, z_{it}) = 0$$

$$E(v_i, v_j) = 0 \quad (i \neq j)$$

$$E(w_t, w_s) = 0 \quad (t \neq s)$$

$$E(z_{it}, z_{is}) = E(z_{it}, z_{jt}) = E(z_{it}, z_{js}) = 0 \quad (i \neq j, t \neq s)$$

Based on the above assumptions, the disturbance u_{it} is homoscedastic with variance

$$Var(u_{it}) = \sigma^2 = \sigma^2_v + \sigma^2_w + \sigma^2_z$$

Because error variances, σ^2_v, σ^2_w, and σ^2_z, are unknown, there are some processes to estimate regression coefficients. We first fit the regression model by unweighted least squares (ordinary least square) and analyze the residuals. Second, the variance function is estimated by regressing the absolute residuals on the appropriate predictors. Third, the fitted values from the estimated variance function are used to obtain weights. Finally, we estimate the regression coefficients using these weights.

CH 7. An Empirical Test for the Convergence/Divergence Hypotheses about the Distributions of Japanese and US FDI

7-1. Introduction

This chapter investigates the patterns of Japanese and US FDI in terms of overall distributions (6 regions-5 industries level), geographic distributions (6 regions level), and industrial distributions (5 industries level) in the 1970s and 1990s. The chapter begins with data description, which is used in each test. To test convergence/divergence hypotheses we employ the following steps. First, we use the Hellinger distance measures to show a general tendency of the differences between the distributions of Japanese and US FDI. Basically Hellinger Distance is a measure of a distance between two probability measures (Rao, 1987). Hellinger distance such as H (P1, P2), is defined by H^2 (P1, P2) = $2(1-\rho(P1, P2)) = \Sigma ((dP1/d\mu)^{1/2} - (dP2/d\mu)^{1/2})^2 d\mu$. P1 and P2 are probability 1 and 2 respectively. However, in our study we modified this model to: Σ (SQRT (S1) – SQRT (S2))^2. S1 and S2 are Japanese and US FDI shares respectively in same host countries. Hellinger distance becomes zero if there is no difference between Japanese and US FDI shares in host countries, and is getting bigger if the differences between them become larger. Although the measure has no significance levels because Hellinger distance is not a statistical measure, it does give confirmatory evidence of convergence or divergence. Second, we employ the hierarchical linear model (HLM) to test each hypothesis. The HLM[1] provides a coefficient, a standard error and variance with statistical significant levels of each home country in each time period. After that, based on the results from the

[1] It is detailed in the chapter 6.

HLM we use a standard test of the equality of coefficients by a T-test[2] for the Japanese and US equations.

7-2 Overall Distributions (6 regions-5 industries Level)

H1a) The differences on the overall distributions of Japanese and US manufacturing FDI were smaller in the 1990s than they were in the 1970s.

Table 7-1 describes the data to test H1a. Because Japanese and US FDI data with the same industrial breakdowns are only available down to at a regional rather than a country level, our statistical analysis is based on regional data. There are 88 and 203 observations for Japanese data set in the first (1975-1979) and second period (1990-1996), respectively, which are for five industrial sectors in six regions. In US data set, 114 and 181 observations are available in the same first and second period, respectively. The available observations for Japanese and US data are different from the maximum numbers, which are 150 and 210 observations in the first and second period, respectively. To construct the 2-level hierarchical linear model each observation represents a host region's share in an industry at a year in the first level. At the second level, each observation represents a host region's share in an industry during the each study period. As a result, we can test the differences and similarities on the distributions of geographic and industrial FDI simultaneously.

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[2] T-test: $|b_1 - b_1^*| / SQRT((SE_1)^2 + (SE_1^*)^2)$. b_1 and b_1^*: Coefficients, SE_1 and SE_1^*: Standard Error. SQRT: Square root.

Hellinger distance measures in Table 7-1 clearly show that the differences of the overall distributions of Japanese and US FDI in the second period, 1990 – 1996, are smaller than those in the first study period, 1975-1979. Because the Japanese data for industrial shares in host regions are available from the year 1977 and the US data for electric appliances are available from the year 1980, the Hellinger distance measures are based on four industries from the year 1977 to 1996, and each measure indicates the sum of differences in the distributions for four industries in 6 regions each year. In addition to the averaged Hellinger distance measures in table 7-1, Figure 7-1 shows the general tendency of the differences. The differences of the overall distributions of Japanese and US FDI have been gradually smaller since the year 1978.

Table 7-1: Data Description for the Overall Patterns

Years	Home Country	Number of Observation	Mean	Standard Deviation	Minimum	Maximum	Hellinger Distance
1977 – 1979	JAPAN	88	16.70	15.60	0.00	46.26	192.67
1975 – 1979	USA	114	18.34	17.46	0.00	59.12	
1990 - 1996	JAPAN	203	16.67	16.55	0.00	54.51	101.56
1990 - 1996	USA	181	17.72	17.52	0.00	60.42	

Outcome variable is each host country's share of Japanese or US FDI for five industrial sectors in six regions.

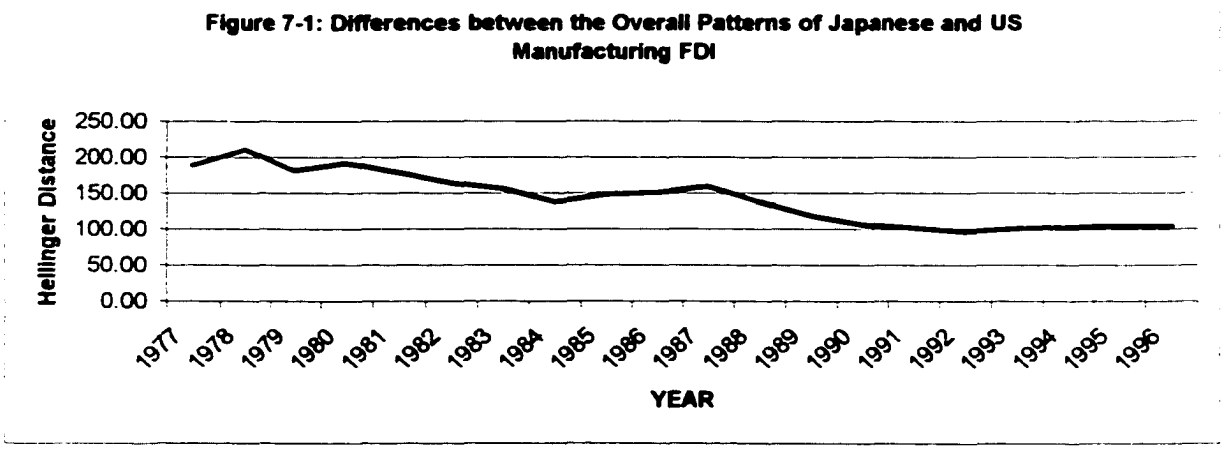

Table 7-2 reports the results of fixed effects, which indicate the grand mean values of the shares of Japanese and US manufacturing FDI in 6 host regions based on HLM. The maximum likelihood point estimates for the grand-mean of FDI shares in 6 host regions (units for the second level) are 16.7 and 16.9 with standard errors of 2.8 and 3.2 for Japanese and US FDI, respectively with over 98 percent reliability in the 1970s. In the 1990s, there are no significant changes for the shares of Japanese and US manufacturing FDI. The table also reports high t-ratios and low p-values for the two countries in the two periods studied. It seems to indicate that we can reject the null hypothesis that the overall distributions of Japanese and US manufacturing FDI are same in terms of their grand mean values during the periods, at the 1 percent significance level.

Table 7-2: HLM Results for the Overall Patterns – Fixed Effects*

Home Country	Fixed Effect	Coefficient	Standard Error	T-ratio	df	P-Value	Reliability for Bo
				1970s			
JAPAN	**For Intrcpt1, β_{ijk}**						0.989
	Intercept2, γ_{ik}	16.70	2.80	5.96	29	0.000	
USA	**For Intrcpt1, β_{ijk}**						0.996
	Intercept2, γ_{ik}	16.86	3.27	5.16	27	0.000	
				1990s			
JAPAN	**For Intrcpt1, β_{ijk}**						0.998
	Intercept2, γ_{ik}	16.67	3.00	5.56	29	0.000	
USA	**For Intrcpt1, β_{ijk}**						0.996
	Intercept2, γ_{ik}	16.62	3.16	5.26	29	0.000	

* Fixed effects are parameter estimates that do not vary across groups: Japanese and US FDI

Table 7-3: Standard Tests of the Equality (T-test)

Japan	USA	Japan & USA	Japan & USA	Difference between Japan and USA
70&90	**70&90**	**1970s**	**1990s**	**1970s & 1990s**
0.01	0.05	0.04	0.01	0.22

Table 7-3 shows the standard test for the equality of coefficients by a T-test for the Japanese and US equations in the 1970s and 1990s, and the differences of the two countries equations between the 1970s and 1990s. It also indicates that we cannot reject the null hypothesis that there is no difference between the overall distributions of Japanese and US manufacturing FDI in terms of the grand means in the 1970s and 1990s and between the 1970s and 1990s, at the 1 percent significance level.

However, our major concern is the variance of Japanese and US manufacturing FDI from their grand mean values, which are the means of the total observations. Table 7-4 presents the results of random effects from HLM. The table lists maximum estimates of the variance components. The variance components are 7.7 and 3.3 at the level-1, and 241.0 and 308.3 at the second level for Japanese and US FDI respectively in the 1970s. The estimations at the second level are the variance of regional means around the grand means as indicated in Table 7-2. These estimates explain that most of the variance in the both countries manufacturing FDI is between regions, not within them. In addition, the intraclass correlations (ICC) indicate that over 97 percent of the variance in FDI is between regions. All the components of variance are significant at 1 percent significance level.

At this point, we have to compare the differences on the variance between Japanese and US manufacturing FDI in the 1970s and 1990s. The differences are decreased from 67.3 in the 1970s to 29.71 in the 1990s at 1 percent significance level.

Table 7-4: HLM Results for the Overall Patterns – Random Effects

Home Country	Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value	ICC*
				1970s			
JAPAN	Intercept 1, u_{ik}	15.52	241.00	29	2745.92	0.000	0.97
	Level-1, r_{ijk}	2.78	7.72				
USA	Intercept 1, u_{ik}	17.56	308.30	27	9766.84	0.000	0.99
	Level-1, r_{ijk}	1.83	3.34				
				1990s			
JAPAN	Intercept 1, u_{ik}	16.69	278.42	29	16432.93	0.000	0.99
	Level-1, r_{ijk}	1.86	3.45				
USA	Intercept 1, u_{ik}	17.55	308.13	29	8592.48	0.000	0.98
	Level-1, r_{ijk}	2.61	6.79				

As a result, the hypothesis 1a, which expects the converging trends in the overall distributions of Japanese and US manufacturing FDI in the 1990s, is supported by both our tests.

7-3 Geographic Distributions (28 or 29 Countries Level & 6 Regions Level)

7-3-1 Geographic Distributions of Total FDI[3] (28 or 29 Countries Level)

H2a) The differences on the geographical distributions of Japanese and US Total FDI are smaller in the 1990s than they were in the 1970s.

Table 7-5 describes the data to test H2a. In Japanese data set, 103 and 203 observations are available from 28 host countries in 1975-1979 and 1990-1996, respectively. 117 and

[3] When we delete Japan and the United States from host counties in the both countries data sets and use same host countries, we found converging trends. The Hellinger distance measures are decreased from 30.6 to 17.4 and the differences of variances are reduced from 16.8 to 13.9 at 1 percent significance level. However, because the shares of Japanese FDI in the United States in the 1990s are over 40 percent, if we delete the United States from host countries in Japanese data set, the data cannot represent Japanese FDI. As a result, we include Japan and the United States in host countries for each data set.

203 observations from 29 host countries are for US data set during the same periods (see Table 6-1). There are no Hellinger distance measures because the host countries of Japanese and US total FDI are different.

Table 7-6 reports the results of fixed effects, which indicate the grand mean values of the shares of Japanese and US FDI in host countries. The maximum likelihood point estimates for the grand-mean of FDI shares in host counties (units for the second level) are 3.2 and 2.9 with standard errors of 0.9 and 0.9 for Japanese and US FDI, respectively with over 99 percent reliability in the 1970s. In the 1990s, there are no significant changes for the both countries.

Table 7-5: Data Description for the Geographic Patterns of Japanese and US Total FDI within the 28 or 29 Host Countries

Years	Home Country	Number of Observation	Mean	Standard Deviation	Minimum	Maximum
1975 – 1979	JAPAN	103	3.19	4.49	0.08	23.25
	USA	117	3.56	4.98	0.11	24.99
1990 - 1996	JAPAN	203	3.18	7.59	0.03	42.68
	USA	203	3.03	3.90	0.05	19.91

Outcome variable is each host country's share of Japanese or US FDI

Table 7-6 also reports high t-ratios and low p-values for the two countries in the two periods studied. It seems to indicate that we can reject the null hypothesis that the geographic patterns of Japanese and US total FDI are same in terms of their grand mean values during the periods, at the 1 percent significance level. Table 7-7 shows the standard test for the equality of coefficients by a T-test for Japanese and US equations in the 1970s and 1990s, and the differences of the two countries equations between the 1970s and 1990s. It also indicates that we cannot reject the null hypothesis that there is

no difference between the geographic patterns of Japanese and US total FDI in terms of the grand means in the 1970s and those in the 1990s, at the 1 percent significance level.

Table 7-6: HLM Results of the Geographic Patterns of Japanese and US Total FDI within the 28 or 29 Host Countries – Fixed Effects*

Home Country	Fixed Effect	Coefficient	Standard Error	T-ratio	df	P-Value	Reliability for Bo
				1970s			
JAPAN	For Intrcpt1, β_{ijk}						0.997
	Intercept2, γ_{ik}	3.16	0.85	3.72	28	0.001	
USA	For Intrcpt1, β_{ijk}						0.997
	Intercept2, γ_{ik}	2.94	0.86	3.43	28	0.002	
				1990s			
JAPAN	For Intrcpt1, β_{ijk}						0.999
	Intercept2, γ_{ik}	3.18	1.41	2.26	28	0.032	
USA	For Intrcpt1, β_{ijk}						0.998
	Intercept2, γ_{ik}	3.03	0.72	4.22	28	0.001	

* Fixed effects are parameter estimates that do not vary across groups: Japanese and US FDI

Table 7-7: Standard Tests of the Equality (T-test)

Japan	USA	Japan & USA	Japan & USA	Difference between Japan and USA
1970s & 1990s	1970s & 1990s	1970s	1990s	1970s & 1990s
0.01	0.08	0.18	0.09	0.10

Table 7-8: HLM Results of the Geographic Patterns of Japanese and US Total FDI within the 28 or 29 Host Countries – Random Effects

Home Country	Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value	ICC*
				1970s			
JAPAN	Intercept 1, u_{ik}	4.64	21.52	28	9460.13	0.000	0.99
	Level-1, r_{ijk}	0.46	0.22				
USA	Intercept 1, u_{ik}	4.70	22.13	28	16704.74	0.000	0.99
	Level-1, r_{ijk}	0.42	0.17				
				1990s			
JAPAN	Intercept 1, u_{ik}	7.70	59.31	28	872120.38	0.000	0.99
	Level-1, r_{ijk}	0.12	0.01				
USA	Intercept 1, u_{ik}	3.92	15.40	28	11342.09	0.000	0.98
	Level-1, r_{ijk}	0.52	0.27				

Table 7-6 also reports high t-ratios and low p-values for the two countries in the two periods studied. It seems to indicate that we can reject the null hypothesis that the geographic patterns of Japanese and US total FDI are same in terms of their grand mean values during the periods, at the 1 percent significance level. Table 7-7 shows the standard test for the equality of coefficients by a T-test for Japanese and US equations in the 1970s and 1990s, and the differences of the two countries equations between the 1970s and 1990s. It also indicates that we cannot reject the null hypothesis that there is no difference between the geographic patterns of Japanese and US total FDI in terms of the grand means in the 1970s and those in the 1990s, at the 1 percent significance level.

Table 7-8 reports the variance of Japanese and US FDI from their grand mean values. The table lists maximum estimates of the variance components. The variance components are 0.22 and 0.17 at the level-1, and 21.52 and 22.13 at the second level for Japanese and US FDI respectively in the 1970s. The estimations at the second level are the variance of country means around the grand means as indicated in Table 7-6. These estimates indicate that most of the variance in the both countries FDI is between host countries, not within them. In addition, the intraclass correlations (ICC) indicate that over 99 percent of the variance in total FDI is between host countries. All the components of variance are significant at 1 percent significance level. At this point, we have to compare the differences on the variance between Japanese and US FDI in the 1970s and 1990s. The differences are increased from 0.61 in the 1970s to 43.91 in 1990s at 1 percent significance level.

As a result, hypothesis 2a, which expects the converging trends in the geographical distributions of Japanese and US total FDI in the 1990s, is not supported by both our tests.

7-3-2 Geographic Distributions of Manufacturing FDI

H2b) The differences on the geographical distributions of Japanese and US manufacturing FDI are smaller in the 1990s than they were in the 1970s.

Table 7-9 describes the data to test H2b. 30 and 42 observations are available for Japanese and US data in 1975-1979 and 1990-1996, respectively, which are for the shares of manufacturing FDI in 6 regions. Each observation represents a host region's share of manufacturing FDI at a year. At the level-2, each observation represents a host region's share during the two periods studied. As a result, we can test the differences and similarities on the geographic distributions of Japanese and US manufacturing FDI.

Hellinger distance measures in Table 7-9 clearly describe that the differences of the geographic distributions of Japanese and US manufacturing FDI in the second period (22.6), 1990 – 1996, are smaller than those in the first study period (42.8), 1975 – 1979. In addition to the averaged Hellinger distance measures, Figure 7-2 shows the general tendency of the differences. Each Hellinger distance measure indicates the sum of differences of the distributions of Japanese and US manufacturing FDI in 6 regions each

year. The downward trend after the year 1978 is similar to that in the overall patterns in figure 7-1.

Table 7-10 reports the results of fixed effects, which indicate the grand mean values of Japanese and US manufacturing FDI in host regions. The maximum likelihood point estimates for the grand-mean of FDI shares in host regions (units for the second level) are 16.7 and 16.2 with standard errors of 5.9 and 6.8 for Japanese and US FDI, respectively with over 99 percent reliability in the 1970s. In the 1990s, there are no significant changes except for the coefficient for the United States.

Table 7-9: Data Description for the Geographic Patterns of Japanese and US Manufacturing FDI in the 6 Host Regions

Years	Home Country	Number of Observation	Mean	Standard Deviation	Minimum	Maximum	Hellinger Distance
1975 – 1979	JAPAN	30	16.67	14.75	0.79	44.46	42.79
	USA	30	16.21	16.91	0.25	50.11	
1990 - 1996	JAPAN	42	16.67	16.96	0.21	49.41	22.63
	USA	42	15.50	16.72	0.49	51.62	

Outcome variable is each host country's share of Japanese or US FDI

Figure 7-2: Differences between the Geographic Patterns of Japanese and US Manufacturing FDI

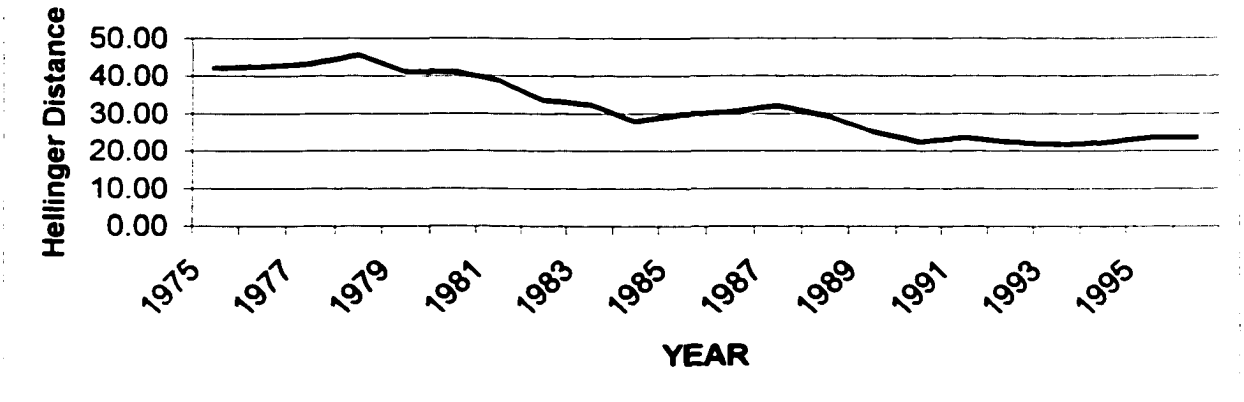

Table 7-10: HLM Results of the Geographic Patterns of Japanese and US Manufacturing FDI in the 6 Host Regions – Fixed Effects*

Home Country	Fixed Effect	Coefficient	Standard Error	T-ratio	df	P-Value	Reliability for Bo
				1970s			
JAPAN	For Intrcpt1, β_{ijk}						0.997
	Intercept2, γ_{ik}	16.67	5.88	2.83	5	0.037	
USA	For Intrcpt1, β_{ijk}						0.999
	Intercept2, γ_{ik}	16.21	6.78	2.39	5	0.061	
				1990s			
JAPAN	For Intrcpt1, β_{ijk}						0.999
	Intercept2, γ_{ik}	16.67	6.82	2.44	5	0.057	
USA	For Intrcpt1, β_{ijk}						0.999
	Intercept2, γ_{ik}	15.50	6.74	2.30	5	0.068	

* Fixed effects are parameter estimates that do not vary across groups: Japanese and US FDI

Table 7-11: Standard Tests of the Equality (T-test)

Japan	USA	Japan & USA	Japan & USA	Difference between Japan and USA
1970s & 1990s	1970s & 1990s	1970s	1990s	1970s & 1990s
0.00	0.07	0.05	0.12	0.79

Table 7-12: HLM Results of the Geographic Patterns of Japanese and US Manufacturing FDI in the 6 Host Regions – Random Effects

Home Country	Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value	ICC*
				1970s			
JAPAN	Intercept 1, u_{ik}	15.76	248.40	5	1869.94	0.000	0.98
	Level-1, r_{ijk}	1.82	3.33				
USA	Intercept 1, u_{ik}	18.18	330.60	5	7736.35	0.000	0.99
	Level-1, r_{ijk}	1.03	1.07				
				1990s			
JAPAN	Intercept 1, u_{ik}	18.30	334.90	5	6233.88	0.000	0.99
	Level-1, r_{ijk}	1.37	1.88				
USA	Intercept 1, u_{ik}	18.08	326.79	5	18042.62	0.000	0.99
	Level-1, r_{ijk}	0.80	0.63				

The downward trend of US manufacturing FDI from 16.2 to 15.5 seems to indicate that the United States focuses less on manufacturing sectors in the 1990s than in the 1970s. Table 7-12 also reports t-ratios and p-values for the two countries in the two time periods. It seems to indicate that we can reject the null hypothesis that the geographic patterns of Japanese and US manufacturing FDI are same in terms of their grand mean values during the periods, at the 1 percent significance level. Table 7-11 shows the standard test for the equality of coefficients by a T-test for the Japanese and US equations in the 1970s and 1990s, and the differences of the two countries equations between the 1970s and 1990s. It also indicates that we cannot reject the null hypothesis that there is no difference between the geographic distributions of Japanese and US manufacturing FDI in terms of the grand means in the 1970s and those in the 1990s, at the 1 percent significance level.

Our major concern is the variance of Japanese and US FDI from their grand mean values. Table 7-12 presents the results of random effects from HLM. The table lists maximum estimates of the variance components. The variance components are 3.3 and 1.1 at the first level, and 248.4 and 330.6 at the second level for Japanese and US FDI respectively in the 1970s. The estimations at the second level are the variance of regional means around the grand means as indicated in Table 7-10. These estimates indicate that most of the variance in the both countries FDI is between regions, not within them. In addition, the intraclass correlations (ICC) indicate that over 98 percent of the variances in FDI are between regions. All the components of variance are significant at 1 percent significance level. At this point, we have to compare the differences on the variance between Japanese and US manufacturing FDI in the 1970s and 1990s. The differences are

significantly decreased from 82.2 in the 1970s to 8.11 in the 1990s at 1 percent significance level. The converging trend is more significant compared to that in the overall distributions of Japanese and US manufacturing FDI, in which the difference is reduced by 56 percent (from 67.3 to 29.71).

As a result, the hypothesis 2b, which expects the converging trends in the geographical distributions of Japanese and US manufacturing FDI in the 1990s, is supported by both our tests.

7-3-3 Industrial Distributions of Manufacturing FDI

H3a) The differences on the industrial distributions of Japanese and US manufacturing FDI are smaller in the 1990s than they were in the 1970s.

Table 7-13 describes the data to test H3a. In Japanese data, 25 and 35 observations are available for 5 industrial sectors (see Table 6-2) in 1975-1979 and 1990-1996, respectively. There are 21 and 35 observations in US data set in the same periods. Each observation represents a share of an industry at a year at the first level in HLM. At the second level, each observation represents the sum of the shares of an industry during the two time periods.

Hellinger distance measures in Table 7-13 describe that the differences of the industrial patterns of Japanese and US manufacturing FDI in the second period (2.5), 1990-1996, are smaller than those in the first study period (2.6), 1975-1979. Each Hellinger distance measure indicates the sum of differences of the distributions of Japanese and US manufacturing FDI in four industries each year because US data for electric appliances are available from the year 1980. In addition to the averaged Hellinger distance measures, Figure 7-3 shows the general tendency, which is very different from that in overall (figure 7-1) and geographic patterns (figure 7-2). The Hellinger distance measures have been smaller from 1978 to 1980 and then larger from 1990. The possible reason for this trend in the 1990s is that Japan put more emphasis on electrical appliance while the United states has kept its industrial focus on chemical and iron & machinery in the 1990s (see table 2-6, 7, 8).

Table 7-13: Data Description for the Industrial Distributions of Japanese and US Manufacturing FDI

Years	Home Country	Number of Observation	Mean	Standard Deviation	Minimum	Maximum	Hellinger Distance
1975 – 1979	JAPAN	25	13.39	7.26	4.66	26.78	2.64
	USA	21	18.61	9.28	8.32	34.46	
1990 - 1996	JAPAN	35	15.56	6.70	5.01	24.95	2.54
	USA	35	15.50	5.84	8.02	26.52	

Outcome variable is each host country's share of Japanese or US FDI

Table 7-14 reports the results of fixed effects, which indicate the grand mean values of the shares of Japanese and US manufacturing FDI in the 5 industries. The maximum likelihood point estimate for the grand-mean of FDI shares in the five industries (units for the second level) are 13.4 and 17.0 with standard errors of 3.1 and 4.0 for Japanese and

US manufacturing FDI, respectively with over 98 percent reliability in the 1970s. In the 1990s, there are some changes. The upward trend of Japanese manufacturing FDI in the five industries from the first to second period seems to indicate that Japan more focuses on the five industries in the 1990s than in the 1970s

Figure 7-3: Differences between the Industrial Patterns of Japanese and US Manufacturing FDI

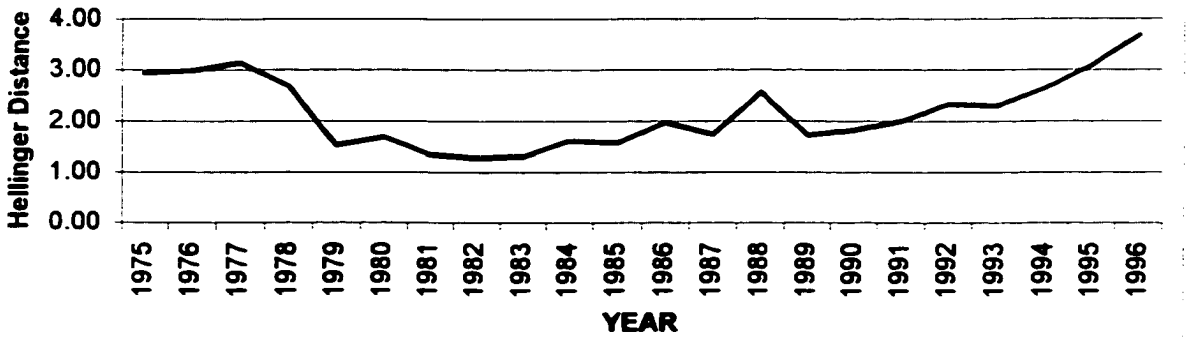

Table 7-14 reports the results of fixed effects, which indicate the grand mean values of the shares of Japanese and US manufacturing FDI in the 5 industries. The maximum likelihood point estimate for the grand-mean of FDI shares in the five industries (units for the second level) are 13.4 and 17.0 with standard errors of 3.1 and 4.0 for Japanese and US manufacturing FDI, respectively with over 98 percent reliability in the 1970s. In the 1990s, there are some changes. The upward trend of Japanese manufacturing FDI in the five industries from the first to second period seems to indicate that Japan more focuses on the five industries in the 1990s than in the 1970s. The United States has just an opposite trend during the same periods. The table also reports t-ratios and p-values for the two countries in the two periods. It seems to indicate that we can reject the null hypothesis that the industrial patterns of Japanese and US manufacturing FDI are same in

terms of their grand mean values during the periods, at the 1 or 2 percent significance level. Table 7-15 shows the standard test for the equality of coefficients by a T-test for the Japanese and US equations between the 1970s and 1990s. The comparisons of the two equations in the 1970s and 1990s clearly show that we can not reject the null hypothesis that the grand average share in the five industries are same at the 1 percent significance level. However, we conduct another T-test based on the differences between Japanese and US equations in the 1970s, and the differences between those in the 1990s. As a result, we can reject the null hypothesis at the 1 percent significance level. It indicates that the difference on the grand mean values in the five industries by Japan and the United States could be different in the 1990s compare to those in the 1970s.

Table 7-14: HLM Results of the Industrial Distributions of Japanese and US Manufacturing FDI – Fixed Effects*

Home Country	Fixed Effect	Coefficient	Standard Error	T-ratio	df	P-Value	Reliability for Bo
				1970s			
JAPAN	**For Intrcpt1, β_{ijk}**						0.992
	Intercept2, γ_{ik}	13.39	3.12	4.30	4	0.017	
USA	**For Intrcpt1, β_{ijk}**						0.984
	Intercept2, γ_{ik}	17.03	4.01	4.25	4	0.018	
				1990s			
JAPAN	**For Intrcpt1, β_{ijk}**						0.999
	Intercept2, γ_{ik}	15.56	2.95	5.29	4	0.002	
USA	**For Intrcpt1, β_{ijk}**						0.989
	Intercept2, γ_{ik}	15.50	2.47	6.27	4	0.000	

* Fixed effects are parameter estimates that do not vary across groups: Japanese and US FDI

Table 7-15: Standard Tests of the Equality (T-test)

Japan	USA	Japan & USA	Japan & USA	Difference between Japan and USA
1970s & 1990s	**1970s & 1990s**	**1970s**	**1990s**	**1970s & 1990s**
0.51	0.32	0.72	0.02	3.54***

***: $p < 0.01$

Table 7-16: HLM Results of the Industrial Distributions of Japanese and US Manufacturing FDI – Random Effects

Home Country	Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value	ICC*
				1970s			
JAPAN	Intercept 1, u_{ik}	7.76	60.21	4	473.85	0.000	0.96
	Level-1, r_{ijk}	1.60	2.56				
USA	Intercept 1, u_{ik}	9.94	98.85	4	379.51	0.000	0.96
	Level-1, r_{ijk}	2.12	4.49				
				1990s			
JAPAN	Intercept 1, u_{ik}	7.36	54.17	4	5690.13	0.000	0.99
	Level-1, r_{ijk}	0.52	0.27				
USA	Intercept 1, u_{ik}	6.15	37.86	4	372.08	0.000	0.93
	Level-1, r_{ijk}	1.70	2.88				

Another converging patterns are detected in the variance of Japanese and US FDI from their grand mean values. Table 7-16 presents the results of random effects from HLM. The table lists maximum estimates of the variance components. The variance components are 2.6 and 4.5 at the first level, and 60.2 and 98.85 at the second level for Japanese and US FDI respectively in the 1970s. The estimations at the second level are the variance of industrial means around the grand means as indicated in Table 7-14. These estimates indicate that most of the variance in the both countries FDI is between industries, not within them. In addition, the intraclass correlations (ICC) indicate that over 93 percent of the variances in FDI are between industries. All the components of variance are significant at 1 percent significance level. At this point, we have to compare the differences on variance between Japanese and US FDI in the 1970s and 1990s. The differences are reduced from 38.6 in the 1970s to and 16.3 in the1990s at 1 percent significance level. The converging trend is more significant than that (56 percent) in the

overall distributions of Japanese and US manufacturing FDI, but less than that (90 percent) in the geographic distributions of Japanese and US manufacturing FDI.

As a result, hypothesis 3a, which expects the converging trends in industrial distributions of Japanese and US manufacturing FDI in the 1990s, is supported by both our tests.

The test results are summarized in Table 7-17.

Table 7-17: Summary of Test Results for Convergence/Divergence Hypotheses

	Description	Test Results	Comment
H1a	**7-1 Overall Distributions** The differences on the overall distributions of Japanese and US manufacturing FDI were smaller in the 1990s than they were in the 1970s.	Supported	The differences on the variance between Japanese and US manufacturing FDI in the 1970s and 1990s are decreased from 67.3 in the 1970s to 29.71 in the 1990s at 1 percent significance level.
H2a	**7-2 Geographic Distributions** The differences on the geographical distributions of Japanese and US Total FDI are smaller in the 1990s than they were in the 1970s.	Not Supported	The differences on the variance between Japanese and US FDI in the 1970s and 1990s are increased from 0.61 in the 1970s to 43.91 in 1990s at 1 percent significance level. This result seems to imply that the geographic patterns of Japanese and US non-manufacturing FDI could be diverging in the 1990s.
H2b	The differences on the geographical distributions of Japanese and US manufacturing FDI are smaller in the 1990s than they were in the 1970s.	Supported	The differences on the variance between Japanese and US manufacturing FDI in the 1970s and 1990s are significantly decreased from 82.2 in the 1970s to 8.11 in the 1990s at 1 percent significance level. The converging trend is more significant compared to that in the overall distributions of Japanese and US manufacturing FDI, in which the difference is reduced by 56 percent (from 67.3 to 29.71).
H3a	**7-3 Industrial Distributions** The differences on the industrial distributions of Japanese and US manufacturing FDI are smaller in the 1990s than they were in the 1970s.	Supported	The differences on variance between Japanese and US FDI in the 1970s and 1990s are reduced from 38.6 in the 1970s to and 16.3 in the1990s at 1 percent significance level. The converging trend is more significant than that (56 percent) in the overall distributions of Japanese and US manufacturing FDI, but less than that (90 percent) in the geographic distributions of Japanese and US manufacturing FDI.

CH 8. An Empirical Test for the Determinant Hypotheses about the Distributions of Japanese and US FDI

8-1 Introduction

This chapter investigates the determinants of Japanese and US manufacturing FDI in overall distributions (6 regions-5 industries level), geographic distributions (6 regions level), and industrial distributions (5 industries level) in the 1970s and 1990s. The chapter begins with data description, which is used in each test. To test the determinant hypotheses we employ the following steps. First, we use a two-stage estimation process, which was detailed in the chapter 6. The major reason for using that process is to correct for heteroscedasticity and autocorrelation derived from the pooled time-series and cross-section data. The coefficient of correlation does not have a clear-cut meaning when weighted least squares are employed (Neter et. al., 1990) because variables are transformed by the estimated variance-covariance matrix. Based on the outcomes from the two-stage estimation process, we employ a standard test of the equality of coefficients by a Chow-test[1] for the Japanese and US equations (Chou, 1988; Mody and Srinivasan, 1998; Greene, 2000). Because we treat the 1980s as a transition period, as detailed in chapter 5, our statistical analysis is to compare the first period, 1975-1979, with the second, 1990-1996.

[1]Chow-Test: $((ESS_R - ESS_{UR}) / K) / (ESS_{UR} / (N+M-2K))$. $ESS_{UR} = ESS_1 + ESS_2$. ESS_1 and ESS_2 : Error sum of squares of regression 1 and 2. ESS_R : Error sum of square of the combined model of regression 1 and 2. N and M: Number of observations in 1 and 2. K: Number of parameters.

8-2 Overall Determinants

The shares of Japanese and US manufacturing FDI, dependent variables, are for five industrial sectors in six regions giving a maximum of 30 annual observations. However, because of the used method of the Cochrane-Orcutt correcting for autocorrelation, which is detailed in the chapter 6, the observations for the first year (1975 or 1977) is deleted from each industrial sector in each region. Actual observations are varied because of the data availability.

Table 8-1 and 8-2 report correlations among the variables in the analyses and the variance inflation factors. Some correlations are higher than 0.5; however, the variance inflation factors (VIF)[2] are low enough not to raise concern about multicollinearity.

Table 8-1: Correlation Matrix for the Overall Distribution of Japanese FDI

	TAX	GLOB	INF	GFDI	LC	GDP	VIF
TAX	1.000						**2.063**
GLOB	.181	1.000					**1.315**
INF	.014	-.093	1.000				**1.195**
GFDI	-.373	.188	.057	1.000			**1.913**
LC	-.069	.164	.217	-.064	1.000		**1.282**
GDP	-.575	-.188	.122	.558	-.232	1.000	**2.304**

*: VIF: Variance Inflation Factor

Table 8-2: Correlation Matrix for the Overall Distribution of US FDI

	TAX	GLOB	GFDI	LC	INF	GDP	VIF*
TAX	1.000						**2.044**
GLOB	.022	1.00					**1.020**
GFDI	.123	-.12	1.000				**1.851**
LC	-.085	-.03	-.010	1.000			**1.209**
INF	.169	.00	.097	.318	1.000		**1.226**
GDP	-.456	-.09	.378	-.152	-.131	1.000	**5.833**

*: VIF: Variance Inflation Factor

[2] " A maximum VIF value in excess of 10 is frequently taken as an indication that multicollinearity may be unduly influencing the least square estimates" (p 387, Neter, et. al., 1990)

Table 8-3: Determinants of the Overall Distributions

	Japan		The Unites States	
	1977-1979	1990-1996	1975-1979	1990-1996
Intercept	-0.89	0.11	-1.01	5.47***
	(-1.30)	(0.68)	(-0.27)	(7.08)
LC	-0.33	-0.14***	0.88***	0.21***
	(-1.36)	(-4.51)	(23.36)	(9.88)
GDP	0.54***	1.03***	0.05**	1.22***
	(3.13)	(17.27)	(2.01)	(58.37)
GFDI	0.54	0.14	0.08	-0.23***
	(1.02)	(0.85)	(1.51)	(-16.71)
GLOB	-0.03	0.20**	-0.08**	0.06***
	(-0.17)	(2.25)	(-2.40)	(4.13)
INF	-0.11	0.08**	-0.17***	0.03***
	(-0.80)	(2.35)	(-5.15)	(4.89)
TAX	-0.07	-0.28	-0.01	-0.17***
	(-0.18)	(-1.59)	(-0.05)	(-6.86)
Observations	58	203	84	187
Adj. R^2	0.23	0.86	0.96	0.99
F	3.91***	215.49***	416.81***	5704.02***
DW	1.24	1.46	1.24	1.92

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$

Dependent Variables: Manufacturing FDI shares for five industrial sectors in six regions in which maximum annual observations are 30, and the first year observation (1975 or 1977) is deleted from each industrial sector in each region during the autocorrelation treatment (Actual observations vary).

GLOB (Globalization rates): The ratios of FDI out stock to GDP of home country for 5 industrial sectors.

LC (Labor cost): The ratio of the average labor costs of host countries to those in home country for 5 industrial sectors in 6 regions in which labor costs are measured by wages and salaries paid to employees in US $ divided by number of employees.

GDP: The average gross domestic productions of host countries in 6 regions.

GFDI (Gross fixed domestic investment): The ratio of average gross fixed domestic investments to GDP of host countries in 6 regions.

INF (Inflation rates): The average inflation rates of host countries in 6 regions.

TAX (Tax rates): The average tax rates of host countries in 6 regions in which tax rates are measured by total tax revenue divided by GDP.

T-statistics are reported in parentheses.

Table 8-4: Standard Test of the Equality (Chow Test)

Japan	USA	Japan & USA	Japan & USA
70&90	70&90	1970s	1990s
1.89	3437.44***	468.46***	139.53***

***: $p < 0.01$

Table 8-3 presents the results of statistical analysis of the FDI determinants of the overall distributions of Japanese and US manufacturing FDI. In the case of Japanese manufacturing FDI, the estimated coefficient for GDP is a significant variable at the 1

percent significance level in the 1970s. However, in the 1990s the coefficients for LC, GDP, GLOB and INF are significant at the 1 or 5 percent significance level. Generally, the changing patterns of the estimated coefficients seem to demonstrate that significant determinants to attract Japanese MNEs were mostly location-specific advantages in the 1970s, but ownership, location-specific and international advantages in the 1990s. Especially, the coefficients for LC, GDP, INF and TAX in the two time periods clearly represent that the major focus of Japanese FDI have been changed from developing countries in the 1970s to developed countries in the 1990s. The coefficient for INF should be interpreted carefully given that the positive correlation between GDP and INF in the Japanese sample (see Table 8-1). The ownership-specific variable, GLOB, negatively related in the 1970s, but positive and significant in the 1990s. It surely shows that the degree of Japanese firms' multinationality increased considerably between 1970s and 1990s.

In addition, the location-specific variable, LC, which was detailed in the chapter 6, indicates not only relative labor costs, but also relative productivity and real exchange rates. It is derived from the measurement of LC, which is the ratio of the average labor costs of host countries to those in home country in which labor costs are measured by wages and salaries paid to employees in US dollar divided by number of employees. The changes in LC can be interpreted as in the 1970s the important factors for Japanese MNE in foreign locations were relatively lower labor costs, lower productivity and/or lower real exchange rates compared to its domestic market conditions; however, the degree of the importance has been declined in the 1990s.

In the case of US manufacturing FDI, LC, GDP, GLOB and INF are significant variables at the 1 or 5 percent significance level in the 1970s. But in the 1990s, all variables are significant at the 1 percent significance level. The changing patterns show that ownership and location-specific factors were more important determinants of US FDI in the 1970s, but all of OLI variables were significant in the 1990s. The importance of GDP during the two time periods demonstrates that market seeking has been the most motivation of US FDI, and the estimated coefficients for LC, INF and TAX represent that the focus of US FDI has been changed from developed countries in the 1970s to developing countries in the 1990s. The interpretations of the location-specific variable, LC, are exactly opposite to those in the case of Japanese FDI. The result of high adjusted R^2 typical of the US case, is exactly same to that in Mody and Shrinivasan (1998), which was detailed in the chapter 5.

Table 8-4 reports the standard tests of the equality of the coefficients for Japanese and US equations between the 1970s and 1990s. Statistically, three out of four cases; US determinants between the 1970s and 1990s and the differences between Japanese and US determinants in the 1970s and 1990s, can reject the null hypothesis that determinants between the two periods and between the two countries are same, at the 1 percent significance level. However, we cannot reject the null hypothesis in the case of Japanese FDI between the 1970s and 1990s. In addition, the F-ratios for the differences between Japanese and US determinants have dropped remarkably while FDI determinants have been stable in Japanese case, but significantly changed in US case, between the 1970s and 1990s

Consequently, we find three points. First, the major determinants of the overall distributions of Japanese and US manufacturing FDI have been changed from variables of location and/or ownership-specific advantages in the 1970s to variables of all OLI factors in the 1990s. Second, the changing directions of all determinants of Japanese and US FDI except for LC are same from the 1970s to 1990s. Third, the differences of the determinants between Japanese and US FDI have been smaller in the 1990s than those in the 1970s.

As a result, hypothesis H1b, which expects the converging trends in determinants for the overall distributions of Japanese and US manufacturing FDI in the 1990s, is supported by our tests.

8-3 Geographic Distributions

The shares of Japanese and US manufacturing FDI, dependent variables, are for six regions giving a maximum of 6 annual observations. However, during the Cochrane-Orcutt correction has been used to correct autocorrelation, the observations for the first year (1975 or 1977) are deleted from each region. Thus, 24 and 42 observations are available in 1975-1979 and in 1990-1996, respectively.

Table 8-5 and 8-6 report correlations among the variables in the analyses and variance inflation factors. Some correlations are higher than 0.5; however, the variance inflation factors (VIF) are low enough not to raise concern about multicollinearity.

Table 8-5: Correlation Matrix for the Geographic Distribution of Japanese FDI

	TAX	LC	GLOB	INF	GFID	GDP	VIF
TAX	1.000						**2.925**
LC	.522	1.000					**2.840**
GLOB	.574	.632	1.000				**3.463**
INF	.002	.067	-.184	1.000			**1.210**
GFID	-.094	.239	.377	.029	1.000		**1.962**
GDP	-.753	-.700	-.656	.127	.118	1.000	**4.638**

Table 8-6: Correlation Matrix for the Geographic Distribution of US FDI

	TAX	GFDI	GLOB	INF	LC	GDP	VIF
TAX	1.000						**2.614**
GFDI	.081	1.000					**1.642**
GLOB	.360	.111	1.000				**1.369**
INF	.068	.113	.050	1.000			**1.236**
LC	-.329	.034	-.007	.339	1.000		**1.738**
GDP	-.457	.266	-.431	-.177	-.239	1.000	**7.501**

Table 8-7 presents the results of statistical analysis of the FDI determinants of Japanese and US manufacturing FDI in six host regions. In the case of Japanese manufacturing FDI, the estimated coefficients for LC, GFDI, INF and TAX are significant variables in the 1970s, but that of LC is only significant at the 1 percent significance level in the 1990s. It clearly indicates that the motivation of Japanese manufacturing FDI has been changed from resource seeking in the 1970s, especially in developing countries where Japanese MNE could enjoy cheap labor, cheap natural resources to strategic asset seeking in the 1990s in developed countries, which have relatively higher productivity, higher labor than developing countries have. Although these is not much change in GDP, the changing directions of GFDI, INF and TAX from the 1970s to 1990s represent that the geographic focus of Japanese FDI has been changes to developing countries in the 1990s.

Table 8-7: Determinants of the Geographic Distributions of Manufacturing FDI

	Japan		The Unites States	
	1975-1979	1990-1996	1975-1979	1990-1996
Intercept	227.42***	12.88	-110.55	-21.77
	(5.22)	(0.23)	(-1.17)	(-0.98)
LC	-0.92**	1.09***	0.43**	0.21***
	(-2.72)	(4.58)	(2.44)	(3.71)
GDP	-0.45	-0.46	0.49***	0.04
	(-1.63)	(-1.36)	(3.17)	(0.31)
GFDI	-1.21***	-0.14	-0.30*	-0.09
	(-7.57)	(-0.84)	(-1.97)	(-1.21)
GLOB	0.06	0.01	0.12	-0.02
	(0.45)	(0.02)	(1.49)	(-0.50)
INF	-0.48**	0.08	0.12	0.21***
	(-2.43)	(0.63)	(0.81)	(5.72)
TAX	-0.51**	0.39	0.14	0.82***
	(-2.40)	(1.56)	(1.21)	(5.41)
Observations	24	42	24	42
Adj. R^2	0.72	0.66	0.87	0.96
F	10.74***	14.51***	27.46***	184.41***
DW	2.31	2.99	2.40	2.46

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$

Dependent Variables: Manufacturing FDI shares in six regions in which maximum annual observations are 6 and the first year observation (1975) is reduced from each region during the autocorrelation treatment.

GLOB (Globalization rates): The ratios of FDI out stock to GDP of home country.

LC (Labor cost): The ratio of the average labor costs of host countries to those in home country in 6 regions in which labor costs are measured by wages and salaries paid to employees in US $ divided by number of employees.

GDP: The average gross domestic productions of host countries in 6 regions.

GFDI (Gross fixed domestic investment): The ratio of average gross fixed domestic investments to GDP of host countries in 6 regions.

INF (Inflation rates): The average inflation rates of host countries in 6 regions.

TAX (Tax rates): The average tax rates of host countries in 6 regions in which tax rates are measured by total tax revenue divided by GDP.

T-statistics are reported in parentheses.

In the case of US manufacturing FDI, the estimated coefficient for GDP clearly represents that market seeking was the most motivation of US FDI in the 1970s, but not in the 1990s. The positive and significant relation between US FDI and LC indicates that the important factors for US MNE in foreign locations were relatively higher productivity, higher real exchange rates and/or higher labor costs compared to its domestic market conditions in the 1970s; however, the degree of the importance has been declined in the 1990s. In other words, the decreased coefficients for LC and GDP, and

increased coefficients for INF and TAX simply represent that efficiency and strategic asset seeking become more important motivation for US manufacturing FDI.

Table 8-8: Standard Test of the Equality (Chow Test)

Japan	USA	Japan & USA	Japan & USA
70&90	70&90	1970s	1990s
8.52***	7.58***	9.24***	11.69***

***: $p < 0.01$

Table 8-8 reports standard tests of the equality of coefficients for Japanese and US equations. Statistically, all four cases; Japanese and US determinants between the 1970s and 1990s and between Japanese and US determinants in the 1970s and 1990s, can reject the null hypotheses that determinants between the two periods and between the two countries are same, at the 1 percent significance level. In addition, the F-ratios for all four cases are not much different with each other. It seems to indicate that the differences between Japanese and US FDI have not been changed during the two time periods.

Consequently, hypothesis H2c, which expects the geographic distribution of Japanese manufacturing FDI was more determined by variables of resource seeking in the 1970s, and that in the 1990s by variables of market, efficiency or strategic asset seeking, is supported by our test.

Hypothesis H2d, which expects the geographic distribution of US manufacturing FDI was more determined by variables of market seeking in the 1970s, and that in the 1990s by variables of efficiency or strategic asset seeking, is supported by our test.

8-4 Industrial Distributions

The shares of Japanese and US manufacturing FDI, dependent variables, are for five industrial sectors giving a maximum of 5 annual observations. However, due to the Cochrane-Orcutt correcting for autocorrelation, which is detailed in the chapter 6, the observations for the first year (1975 or 1977) is deleted from each industry sector. Thus, 20 and 35 observations are available in 1975-1979 and in 1990-1996, respectively.

Table 8-9 and 8-10 report correlations among the variables in the analyses and variance inflation factors. Some correlations are higher than 0.5; however, the variance inflation factors (VIF) are low enough not to raise concern about multicollinearity (Neter et al., 1989).

Table 8-9: Correlation Matrix for the Industrial Distribution of Japanese Manufacturing FDI

	TAX	INF	GLOB	LC	GDP	GFDI	VIF
TAX	1.000						**4.419**
INF	-.037	1.000					**1.264**
GLOB	-.021	-.054	1.000				**1.762**
LC	-.329	.056	-.185	1.000			**2.775**
GDP	-.168	-.063	-.374	.527	1.000		**8.572**
GFID	-.635	.095	-.002	.249	.674	1.000	**9.182**

Table 8-10: Correlation Matrix for the Industrial Distribution of US Manufacturing FDI

	TAX	LC	GLOB	INF	GFDI	GDP	VIF
TAX	1.000						**1.481**
LC	-.097	1.000					**1.069**
GLOB	.070	-.070	1.000				**1.051**
INF	.007	.124	.047	1.000			**1.393**
GFDI	.160	-.058	.004	-.305	1.000		**3.876**
GDP	.397	-.174	-.067	-.450	.826	1.000	**5.463**

Table 8-11 reports the results of statistical analysis of the FDI determinants of Japanese and US manufacturing FDI in five industrial sectors. The table gives somewhat different results compared to previous sections because this section is not concern with the question of developed and developing host countries. In the case of Japanese manufacturing FDI, LC is only significant explanatory variable in the 1970s at the 10 percent significance level, but all coefficients except for LC and INF are significant in the 1990s. It seems to indicate that the concentrations of Japanese manufacturing FDI have been moved from iron & nonferrous metals/machinery and chemical industries to electrical appliances and iron & nonferrous metals/machinery between the two periods (see Table 8-12). In other words, location specific advantages to secure resources for chemical industries were major determinants in the 1970s and in the 1990s location specific advantages such as GDP, GFDI, and TAX to secure market and to exploit its competitiveness in the electric appliances are major determinants.

In the US case, only LC in the 1970s and LC and GLOB in the 1990s are significant at the 1 percent significance level. Because the United States has kept over 40 percent of its manufacturing FDI in iron & nonferrous metals/machinery and chemical industries since 1975 (see Table 8-12), the changed characteristics of the two industries from 1970s to 1990s can represent the motivation of the distributions of US manufacturing FDI. The decreased coefficients for LC and TAX and increased coefficients for GDP, GFDI, and INF represent that the distributions of US manufacturing FDI are motivated by location specific advantages to exploit or augment its competitive advantages.

Table 8-11: Determinants of the Industrial Distributions of Manufacturing FDI

	Japan		The Unites States	
	1975-1979	1990-1996	1975-1979	1990-1996
Constant	1.12	9.94***	36.97**	20.95***
	(0.39)	(9.74)	(2.81)	(4.23)
LC	1.70*	0.37	-1.03***	-2.78***
	(1.97)	(1.57)	(-3.21)	(-3.40)
GDP	4.33	1.38*	0.10	1.31
	(1.23)	(1.83)	(0.17)	(1.65)
GFDI	-4.94	2.86**	-1.59	1.44
	(-1.15)	(2.27)	(-0.60)	(0.63)
GLOB	-1.92	2.08***	0.21	1.10***
	(-0.76)	(11.03)	(0.87)	(2.95)
INF	-0.70	0.35	-0.21	0.003
	(-1.02)	(0.46)	(-0.38)	(0.01)
TAX	2.37	-5.44***	2.19	-1.12
	(0.78)	(-2.88)	(0.75)	(-0.37)
Observations	20	35	20	35
Adj. R^2	0.20	0.81	0.27	0.36
F	1.79	25.50***	2.18	4.25***
DW	1.48	1.61	2.44	2.31

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$
Dependent Variables: Manufacturing FDI shares for five industrial sectors in which maximum annual observations are 5, and the first year observation (1975) is reduced from each industrial sector during the autocorrelation treatment.
GLOB (Globalization rates): The ratios of FDI out stock to GDP of home country for 5 industrial sectors.
LC (Labor cost): The ratio of the average labor costs of host countries to those in home country for 5 industrial sectors in which labor costs are measured by wages and salaries paid to employees in US $ divided by number of employees.
GDP: The average gross domestic productions of host countries.
GFDI (Gross fixed domestic investment): The ratio of average gross fixed domestic investments to GDP of host countries.
INF (Inflation rates): The average inflation rates of host countries.
TAX (Tax rates): The average tax rates of host countries in which tax rates are measured by total tax revenue divided by GDP.
T-statistics are reported in parentheses.

The coefficients for GLOB, which identifies the MNE's ownership specific advantages, are increased and significant at the 1 percent significance level for Japanese and US manufacturing FDI in the 1990s. It clearly supports that the traditional importance of factor endowments does not influence current FDI, but more general economic environments such as created competence, capabilities, supporting industries, local market conditions, macro- organization, and micro policies. Also, one possible reason for the significant increased in the coefficient for GLOB is that the degree of Japanese firms' multinationality considerably increased due to internal or microeconomic factors

such as restructuring and reengineering of firms and external or macroeconomic factors such as the appreciation of the yen and the integration and the expansion of the European Union.

Table 8-12: Average Industrial Shares of Japanese and US Manufacturing FDI Stocks in the 1970s and 1990s

		Japanese FDI				US FDI			
Region	**Years**	**Mean**	**Min.**	**Max.**	**SD.**	**Mean**	**Min.**	**Max.**	**SD.**
Foodstuffs	1975 - 1979	5.09	4.66	5.71	0.39	8.63	8.33	9.34	0.41
	1990 - 1996	5.29	5.01	5.73	0.29	11.32	9.15	13.31	1.60
Chemicals	1975 - 1979	19.07	15.30	22.55	2.94	20.65	19.87	21.63	0.85
	1990 - 1996	13.94	13.35	14.66	0.47	23.74	22.32	26.52	1.46
Iron, Nonferrous & Metals/ Machinery	1975 - 1979	23.66	21.73	26.78	1.89	32.42	25.29	34.46	3.99
	1990 - 1996	21.23	20.41	22.35	0.69	20.26	16.81	24.33	2.75
Electrical Appliances	1975 - 1979	11.41	10.35	11.87	0.64	NA	NA	NA	NA
	1990 - 1996	24.02	23.17	24.95	0.68	9.31	8.02	11.62	1.24
Transport Equipment	1975 - 1979	7.70	7.40	7.91	0.21	14.81	13.26	15.94	1.07
	1990 - 1996	13.34	12.89	13.71	0.32	12.89	11.51	13.66	0.77

SOURCE: The various issues of Financial Statistics of Japan published by the Department of Finance in Japan and the various issues of EXIM Review by the Export-Import Bank of Japan. The various issues of Survey of Current Business published by the US Department of Commerce
Columns do not add to 100 because of other industries, which are not included in this table.

Table 8-13: Standard Test of the Equality (Chow Test)

Japan	USA	Japan & USA	Japan & USA
70&90	**70&90**	**1970s**	**1990s**
3.67***	1.15	3.06	7.17***

***: $p < 0.01$

Table 8-13 reports the standard tests of the equality of the coefficients for Japanese and US equations between the 1970s and 1990s. Statistically, three cases: Japanese determinants between the 1970s and 1990s and between Japanese and US determinants in the 1970s and 1990s, can reject the null hypotheses that determinants between the two

periods and between the two countries are same, at the 1 percent significance level. However, in the US case between 1970s and 1990s, we cannot reject the null hypothesis.

As a result, hypothesis H3b, which expects the industrial distribution of Japanese manufacturing FDI was more determined by variables of resource seeking in the 1970s, and that in the 1990s by variables of market, efficiency or strategic asset seeking, is supported by our test.

Hypothesis H3c, which expects the industrial distribution of US manufacturing FDI was more determined by variables of market seeking in the 1970s, and that in the 1990s by variables of efficiency or strategic asset seeking, is not supported by our test.

The test results are summarized in Table 8-14

Table 8-14: Summary of Test Results for FDI Determinants

	Description	Test Results	Comment
H1b	**8-2 Overall Distributions** The basis is the expectation that the overall distributions of Japanese and US manufacturing FDI were more determined by the variables of ownership or location specific advantages of their MNEs in the 1970s, and that in the 1990s by the variables of not only ownership and location specific advantages but also internalization advantages of countries and/or their MNEs.	Supported	First, the major determinants of the overall distributions of Japanese and US manufacturing FDI have been changed from variables of location and/or ownership-specific advantages in the 1970s to variables of all OLI factors in the 1990s. Second, the changing directions of all determinants of Japanese and US FDI except for LC are same from the 1970s to 1990s. Third, the differences of the determinants between Japanese and US FDI have been smaller in the 1990s than those in the 1970s.
H2c	**8-3 Geographic Distributions** The basis is the expectation that the geographic distribution of Japanese manufacturing FDI was more determined by variables of resource seeking in the 1970s, and that in the 1990s by variables of market, efficiency or strategic asset seeking.	Supported	
H2d	The basis is the expectation that the geographic distribution of US manufacturing FDI was more determined by variables of market seeking in the 1970s, and that in the 1990s by variables of efficiency or strategic asset seeking.	Supported	
H3b	**8-4 Industrial Distributions** The basis is the expectation that the industrial distribution of Japanese manufacturing FDI was more determined by variables of resource seeking in the 1970s, and that in the 1990s by variables of market, efficiency or strategic asset seeking.	Supported	
H3c	The basis is the expectation that the industrial distribution of US manufacturing FDI was more determined by variables of market seeking in the 1970s, and that in the 1990s by variables of efficiency or strategic asset seeking.	Not Supported	Because the United States has kept over 40 percent of its manufacturing FDI in iron & nonferrous metals/machinery and chemical industries since 1975 (see Table 8-12), the changed characteristics of the two industries from 1970s to 1990s can represent the motivation of the distributions of US manufacturing FDI.

CH 9. An Empirical Test for the Geographic and Industrial Distributions of Japanese and US FDI in Europe

9-1. Introduction

This chapter investigates the changing geographic and industrial patterns and FDI determinants of Japanese and US FDI to Europe in the 1970s and 1990s, and tests the theories, which are detailed in chapter 4. The major purpose of this chapter is to find out the influence of European economic integration on the geographic and industrial patterns of Japanese and US FDI in the EU: comparative industrial patterns are tested on the regional (Europe) level because data for manufacturing FDI are not available on the country level. However, the test for aggregate FDI is done on the country level. The chapter begins with geographic patterns consisting of two FDI measures: all types of FDI and manufacturing FDI. It is then followed by the test for manufacturing FDI in the scope of industrial distributions. Next, the empirical results for FDI determinants and the relations between FDI and trade are presented.

In our statistical analysis we use nine host countries, which are Belgium, France, Germany, Italy, Luxembourg, Netherlands, Ireland, Spain, UK in the European Union. The time periods (1975-1979 & 1990-1996) are the same as the previous chapter to test FDI patterns. There are two reasons. First, because we try to compare the FDI patterns of Japanese and US FDI worldwide relative to the EU, the same time periods are desirable. Second, because we expect some restructuring of the patterns of Japanese and US FDI according to the expansion of the integrated area, and Ireland and UK became members in the 1973 before Spain in 1986, we decided to divide the test into the two

periods. However, to analyze determinants of FDI we used different time periods, 1975-1985 and 1986-1996. The rationales for this are not only the limited number of observations, but also because the Internal Market Programme (IMP) was initiated in 1985 and the large appreciation of yen after the G-5 meeting in 1985.

9-2 Geographic Patterns in the EU

H4a) The differences in the geographical distribution of Japanese and US total FDI in the EU are smaller in the 1990s than they were in the 1970s.

To test the extent and significance of the changing geographic patterns of Japanese and US FDI, their FDI determinants, and how far they are converging with one another in Europe between the 1970s and the 1990s, we employed exactly the same methods as were utilized in chapter 7 and 8.

Table 9-1 describes the data to test H4a. There are 24 and 56 observations for Japanese data set in the first (1975-1979) and second period (1990-1996), respectively, which are for the shares of Japanese total FDI in the nine host countries. In the US data set, 40 and 56 observations are available in the first and second period, respectively. To construct the 2-level hierarchical linear model each observation represents a host region's share at a year in the first level. At the second level, each observation represents a host region's

share during the each study period. As a result, we can test the differences and similarities on the distributions of geographic and industrial FDI simultaneously.

Table 9-1: Data Description for the Geographic Patterns of Japanese and US Total FDI in the 9 European Host Countries

Years	Home Country	Number of Observation	Mean	Standard Deviation	Minimum	Maximum	Hellinger Distance
1975 – 1979	JAPAN	24	1.42	2.06	0.08	7.61	7.63
	USA	40	4.19	3.51	0.53	12.60	
1990 - 1996	JAPAN	56	2.27	2.31	0.20	7.62	6.28
	USA	56	5.15	4.94	0.48	19.91	

Outcome variable is each host country's share of Japanese or US FDI

The Hellinger distance measures in Table 9-1 describe the differences of the geographic patterns of Japanese and US FDI in the second period, 1990-1996, are a little smaller than those in the first study period, 1975-1979. In addition to the averaged Hellinger distance measures, Figure 9-1 shows the general tendency of the differences. Compared to previous Hellinger distance measures, the differences between Japanese and US total FDI in the EU have not changed much during the two periods compared to previous figures in chapter 7.

Figure 9-1: Differences between the Geographic Patterns of Japanese and US FDI in the EU

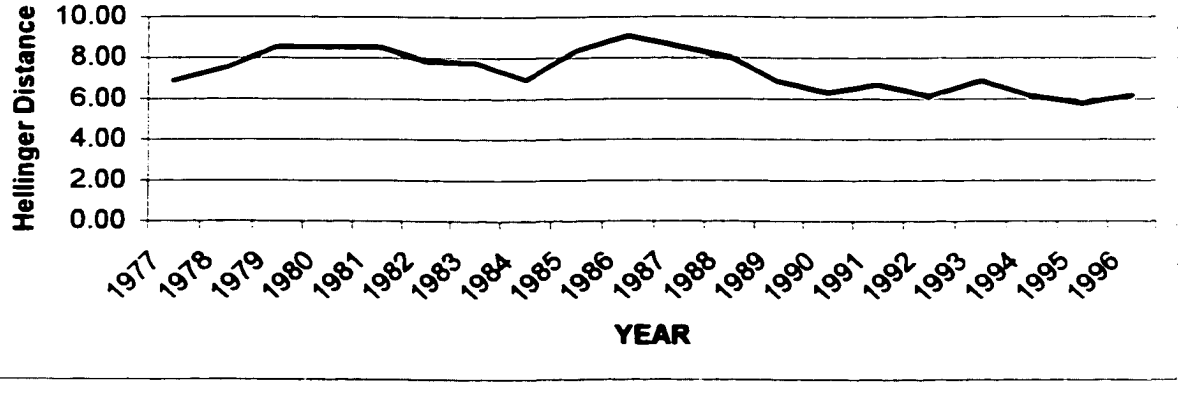

Table 9-2 reports the results of fixed effects, which means between host countries from HLM. The maximum likelihood point estimate for the grand-mean of FDI shares in host counties (units for the second level) are 1.4 and 4.2 with standard errors of 0.7 and 1.2 for Japanese and US FDI, respectively with over 99 percent reliability in the 1970s. In the 1990s, both of the coefficients are increased, which means that the EU markets occupied more Japanese and US FDI in the 1990s then those in the 1970s. The table also provides t-ratios and p-values. The p-values are much lower than those of previous studies in the chapter 7. It seems to indicate that there are more possibilities not to accept the null hypothesis that FDI shares in the 9 EU countries are same.

Table 9-2: HLM Results of the Geographic Patterns of Japanese and US Total FDI in the 9 European Host Countries – Fixed Effects*

Home Country	Fixed Effect	Coefficient	Standard Error	T-ratio	df	P-Value	Reliability for Bo
				1970s			
JAPAN	For Intrcpt1, β_{ijk}						0.992
	Intercept2, γ_{ik}	1.42	0.71	2.01	7	0.083	
USA	For Intrcpt1, β_{ijk}						0.999
	Intercept2, γ_{ik}	4.19	1.22	3.44	7	0.013	
				1990s			
JAPAN	For Intrcpt1, β_{ijk}						0.999
	Intercept2, γ_{ik}	2.27	0.81	2.81	7	0.027	
USA	For Intrcpt1, β_{ijk}						0.997
	Intercept2, γ_{ik}	5.15	1.71	3.01	7	0.021	

* Fixed effects are parameter estimates that do not vary across groups: Japanese and US FDI

Table 9-3: Standard Test of the Equality (T-test)

Japan	USA	Japan & USA	Japan & USA	Difference between Japan and USA
70-79 & 90-96	70-79 & 90-96	1970-79	1990-96	1970-79 & 1990-96
0.79	0.46	1.96**	1.52*	0.11

*: $p < 0.1$. **: $p < 0.05$

Table 9-3 shows the standard test for the equality of coefficients by a T-test for Japanese and US equations in the 1970s and 1990s, and the differences of the two countries equations between the 1970s and 1990s. It indicates that we can reject the null hypothesis that there is no difference between the geographic patterns of Japanese and US total FDI in Europe in terms of the grand means in the 1970s and those in the 1990s, at the 1 or 5 percent significance level. However, we cannot reject the null hypotheses that the geographic patterns of and the differences of the patterns of Japanese and US total FDI in 10 European countries between the 1970s and 1990s are the same. The test clearly represents that the distributions of Japanese and US total FDI in 9 European countries in terms of their grand means have not changed since 1975.

Table 9-4: HLM Results of the Geographic Patterns of Japanese and US Total FDI in the 9 European Host Countries – Random Effects

Home Country	Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value	ICC*
				1970s			
JAPAN	Intercept 1, u_{ik}	2.13	4.53	7	828.10	0.000	0.97
	Level-1, r_{ijk}	0.34	0.12				
USA	Intercept 1, u_{ik}	3.69	13.62	7	4860.13	0.000	0.99
	Level-1, r_{ijk}	0.31	0.10				
				1990s			
JAPAN	Intercept 1, u_{ik}	2.44	5.96	7	24394.14	0.000	0.99
	Level-1, r_{ijk}	0.11	0.01				
USA	Intercept 1, u_{ik}	5.17	26.77	7	2483.66	0.000	0.98
	Level-1, r_{ijk}	0.73	0.53				

Table 9-4 reports the variances of Japanese and US total FDI from their grand mean values. The table lists maximum estimates of the variance components. The variance components are 0.1 and 0.1 at the first level, and 4.53 and 13.62 at the second level for Japanese and US FDI respectively in the 1970s. The estimations at the second level are the variances of country means around the grand means as indicated in Table 9-2. These estimates indicate that most of the variance in the both countries FDI is between host countries, not within them. In addition, the intraclass correlations (ICC) indicate that over 97 percent of the variance in total FDI is between host countries. All variances are significant at 1 percent significance level. At this point, we compared the differences on variances between Japanese and US FDI in the 1970s and 1990s. The differences are 9.1 and 20.8 in the 1970s and 1990s respectively at 1 percent significance level.

The hypothesis H4a, which expects the converging trends in the geographical distributions of Japanese and US total FDI in European countries in the 1990s, is not supported by both our tests.

9-3 Industrial Distributions in Europe

H5a) The differences on industrial distribution of Japanese and US manufacturing FDI in Europe are smaller in the 1990s than they were in the 1970s.

Table 9-5 describes the data to test H5a. In Japanese data, 15 and 35 observations are available for 5 industrial sectors (see Table 6-2) in 1975-1979 and 1990-1996, respectively. There are 21 and 35 observations in US data set in the same periods. Each observation represents a share of an industry at a year at the first level in HLM. At the second level, each observation represents the sum of the shares of an industry during the two time periods.

Table 9-5: Data Description for the industrial Distributions of Japanese and US Manufacturing FDI in Europe

Years	Home Country	Number of Observation	Mean	Standard Deviation	Minimum	Maximum	Hellinger Distance
1975 – 1979	JAPAN	15	5.84	2.65	1.41	10.77	100.10
	USA	21	48.92	4.41	43.01	59.12	
1990 - 1996	JAPAN	35	16.36	3.85	9.60	22.07	46.54
	USA	35	48.19	8.32	35.86	60.42	

Outcome variable is each host country's share of Japanese or US FDI

The Hellinger distance measures in Table 9-5 describe that the differences of the industrial distributions of Japanese and US manufacturing FDI in Europe are significantly decreased from 100.1 in the first to 46.54 in the second period. The general tendency of the Hellinger distance measures in Figure 9-2 is very interesting. Most of Hellinger distance measures have slow downward or upward trends, but that in Europe has a sharply declining trend between 1976 and 1977 and then turns to a slow downward.

Figure 9-2: Differences between the Industrial Patterns of Japanese and US Manufacturing FDI in Europe

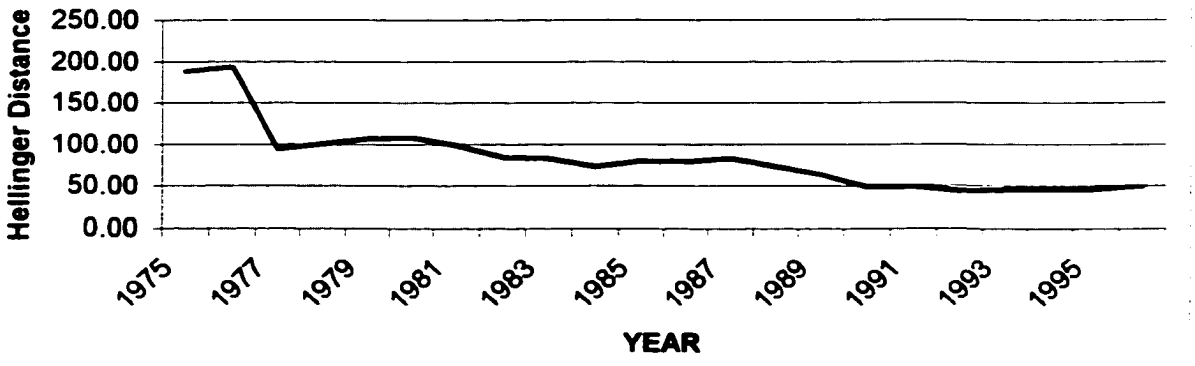

Table 9-6: HLM Results of the industrial Distributions of Japanese and US Manufacturing FDI in Europe – Fixed Effects*

Home Country	Fixed Effect	Coefficient	Standard Error	T-ratio	df	P-Value	Reliability for Bo
				1970s			
JAPAN	For Intrcpt1, β_{ijk}						0.885
	Intercept2, γ_{ik}	5.84	1.01	5.80	4	0.000	
USA	For Intrcpt1, β_{ijk}						0.896
	Intercept2, γ_{ik}	49.23	1.65	29.76	4	0.000	
				1990s			
JAPAN	For Intrcpt1, β_{ijk}						0.976
	Intercept2, γ_{ik}	16.36	1.56	10.48	4	0.000	
USA	For Intrcpt1, β_{ijk}						0.975
	Intercept2, γ_{ik}	48.19	3.36	14.33	4	0.000	

* Fixed effects are parameter estimates that do not vary across groups: Japanese and US FDI

Table 9-6 reports the results of fixed effects, which means between industries from HLM. The maximum likelihood point estimate for the grand-mean of FDI shares in the five industries (units for the second level) are 5.8 and 49.2 with standard errors of 1.0 and 1.7

for Japanese and US manufacturing FDI, respectively in the 1970s. In the 1990s, there are some changes. The significant increased coefficient for Japanese manufacturing FDI in the1990s seems to indicate that in the 1990s Japan considerably focuses on the five industries in Europe. The United States has kept its shares during the two time periods. Based on the t-ratios and p-values in the table, we can reject the null hypothesis that the industrial patterns of Japanese and US manufacturing FDI in Europe are same in terms of their grand mean values during the periods, at the 1 percent significance level.

Table 9-7: Standard Tests of the Equality (T-test)

Japan	USA	Japan & USA	Japan & USA	Difference between Japan and USA
1970s & 1990s	1970s & 1990s	1970s	1990s	1970s & 1990s
5.66***	0.28	22.43***	8.59***	6.05***

**: p < 0.05, ***: p < 0.01

The standard test for the equality of coefficients by a T-test for the Japanese and US equations in the 1970s and 1990s, and the differences of the two countries equations between the 1970s and 1990s are reported in Table 9-7. First, we tested the equality of coefficients for each country between the 1970s and 1990s. In the case of Japan, we can reject the null hypothesis that the average FDI share in the EU countries is the same, at the 1 percent significant level. In the US case, we cannot reject the null hypothesis. In addition, three other standard tests for the equality of coefficients for the Japanese and US equations Japanese and US equations in 1970s, that in the 1990s and the differences of the two equations between the 1970s and 1990s, can reject the null hypothesis at the 1 percent significance level. Because F-values are significantly reduced from the 1970s to 1990s (22.43 to 8.59) and the differences between the 1970s and 1990s are divergent, we

can predict that the industrial distributions of Japanese and US manufacturing FDI in Europe are converging in the 1990s.

Table 9-8: HLM Results of the industrial Distributions of Japanese and US Manufacturing FDI in Europe – Random Effects

Home Country	Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value	ICC*
				1970s			
JAPAN	Intercept 1, u_{jk}	2.37	5.61	4	34.78	0.000	0.72
	Level-1, r_{ijk}	1.48	2.19				
USA	Intercept 1, u_{jk}	3.92	15.36	4	56.90	0.000	0.74
	Level-1, r_{ijk}	2.31	5.35				
				1990s			
JAPAN	Intercept 1, u_{jk}	3.86	14.88	4	165.34	0.000	0.85
	Level-1, r_{ijk}	1.61	2.58				
USA	Intercept 1, u_{jk}	8.30	68.92	4	158.14	0.000	0.85
	Level-1, r_{ijk}	3.54	12.52				

Table 9-8 presents the results of random effects from HLM. The table lists maximum estimates of the variance components. The variance components are 2.2 and 5.4 at the first level, and 5.6 and 15.4 at the second level for Japanese and US FDI respectively in the 1970s. The estimations at the second level are the variances of industrial means around the grand means as indicated in Table 9-6. These estimates indicate that most of the variance in the both countries FDI is between industries, not within them.

In addition, the intraclass correlations (ICC) indicate that over 72 percent of the variances in FDI are between industries. All variances are significant at 1 percent significance level. At this point, we compared the differences on variances between Japanese and US FDI in the 1970s and 1990s. The differences are 9.8 and 54.0 in the 1970s and 1990s respectively at 1 percent significance level. It indicates that the industrial distributions of

Japanese and US manufacturing FDI in Europe are diverging in the 1990s compared to that in the 1970s. This result is compatible with differences in the industrial distribution of ownership advantages.

As a result, hypothesis H5a, which expects the converging trends in the industrial distribution of Japanese and US manufacturing FDI in Europe in the 1990s, is not supported by both our tests.

9-4 Determinants of Japanese and US Manufacturing FDI in Europe

H5b) The changing industrial distribution of Japanese manufacturing FDI in Europe has been more influenced by its changed overall manufacturing FDI, from resource seeking to market, efficiency or strategic asset seeking than by European integration *per se* because the effects of European economic integration on Japanese manufacturing FDI is not significant.

H5c) The changing industrial distribution of US manufacturing FDI in Europe has been more influenced by European integration *per se* rather than its changed overall manufacturing FDI, from market seeking to efficiency or strategic asset seeking because the effects of European economic integration on US manufacturing FDI is significant.

The shares of Japanese and US manufacturing FDI, dependent variables, are in 9 European countries giving a maximum of 9 annual observations. However, because Belgium and Luxemburg are considered as one country, and the Cochrane-Orcutt deleted the observations for the first year (1975 or 1977) from each host country, actual observations vary.

Table 9-9 and 9-10 report correlations among the variables in the analyses and variance inflation factors. Some correlations are higher than 0.5, and the variance inflation factors (VIF) are a little high to raise concern about multicollinearity. TAX in Japanese data, and GDP and TAX in the US data could be problematic; however, because of the theoretical importance of the two variables, we decide to include them.

Table 9-9: Correlation Matrix for Japanese Manufacturing Distribution in Europe

	TAX	GFDI	EXFDI	GLOB	LC	INF	GDP	VIF
TAX	1.000							**10.007**
GFDI	-.042	1.000						**1.073**
EXFDI	.087	-.108	1.000					**1.633**
GLOB	-.165	.081	.066	1.000				**2.461**
LC	-.169	.070	.423	.553	1.000			**3.431**
INF	.312	-.070	-.092	-.404	-.513	1.000		**3.734**
GDP	-.716	.062	.124	-.213	.068	.178	1.000	**7.148**

Table 9-10: Correlation Matrix for US Manufacturing Distribution in Europe

	TAX	EXFDI	GLOB	GFDI	INF	LC	GDP	VIF
TAX	1.000							**10.752**
EXFDI	-.069	1.000						**2.251**
GLOB	.240	.227	1.000					**1.290**
GFDI	-.031	.160	.183	1.000				**4.128**
INF	.298	.121	.198	.056	1.000			**3.737**
LC	-.096	.742	.324	.223	.117	1.000		**4.563**
GDP	-.554	-.166	-.174	.529	.151	-.248	1.000	**11.269**

Table 9-11: Determinants of Manufacturing FDI in Europe

	Japan		The United States	
	1977-1985	1986-1996	1975-1985	1986-1996
Intercept	2.12	14.27***	2.76	6.65
	(1.20)	(9.61)	(0.71)	(1.48)
LC	0.39	0.15**	-0.34**	-0.41***
	(0.88)	(2.67)	(-2.39)	(-3.91)
GDP	-4.40**	-0.31	3.89***	0.22
	(-2.37)	(-1.02)	(5.71)	(1.59)
GFDI	0.53***	0.15**	-2.34***	-0.03
	(3.43)	(2.63)	(-7.41)	(-0.74)
GLOB	0.07	1.40***	0.31***	0.15***
	(0.33)	(14.50)	(6.86)	(3.26)
INF	0.17	-0.27***	0.52***	-0.001
	(1.23)	(-4.35)	(5.10)	(-0.04)
TAX	4.26**	0.007	-0.93	0.47***
	(2.41)	(0.03)	(-1.29)	(3.61)
EXPFDI	-0.09	-0.62***	0.01	-0.65***
	(-1.24)	(-7.05)	(0.11)	(-14.83)
Observations	40	55	46	55
Adj. R^2	0.90	0.93	0.94	0.98
F	52.87***	95.84***	104.54***	649.75***
DW	1.74	2.11	1.39	2.12

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$

Dependent Variables: Manufacturing FDI shares for five industrial sectors in which maximum annual observations are 5 and the first observation (1975 or 1977) is reduced from each industrial sector during the autocorrelation treatment (Actual observations are vary).

GLOB (Globalization rates): The ratios of FDI out stock to GDP of home country for 5 industrial sectors.

LC (Labor cost): The ratio of the average labor costs of host countries to those in home country for 5 industrial sectors in which labor costs are measured by wages and salaries paid to employees in US $ divided by number of employees.

GDP: The average gross domestic productions of host countries.

GFDI (Gross fixed domestic investment): The ratio of average gross fixed domestic investments to GDP of host countries.

INF (Inflation rates): The averages inflation rates of host countries.

TAX (Tax rates): The averages corporate tax rates of host countries.

EXFDI (Export intensity): The averages corporate export intensity of home countries in which export intensities are measured by home country's exports divided by FDI outflows to host countries.

Table 9-11 presents the results of FDI determinants for Japanese and US manufacturing FDI in Europe. In the case of Japanese manufacturing FDI, the estimated coefficient for GDP, GFDI and TAX are significant at 1 or 5 percent significance level in the first period, and all coefficients except for GDP and TAX are significant at 1 or 5 percent significance level in the second period. The changing patterns on coefficients for GDP, GLOB, INF and TAX from the first period to the second period are in accordance with the changing patterns on the overall distributions of manufacturing FDI in chapter 8. The

changing patterns on the coefficients for LC, INF and TAX during the two time periods simply support that the industrial distribution of Japanese manufacturing FDI in Europe has been changed to look for lower labor costs and more favorable business environment within Europe. In addition, even though EXPFDI becomes a more important determinant in the second period, the changes in GDP are the most noticeable. Especially, the significantly increased coefficient for GDP represents the similar patterns of the overall distributions of Japanese FDI, which are from resource seeking to market seeking. It seems to prove that because not only Japan is a latecomer and Japanese MNEs have trade-based rather than investment-based commercial relationship with the EU (UN, 1990), but also its FDI in Europe has aimed at exploiting the European market as a whole beginning from the early 1970s (Dunning, 1994), the integration effect, EXPFDI, could be less important determinant compared to other variables in the second period. In other words, the results of this test can predict that the economic integration processes in the EU have turned the type of Japanese FDIs into defensive export substituting investments in industries where Japan has already O and L advantages such as automobile, electric and electronic equipment and offensive export substituting investments to upgrade and rationalize operations in the EU.

As a result, hypothesis 5b, which expects that the changing industrial distributions of Japanese manufacturing FDI in Europe has been more influenced by its changed overall manufacturing FDI, from resource seeking to market, efficiency or strategic asset seeking than by European integration per se because the effects of European economic integration on Japanese manufacturing FDI is not significant, is supported by our test.

In the case of US manufacturing FDI in Europe, all coefficients except for TAX and EXPFDI are statistically significant in the first period, which represent that US MNEs motive to invest in Europe was market seeking based on its ownership specific advantages. However, in the second period the degree of importance for GDP remarkably decreases and those of TAX and LC increases with the 1 percent significance level, which show that the motive for US MNEs changes to efficiency and/or strategic asset seeking. However, the major interesting change is that the integration effect, EXPFDI was not a significant variable in the first period, but it becomes the most important explanatory variable in the second period compared to other variables. It seems to prove that because the United States has a long investment history in the European market in which most of US FDI flows in Europe in the early 1960s were characterized as defensive import-substituting investments based on transaction cost theory and oligopolistic power theory, to supply local markets (UN, 1990), the economic integration processes in Europe have turned the type of US FDIs into rationalized investments and offensive export substituting investments (Dunning, 1988, 1991; UN, 1990).

As a result, hypothesis 5c, which expects that the changing industrial distributions of US manufacturing FDI in Europe has been more influenced by European integration per se rather than its changed overall manufacturing FDI, from market seeking to efficiency or strategic asset seeking because the effects of European economic integration on US manufacturing FDI is significant, is supported by our test.

Table 9-12: Standard Test of the Equality (Chow Test)

Japan	USA	Japan & USA	Japan & USA
77-85&86-96	75-85&86-96	1975(1977) - 1985	1986 - 1996
16.63***	18.24***	582.92***	273.66***

***: $p < 0.01$

Table 9-12 reports the standard tests of the equality of the coefficients for Japanese and US equations. Statistically, all cases: Japanese and determinants between the first period (1975 or1977-1985) and the second period (1986-1996) and between Japanese and US determinants in the two periods, can reject the null hypotheses that determinants between the two periods and between the two countries are the same at the 1 percent significance level.

9-5 Relationships between FDI and Trade in Europe

H6a) Japan has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996.

H6b) The United States has more complementary relationships between manufacturing FDI and trade in 1975-1986 than they were in 1986-1996.

H6c) Japan has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996 in Europe

compared to other areas because of the effect of European economic integration.

H6d) The United States has more complementary relationships between manufacturing FDI and trade in 1975-1985 than they were in 1986-1996 in Europe compared to other areas because of the effect of European economic integration.

Because we try to examine how much economic integration influences the relationships between FDI and trade between the two periods (1975-1979 & 1990-1996), the relationships in Asian countries where economic integration does not exist is compared to European countries. The sample contains 11 Asian countries: Australia, Hong Kong, Indonesia, Japan, South Korea, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Thailand, and 9 European countries: Belgium, France, Germany, Ireland, Italy, Luxemburg, Netherlands, Spain, United Kingdom. In addition, the relationship between FDI and trade in the world market, which include 28 or 29 host countries for Japanese and US case respectively (see Table 6-1), is also compared.

Table 9-13 shows the relationships of FDI and trade by regressions based on Cochrane-Orcutt procedure to treat autocorrelation. In the case of the overall relationships between FDI and trade, Japan and the United States have kept their complementary relationships during the two time periods at the 1 percent significance level. The coefficients for Export of the two home countries in the first period are 0.71 for Japan and 1.83 for the

United States. In other words, the United States has more complementary relationship between FDI and trade in the first period than Japan has. In the second period, the relationships between FDI and trade are more positively related compared to those in the first period, and Japan has a little more complementary relationship than the United States has. These results could prove that the increased value-added activities and intra-firm trade by foreign affiliates derived from FDI have generated more demands for other products such as intermediate goods, capital goods, and other related services (UNCTAD, 1996; Brainard, 1997).

Table 9-13: Relationship between FDI and Trade

	Japan		The United States	
	1977-1985	1986-1996	1975-1985	1986-1996
Europe				
Export	-0.17	2.05***	2.28***	3.14***
	(-0.06)	(4.33)	(16.00)	(16.61)
Constant	0.009***	0.008***	-0.001	-0.002
	(4.64)	(2.77)	(-0.29)	(-0.57)
Observations	64	88	80	88
# of Country	9	9	9	9
R^2	0.01	0.18	0.77	0.76
DW	2.36	2.09	2.15	1.75
Asia				
Export	0.63*	1.18***	1.02***	0.47***
	(1.95)	(3.00)	(3.70)	(3.23)
Constant	0.015***	0.014***	0.002	0.005***
	(5.00)	(4.79)	(1.15)	(4.24)
Observations	94	110	87	121
# of Country	11	11	10	10
R^2	0.04	0.08	0.14	0.08
DW	2.26	2.10	1.58	1.53
World				
Export	0.71***	2.36***	1.83***	2.31***
	(4.00)	(9.35)	(18.92)	(18.38)
Constant	0.013***	0.008***	0.002	0.001
	(7.96)	(2.97)	(1.25)	(0.56)
Observations	238	308	251	308
# of Country	31	31	31	31
R^2	0.06	0.22	0.59	0.56
DW	2.14	1.96	1.93	1.64

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.01$
Dependent Variables: Manufacturing FDI shares in host countries in which the first observation (1975 or 1977) is reduced from each industrial sector during the autocorrelation treatment (Actual observations are vary).
Export: Export shares in host countries.

Table 9-14: Standard Test of the Equality (T- Test)

	Japan	USA	Japan & USA	Japan & USA	Difference
	77-85 & 86-96	77-85 & 86-96	77-85	86-96	77-85 & 86-96
Europe	3.62***	3.61***	6.59***	2.13**	7.45***
Asia	1.07	1.75**	0.91	1.68**	0.01
World	5.40***	3.04***	5.59***	0.22	14.25***

**: $p < 0.05$, ***: $p < 0.01$

In addition, the fifth row in Table 9-14 shows the standard test for the equality of coefficients by a T-test for the Japanese and US equations, and the differences of the two countries equations between the two time periods. We cannot reject the null hypothesis that the relationships between FDI and trade are same, only in the second period. It also could support that liberalization by governments, globalization by MNEs, and the creation of regional agreement induce the converging patterns of the relationship between FDI and trade by Japanese and US MNEs.

As a result, hypotheses 6a and 6b, which expect that Japan and the United States have more complementary relationships between manufacturing FDI and trade in 1977 (1975)-1985 than they were in 1986-1996, are supported by our test.

The relationships between FDI and trade in Europe are somewhat different from those in the world market. Table 9-13 demonstrates that in European market, Japanese FDI is substitute for trade, and US FDI is complementary to trade in the first period. However, both of them are complementary to trade in the second period, and the changing pattern of Japanese relationship between FDI and trade in European market is remarkable. It clearly supports that Japan has trade-based commercial relationship in Europe, and the United States has investment-based commercial relationship in Europe (UNCTAD, 1990)

in the first period. In the second period, Japanese and US FDI create more exports in European market compared to those in the first period. On the contrary, Japanese and US FDI in Asian market have been complementary to trade during the two time periods, but they do not create more exports than they do in European market in the second period. In addition, Table 9-14 shows the standard test for the equality of coefficients by a T-test for the Japanese and US equations in the 1977 (1975)-1985 and 1986-1996, and the differences of the two countries equations between the two periods. The fourth row in the table demonstrates that the relationship between FDI and trade in Asian market is changed only in the US case between the two time periods and in the Japanese & US case in the second period. However, the third row shows that there are many changes in European market. We can reject the null hypothesis that the relationship between FDI and trade is same, in all cases at the 1 or 5 percent significance level. It seems to support that the relationship between FDI and trade is more interconnected (UNCTAD, 1996; Gray, 1999) in Europe because of European economic integration.

As a result, hypothesis 6c and 6d, which expect that Japan and the Unites States have more complementary relationships between manufacturing FDI and trade in 1977 (1975)-1985 than they were in 1986-1996 in Europe compared to other areas because of the effect of European economic integration, are supported by our test.

The test results are summarized in Table 9-15

Table 9-15: Summary of Test Results

	Description	Test Results	Comment
H4a	**9-1 Geographic Patterns in Europe** The differences on the geographical distributions of Japanese and US total FDI in Europe are smaller in the 1990s than they were in the 1970s.	Not Supported	It seems to indicate that the patterns of Japanese and US non-manufacturing FDI could be very diverging in the 1990s.
H5a	**9-2 Industrial Patterns in Europe** The differences on industrial distribution of Japanese and US manufacturing FDI in Europe are smaller in the 1990s than they were in the 1970s.	Not Supported	This does not mean that European economic integration did not influence on the patterns of Japanese and US manufacturing FDI in Europe. It could be interpreted that the different characteristics between Japanese and US MNEs in Europe have existed since the 1970s.
H5b	The changing industrial distributions of Japanese manufacturing FDI in Europe has been more influenced by its changed overall manufacturing FDI, from resource seeking to market, efficiency or strategic asset seeking than by European integration *per se* because the effects of European economic integration on Japanese manufacturing FDI is not significant.	Supported	The trends of macroeconomic convergence among developed countries could also be considered as one of the reasons. Similar macroeconomic conditions such as living standards, working conditions, and income patterns can provide new opportunities by creating global customers and products.
H5c	The changing industrial distributions of US manufacturing FDI in Europe has been more influenced by European integration *per se* rather than its changed overall manufacturing FDI, from market seeking to efficiency or strategic asset seeking because the effects of European economic integration on US manufacturing FDI is significant.	Supported	
H6a	**9-3 Relationships between FDI and Trade in Europe** Japan has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996.	Supported	These results could prove that the increased value-added activities and intra-firm trade by foreign affiliates derived from FDI have generated more demands for other products such as intermediate goods, capital goods, and other related services (UNCTAD, 1996; Brainard, 1997).
H6b	The United States has more complementary relationships between manufacturing FDI and trade in 1975-1986 than they were in 1986-1996.	Supported	It also could support that liberalization by governments, globalization by MNEs, and the creation of regional agreement induce the converging patterns of the relationship between FDI and trade by Japanese and US MNEs.
H6c	Japan has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996 in Europe compared to other areas because of the effect of European economic integration.	Supported	It clearly supports that Japan has trade-based commercial relationship in Europe, and the United States has investment-based commercial relationship in Europe (UNCTAD, 1990) in the first period. In the second period, Japanese and US FDI create more exports in European market compared to those in the first period
H6d	The United States has more complementary relationships between manufacturing FDI and trade in 1977-1985 than they were in 1986-1996 in Europe compared to other areas because of the effect of European economic integration.	Supported	On the contrary, Japanese and US FDI in Asian market have been complementary to trade during the two time periods, but they do not create more exports than they do in European market in the second period.

CH 10. Findings and Implications

The previous five chapters have presented theoretical and empirical argument to support the converging patterns of Japanese and US FDI and the influences of European economic integration on these patterns. Chapter 5 presented theoretical arguments, which proposed that the geographic and industrial patterns of Japanese and US FDI might be converging in the 1990s, and European economic integration might be a major factor to make the same converging patterns and complementary relations between FDI and trade in Europe. Chapter 7 presented empirical tests for the geographic and industrial distributions of Japanese and US FDI, which are convergence/divergence hypotheses, by employing the Hellinger Distance, the hierarchical linear model (HLM) and standard tests of the equality. In chapter 8, the determinant hypotheses about the distributions of Japanese and US FDI were tested by employing the generalized least square (GLS). In chapter 9, the influences of European economic integration on Japanese and US manufacturing FDI were tested, and the distributions of Japanese and US FDI in Europe were compared to overall distributions.

The converging patterns of Japanese and US FDI in the world and in Europe in terms of total FDI were not detected in the 1990s. However, the patterns of Japanese and US manufacturing FDI in the 1990s were clearly converging. It seems to indicate that the patterns of Japanese and US non-manufacturing FDI could be very diverging in the 1990s. The converging patterns of Japanese and US manufacturing FDI in the 1990s could be explained by many changed international economic environments in the 1990s compared to those in the 1970s. First, in the 1990s, all economic entities; countries and

firms, had become involved in globalization processes to be competitive in the global market. These globalization processes encouraged more economic ties and interdependence, which were further stimulated by the liberalization and deregulation of markets and by new technologies such as communication technology. Second, the increased multinationality of Japanese multinational enterprises (MNEs) could be another reason. Because MNEs were major actors in the exploitation of ownership advantages in outside of their national boundaries, the similar degree of international involvement of MNEs could make similar FDI patterns. According to the restructuring or reengineering of Japanese MNEs and the Japanese yen appreciation in the 1980s, Japanese MNEs caught up with the degree of US MNEs' multinationality. Third, the trends of macroeconomic convergence among developed countries could also be considered as one of the reasons. Similar macroeconomic conditions such as living standards, working conditions, and income patterns can provide new opportunities by creating global customers and products.

The converging patterns of industrial distributions of Japanese and US manufacturing FDI in the 1990s were also detected in chapter 7, but varied among industries and regions. The rates of convergence, which we calculated by the reduced rates of variance (see Table 7-4, 7-16 and 7-12), are different in the overall, geographic and industrial distributions of Japanese and US manufacturing FDI. There are some possible explanations. First, there is different motivation based on different regions in an industry (Suzuki, 1994). According to the increased importance of created assets, Japan and the United States had both focused on technology or R&D intensive industries and then built

up ownership advantages in those industries. However, because Japan had concentrated on the electrical appliances industry and the United States on the chemical industry in the 1990s, convergent rates varied among industries. Second, some markets for the ownership specific advantages of MNEs were not easily internalized in an overseas location (Dunning, 1993a). It means that the location advantages to exploit the ownership advantages by Japan and the United States were different among the host regions.

We expected that we would find more converging patterns of Japanese and US manufacturing FDI in Europe in the 1990s because European economic integration significantly increased its location and internalization advantages by providing new opportunities for economies of scale and scope and cross-border activities among members. However, we did not find the converging patterns in Europe. This does not mean that European economic integration did not influence on the patterns of Japanese and US manufacturing FDI in Europe. It could be interpreted that the different characteristics between Japanese and US MNEs in Europe have existed since the 1970s. However, table 9-8 provides the variance of the mean values among 5 industries in the Japanese and US manufacturing FDI. The variance of US manufacturing FDI was increased by 349 percent from the first period to the second period while that of Japanese FDI was increased by 165 percent. It seems to support our argument that because the United States has a long investment history in Europe, it needs to reorganize its FDI by the expansion or changed stages of the European economic integration.

In examining FDI determinants of the overall patterns of Japanese and US manufacturing FDI (see Table 8-3), there are many interesting findings. In the case of Japanese manufacturing FDI, the variables of labor costs (LC), market size (GDP) and infrastructure (GFDI) are major determinants in the 1970s. It seems to indicate that Japanese manufacturing FDI was more determined by host country characteristics in the 1970s. However, in the 1990s, most kinds of variables, which include O, L, I, are significant. Especially, the coefficient for market size (GDP) and ownership specific advantages (GLOB) can represent its overall FDI patterns changed to market seeking with O advantages. In the US case, all variables except for GFDI and TAX are significant variables in the 1970s, but all variables are significant in the 1990s. Especially, the coefficient for LC has exactly opposite trend compared to that in the Japanese case. It represents the overall patterns of US FDI have been changed from market seeking to efficiency seeking. The coefficients for GLOB also provide interesting implication. GLOB becomes more important determinant in the overall and industrial patterns of Japanese and US manufacturing FDI in the 1990s compared to that in the industrial distributions of them, but not in the geographic distributions. It seems to indicate that globalization strategies by Japanese and US MNEs are based on industries, not on locations.

FDI determinants of Japanese and US manufacturing FDI in Europe (see Table 9-11) also provide interesting results. In the Japanese case, the variables of location characteristics such as market size, infrastructure and tax rates are statistically significant in the first period, but in the second period all kinds of variables, which are related to O, L, I, are

significant. The United States has somewhat different trends during the two periods. The importances of market size and inflation rates are remarkably decreased from the first to the second period. It seems to indicate that market seeking is no longer the major motivation of US manufacturing FDI in Europe. The influence of European economic integration (EXPFDI) on Japanese and US manufacturing FDI is the important determinant only in the second period. It clearly represents that European economic integration influences on the distributions of Japanese and US manufacturing FDI in Europe from the first (1975 (77)-1985) to the second period (1986-1996). However, the influence of the integration variable, EXPFDI compared to that of other variables is more critical in the case of US FDI rather than in the Japanese case in the second period. It could imply that because the United States has a long history of investment in Europe, European economic integration might have a greater influence on restructuring pre-existing FDI within Europe rather than on stimulating new FDI in the first period. On the contrary, because Japanese FDI in Europe began from the early 1970s and its FDI had aimed to exploit Europe as a whole from the beginning, the effect of European economic integration on Japanese manufacturing FDI was not significant in the first period, but in the second period.

The findings of our study provide implications for FDI theories. Our estimation results in FDI determinants show that all OLI parameters of the eclectic paradigm played a significant role in shaping Japanese and US FDI. Based on Dunning (1997b), the consequences of FDI will vary according to the nature and extent of the ownership (O) specific advantages of the investing firms, the location (L) specific advantages of the

countries in host countries or regions and firms' capabilities to internalize (I) their foreign productions. The interaction of the OLI factors determines the level and pattern of foreign value-added activities of firms. In addition, the eclectic paradigm can comprehend the changed OLI configuration of a firm and the reaction of a firm to that configuration, which are vary according to not only the changed nature and characteristics of industry and the different objectives and/or purposes for the FDI, but also the changed economic and political conditions of home and host countries over a period of time (Dunning, 2000). However, most of the other FDI theories, which focus on only one or two of the three factors, cannot fully explain the contemporary foreign value-added activities because of their limitations to embrace different motivation of FDI and/or the changed international business environments in the 1990s compared to those in the 1970s. As a result, some modification should be required.

The concept of ownership specific advantages in the 1990s is broadened especially by the emergence and growth of inter-firm relationships such as strategic business alliances. The characteristics of technology innovation have been changed from the improvement of existing competitive advantages, based upon production costs in the 1970s to the reorganization of existing market structure in the 1980s and 1990s. It means that new characteristics of technology innovation provide more profit opportunities. Other factors to increase inter-firm relationships are the erosion of the boundary of technology by the introduction of new products, derived from the combining importance of innovation technologies across a wide range of disciplines and globalization processes. These factors require firms to face heavy R&D expenditures, uncertainty, and risks, which are

shared with other firms by the establishments of inter-firm relationships. Consequently, in the 1970s, ownership advantages represented a firm's possession or privileged access to a unique asset (Oa or static O), but in the 1990s, a firm's capabilities (Ot or dynamic O) to organize and/or increase created assets internally and externally were more important because of the emergence and growth of inter-firm relationships such as strategic business alliances. The importance of dynamic ownership advantages, which is embraced by the eclectic paradigm and not by other FDI theories such as transaction costs and resource based theory, based on static ownership advantages, is clearly shown in our estimation results. The high average shares of Japanese FDI in developing countries in the 1970s represent the superiority of Japanese static ownership advantages compared to that of developing countries, but the increased shares of Japanese FDI in developed countries in the 1990s imply that FDI theories should consider dynamic ownership advantages as well as static ownership advantages.

In considering location specific advantages, the dominance of natural comparative advantages such as wages and raw material costs was over, and created comparative advantages such as the availability of skilled manpower, industrial relations legislation, facilities for R&D, the protection of property rights, competition policy, and employment legislation became more important factors to determine locations by firms in the 1990s. It also meant that the economic prosperity of a country or a region was determined not only by its possessed natural resources, but also by its accumulated knowledge, level of education and the capability and/or infrastructure to coordinate those assets. Because of the changed international business environments especially the growth of inter-firm

relationships, which are detailed above, location specific advantages should be considered on the ground of the interaction with ownership specific and internalization advantages done by the eclectic paradigm. However, most FDI theories ignore the interaction and cannot explain different motives for FDI such as strategic asset seeking to protect or augment competitive advantages. Internalization theory treats ownership specific advantages, derived from structural market imperfection, as exogenous variables. It means that this theory can only explain foreign value added activities of firms, which already have ownership specific advantages before they decide to invest and try to internalize intermediate transactions to reduce costs. Table 8-3 shows that the different relationships of location specific variables with Japanese and US manufacturing FDI on the ground of the interaction with ownership specific and internalization advantages over the two periods. The motives for Japanese manufacturing FDI have been changed from resource seeking in the 1970s to market, efficient, or strategic asset seeking in the 1990s, and host countries' market size (GDP) and ownership specific advantage (GLOB) become more important variables to determine its FDI. In the case of US manufacturing FDI, host countries' GDP, tax, and inflation rates appeared more important in the 1990s compared to those in the 1970s. These estimated coefficients clearly demonstrate that location specific advantages should be considered on the ground of the interaction with ownership specific and internalization advantages, which are embraced by the eclectic paradigm.

Given ownership and location specific advantages, internalization advantages are firms' capabilities to circumvent or exploit market failure. These are how much firms can

internalize their foreign productions and how much benefits firms can get from internalizing intermediate products compared to using arm's length transactions. Although the theory of internalization has dominated explanation of why firms choose FDI instead of other modalities in the past two decades, it needs some modification to explain contemporary business activities such as the growth of strategic business alliances. The major focus of internalization theory is to explain why cross-border transactions of intermediate products are organized by internal hierarchies rather than by other market related agreements. This theory concludes that firms will arrange value-added activities across national boundaries whenever the cost of organizing internal hierarchies is lower than that of using contractual agreements. However, because internalization theory focuses on the problems of appropriability and coordination in the exchange of knowledge through external markets, which is the perspective of technology transfer and not technology creation, it can not explain FDI to sustain and/or augment competitiveness over a period of time. In addition, even though inter-firm agreements can provide incentives to lessen market failure where FDI is impractical, internalization theory cannot explain these kinds of activities. As a result, the concept of internalization needs to be widened to encompass other goals, which are embraced by the eclectic paradigm.

In macro theories, Kojima's dynamic comparative-advantage theory is the most questionable in terms of the comparison between the 1970s and 1990s, which is done by our study. Most of Kojima's theory could be relevant for the FDI patterns in the 1970s; however, it may be not in the 1990s. The principle of comparative is that firms in a

country who have comparative ownership specific advantages to produce some goods and services compared to foreign firms are stimulated to invest in overseas that have comparative location specific advantages in resources to produce those goods and services. However, the shares of Japanese manufacturing FDI to developed countries increased and the industrial shares of manufacturing industries in Europe significantly jumped in the 1990s compared to those in the 1970s. Based on Kojima's theory, these patterns might be interpreted as Japan had already established its comparative advantages in manufacturing industries against developed countries and was loosing them in the 1990s. However, Japan actually did not have comparative advantages in manufacturing industries except a few such as automobile or consumer electronics. As a result, this theory cannot fully explain the patterns of FDI in the 1990s.

In addition, Kojima (1990) states that the geographical patterns of US FDI are quite uniform throughout the world because the microeconomic interests of US FDI is mainly determined without regard of the comparative trade advantage positions of the host countries, and US FDI is heavily focused on industries in which it has oligopolistic power that can help to specialize or internalize in the production of differentiated products. On the contrary, Japanese FDI is quite different according to geographical and time factors because Japan has considered macroeconomic impacts of FDI on patterns of comparative advantages. However, our study find that the differences on geographic and industrial patterns are detected in the 1970s, but the geographic and industrial patterns of Japanese and US manufacturing FDI are converging with each other in the 1990s. Also, Kojima and Ozawa (1984) insist that Japan has been a price taker rather than a price setter who is

expanding and controlling overseas markets with monopolistic ownership specific advantages. This is right when Japanese FDI was largely characterized as labor resource oriented and natural resource oriented to reduce production costs and then to maximize outputs with using foreign factor endowments in the 1970s; however, technology is taking over the importance of unskilled or semi-skilled labor and natural resources on production costs in many manufacturing industries in the 1990s. As a result, Japanese MNEs no longer have significant incentives to look for supplies of cheap labor. Table 8-3 shows that location disadvantage (LC) is less correlated to Japanese FDI than other variables such as market size (GDP) and tax rates (TAX) in the host in the 1990s.

In our study, we expected that European economic integration could be a major factor to lead more converging patterns of Japanese and US FDI in Europe compared to those in their overall patterns in the 1990s. In addition, we tried to find out the differences of the influence of European economic integration on Japanese and US FDI in Europe between 1975 (1977)-1985 and 1986-1996 by employing one variable, export intensity (EXPFDI). Although we could not find the converging patterns, the influence of economic integration on FDI determinants is clearly detected. Generally, it is difficult to test the influence of economic integration on FDI because the major impacts of economic integration on FDI is industry specific and could be derived from other economic and socio-political factors such as market size, level of economic development, political stability, and intra-firm trade among member countries or between member and non-member countries, rather than from integration itself. Considering all possible factors

should help us to gain a better understanding of the influence of economic integration on FDI.

Finally, our study provides strategic and/or policy implications for governments. National policies can encourage the creation of tacit capability through the support of education and training, and encourage local research by having a broader science base with which firms can interact. Especially, a nation's competitive position in technology-intensive industries is less a function of its national factor endowments (L) and more a function of strategic interactions (O) between its firms and government, and between them and the firms and government of other nations (Tyson, 92). It seems to indicate that policies that attempt to support only its domestic-based firms may not be the best strategy for improving its domestic economic welfare. In the face of an increasing globalization of markets and production, there is no guarantee that domestic-based firms will keep the majority of high-wage jobs in the nation. At the same time, investments by foreign-owned high technology firms generate substantial numbers of jobs in a domestic economy. The key issue for policymakers is the ability of the nation to capture a large number of high wage jobs in growing industries, regardless of whether the employer is a domestic-owned or a foreign-owned firm. As a result, governments should consider all possible factors, which could be represented by O, L, I of domestic and foreign MNEs, to establish more attractive locations for foreign MNEs.

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