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Asia-Pacific Research and Training Network on Trade

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Nobuaki Yamashita

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*Nobuaki Yamashita***

Abstract

This paper examines various indicators of the economic activities of Japanese and American multinational corporation (MNC) affiliates in India compared to the case of China, using the unique affiliate-level data. The study shows that Japanese MNCs in India follow the typical MNC expansion strategy in that rapidly growing emerging economy with a focus on the transport equipment industry, whereas United States counterparts are concentrated more in information technology-related services, thus strengthening service-led growth of the Indian economy. However, the author remains sceptical of the expectation that India will grow as an export platform similar to China because of the former country's unique FDI experiences and rising domestic market potential.

Keywords: production networks, multinational corporations, FDI, India, China

JEL Codes: F14, F23, O53

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Introduction

One of the most important developments in international trade and foreign direct investment (FDI) in Asia during recent years has been the rapid growth of cross-border production networks, driven by widespread multi-plant operations of multinational corporations (MNCs), and their extensive use of outsourcing and intra-firm trade in parts and components (Athukorala and Yamashita, 2006; Jones and Kierzkowski, 2001; Jones 2000).

In this context, China and India, the two most dynamic emerging economies, have so far had contrasting experiences in attracting MNCs engaged in global production networks. On the one hand, China has emerged as a prime export base for assembling a wide range of manufactured goods. As a result, the bulk of China's manufacturing exports contain imported parts and components. This suggests that China's participation in production networks has been high (Dean, Fung and Wang, 2011). India, on the other hand, has a poor track record for attracting this type of FDI, which is possibly one of the reasons for its lacklustre export performance during past years (Athukorala, 2008; Srinivasan, 2004). Despite India's huge potential for hosting larger-scale FDI, the country is still generally lagging behind China and other Asian countries in this area, with the exception of its success in attracting FDI for back-office business processing and software service industries.

Although the literature at large has pointed out possible reasons for India's under-performance in attracting FDI (Srinivasan, 2004; Athukorala, 2008), previous studies have mainly drawn inferences from a macro-view of FDI statistics. Instead, this study explores a uniquely constructed operation-based dataset of Japanese and United States' MNC affiliates in India from an international comparative perspective, using China as a comparison. Specifically, this study compares various indicators of economic operations of Japanese and United States' MNC affiliates in order to capture any systematic differences. An analysis is conducted in the context of India's ongoing economic and business reforms since 1991. In particular, the recently signed Japan-India Free Trade Agreement is seen as an important step that may help to change the perceptions of India among Japanese investors. In fact, the latest survey conducted by the Japan Bank of International Cooperation (JBIC), ranks India for the first time as the most promising country for the next 10 years or so for Japanese manufacturing MNCs.

Section 1 of this paper develops the analytical context of the distinctive specialization and operations of MNC affiliates in a host country, while section 2 provides an overview of trends and development of United States and Japanese FDI patterns in China and India. Section 3 takes a closer look at the operational characteristics of United States and Japanese MNC affiliates in India and China. Section 4 summarizes the key findings and puts forward policy implications.

1. MNCs in production networks: An overview

The creation of production networks has been one of the underlying competitive advantages for manufacturing multinational firms in industrial countries since the late 1960s (Helleiner, 1973; Grunwald and Flamm, 1985). MNCs break up the vertically integrated production process into finer stages and the relocation each stage to the most suitable area beyond an MNC's own borders.¹ United States-based MNCs initially engaged in international fragmentation of production in order to gain cost competitiveness in the world market. This practice was encouraged in the United States' electronics and garments industries by the Offshore Assembly Programme (OAP), a special government scheme where tax-exemption was granted to re-imported products, comprising United States value-added after offshore assembly (Finger, 1975). This practice subsequently spread to other heavy industries such as the automobile industry and to MNCs of other industrial countries (Watanabe, 1972). In addition, several important factors, including technological progress as well as the continuous reduction in transportation and communication costs, made the option of cross-border fragmentation of production more attractive and profitable through further cost reductions. While intra-firm trade by MNCs still dominates the international exchange of production processes, the emergence of "arm's-length" contract manufacturers has facilitated international transactions. Overall, production networks have gradually begun to spread, involving developing countries at different stages and types of production.

While the rise of production networks is a general phenomenon, it has been suggested that the nationality of MNCs characterizes the functions of production networks (Sturgeon, 2003). For example, in the electronics industry, the Japanese electronic networks have been a relatively closed system with a tightly controlled buyers-suppliers linkage excluding outsiders (Hackett and Srinivasan, 1998). Japanese production networks have developed based on the social relationship of "trust" and "reputation". Product and process specification remain relatively tacit, and involve intensive

¹ The semiconductor industry provides an illustrative example (Grunwald and Flamm, 1985; Brown and Linden, 2005). One of the most important semiconductor products is an "integrated circuit" or "chip", which is a network of tiny wires fabricated on surfaces connecting transistors that switch processing data on and off in a binary code. The manufacturing process of the chip consists of three primary discrete value-chain activities: design; wafer fabrication; and test and assembly (Brown and Linden, 2005). In this process of specialization in the value chain, the design is the most skill-intensive, requiring a very high standard of sophisticated technology and highly-skilled labour. The next step, wafer fabrication, needs to be performed in an extremely clean location, but requires relatively lower skills than the design process. The fabrication stage also entails a huge fixed investment to build a plant (called a fab) that holds a wide variety of expensive equipment. Finally, assembly is typically the process of cutting the wafer into delicate individual chips (or dyes) and packaging them with the intensive use of manual labour. Among these three value-added activities, assembly is likely to be relocated first in order to benefit from cheaper labour costs overseas, while fabrication is likely to be moved next. Design activities are likely to remain inside the home country. For example, in 2002, the world's leading chip maker, the United States' Intel Corporation, found assembly locations and testing facilities mostly in developing countries such as China, Costa Rica, Malaysia and the Philippines. The other sophisticated and high-end value processes, such as wafer fabrication, design and manufacturing of chips are still concentrated in the United States.

information flows between firms and suppliers; this leads to greater asset specificity and relation-specific investment. In electronics, this form of inter-firm production network relies heavily on technology-intensive components (sound display, memory chips, microprocessors, power and mechanical components, or advanced design and development) supplied by related Japanese suppliers; simpler and non-strategic components are sourced from unaffiliated suppliers, usually for the previous generation model (Borrus, Ernst and Haggard, 2000). This procurement arrangement essentially blocks outside vendors from becoming involved with Japanese production networks and supply chains.

On the other hand, United States electronic firms are often characterized by the full integration of modularity and the heavy use of contract manufacturers (Sturgeon, 2003).² This system is facilitated by highly standardized inter-firm links that require less frequent and less intense interactions. The functions of contract manufacturers are highly modular in nature, being accessed and shared by a wide array of “lead firms”, thus increasing flexibility (Borrus, Ernst and Haggard, 2000). While acknowledging this difference in characteristics, it has been argued that, with the passage of time, operations of MNCs of different nationalities become similar as the ongoing process of globalization forces MNCs to emulate international best practices in global business operations. Hence, a common evolution between Japanese and United States MNCs in a given host country should be expected (Encarnation, 1993; Dunning, Kim and Lee, 2007).

In sum, these contrasting structures between Japanese and United States production networks may contribute to the distinctive specialization and operations of MNC affiliates in a host country. They may also be influenced by the development process of global business operations.

2. FDI patterns

To begin with, a look at some of the issues concerning the quality of FDI data is in order. First, it is well-known that FDI data reported from China and India are somewhat inflated, because of round-tripping FDI through Hong Kong, China to China, and through Mauritius to India (Wei, 2005). Second, FDI outflows from Japan and the United States may not be comparable. According to the standard definition, the three

² Development of modular production has been one of the most notable changes in the United States electronics machinery industry during the past 15 years. The modular production network is driven by contract manufacturers who provide traditional and standardized manufacturing functions, product (re)design, component processing and purchasing, inventory management, routine tests, and after-sales services and repairs. The use of contract manufacturers may bring cost and flexibility advantages to “lead firms” (Borrus, Ernst and Haggard, 2000; Sturgeon, 2003). As a result of the widespread use of modular technology, major firms such as Hewlett Packard and Ericsson have been able to sell most of their worldwide manufacturing infrastructure to contract manufacturers Solectron and Flextronics (Sturgeon, 2003). The modular production network has also spread into semiconductor and other heavy industry in the United States. In the United States automotive industry, Ford and General Motors (GM) have retained vehicle design and final assembly while relying on an increasing supply volume of components (such as entire automotive interior systems, headlights, carpets, cockpits, interior panels and module design) from Lear, Johnson Controls, Magna and TRW.

components of FDI are (a) equity capital, (b) retained earnings and (c) intra-company loans or intra-company debt transactions. The majority of FDI reporting countries do not include retained earnings as a part of FDI (Lipsey, 2003; Athukorala, 2007). Only the Government of the United States consistently reports all three components of FDI in official publications. In 1996, the Government of Japan also started reporting all three components of FDI (UNCTAD, 2001). Thus, to increase compatibility between JFDI and USFDI data, such data are tabulated from 1996 onwards in table 6. Last, it should be noted that the Reserve Bank of India broadened the definition of FDI to include retained earnings in 2003 only with effect from 2000/01 fiscal year (Athukorala and Hill, 2010).

Table 1 shows the importance of Japanese and United States FDI in total FDI inflows in India during 1991-2008. Throughout that period, Japan accounted for around 4 per cent. The United States, in contrast, was a major investing country during 1991-2000, accounting for 20 per cent, but that share dropped to 7.6 per cent during 2000-2008. Instead, Mauritius became the biggest investing country in the same period due to round-tripping FDI.

Table 1. Top 10 investing countries in India, 1991-2000 and 2000-2008

Ranking	1991-2000		2000-2008	
	Country	Share in total FDI inflows	Country	Share in total FDI inflows
1	United States	20.4	Mauritius	43.68
2	Mauritius	11.9	Singapore	8.94
3	United Kingdom	6.4	United States	7.67
4	Japan	4.0	United Kingdom	5.58
5	Republic of Korea	3.9	Netherland	4.09
6	Germany	3.4	Japan	3.27
7	Australia	2.7	Cyprus	3.08
8	Malaysia	2.3	Germany	2.6
9	France	2.1	France	1.45
10	Netherland	1.9	United Arab Emirates	1.15

Source: Extracted from tables 2 and 3 in Choundhury, 2009.

A notable difference between the patterns of outward investment by Japan and the United States is the importance attached to developing Asian economies. Table 2 shows country/regional distribution of United States FDI (USFDI) and Japanese FDI (JFDI) outward stock between 1996 and 2010. In 2010, developing Asia accounted for 25.6 per cent of total JFDI stock, but only 8.9 per cent of USFDI stock. The majority of USFDI stock is still in Europe; in fact, 56 per cent of all outward USFDI stock in 2010, up from 49 per cent of the total in 1996.

While India as an FDI destination still attracts relatively smaller flows (shares) than other Asian countries, its ranking has been rising. The share of India in outward JFDI stock increased from just 0.3 per cent in 1996 to 1.6 per cent in 2010. A similar increase can be seen for the share of India in outward USFDI stock, from 0.2 per cent to

0.7 per cent during the same period. Relative to China, India attracted much less FDI. India enjoyed a faster growth rate of both Japanese and USFDI stocks. Between 2000 and 2010, the period in which the process of Indian trade liberalization was accelerated, the annualized growth rate of Japanese and USFDI stood at 28 per cent. In contrast, the same figure for China was 23 per cent for JFDI and 18 per cent for USFDI.

China as an FDI destination is much less important in USFDI, compared with JFDI. In 1996, the accumulated value of the United States' direct investment in China increased from US\$ 3.8 billion to US\$ 60.5 billion, which accounted for 1.5 per cent of the total outward USFDI stock.

Despite an increase in the FDI volume, China's share only accounted for 1.5 per cent of total USFDI stock in 2010. In contrast, the total value of Japanese direct investment in China increased from US\$ 8 billion in 1996 to US\$ 67 billion in 2010. Accordingly, the share of China in outward JFDI stock increased from 3.1 per cent in 1996 to 8 per cent in 2010, the largest share among developing Asian economies. During the 2008-2009 global financial crisis, JFDI in China continued to grow, perhaps because of the surge in the Japanese yen and rising relative domestic manufacturing costs.

Table 2. Country distribution of USFDI and JFDI stock, 1996-2010

	JFDI outward stock (US\$ billion)			Annualized growth rate (Per cent)		Share in total FDI outward stock (Per cent)		
	1996	2000	2010	1996-2010	2000-2010	1996	2000	2010
Developing Asia	79.2	49.3	212.7	7.3	15.7	30.6	17.7	25.6
China	8.1	8.7	66.5	16.2	22.6	3.1	3.1	8.0
India	0.8	1.2	13.6	22.6	27.7	0.3	0.4	1.6
Hong Kong, China	9.4	6.5	15.5	3.7	9.0	3.6	2.3	1.9
Taiwan Province of China	4.0	3.6	10.4	6.9	11.2	1.6	1.3	1.2
Republic of Korea	3.5	4.2	15.0	11.1	13.6	1.3	1.5	1.8
Singapore	11.4	8.9	27.5	6.5	12.0	4.4	3.2	3.3
Thailand	15.8	4.8	27.8	4.1	19.3	6.1	1.7	3.3
Indonesia	17.2	4.8	11.9	-2.6	9.6	6.6	1.7	1.4
Malaysia	5.8	4.0	10.0	4.0	9.6	2.2	1.4	1.2
Philippines	2.9	2.0	8.7	8.3	15.6	1.1	0.7	1.0
Viet Nam	0.0	0.0	4.5					0.5
								31.6
North America	97.9	138.5	262.3	7.3	6.6	37.8	49.7	
Latin America	12.0	21.0	107.0	16.9	17.7	4.6	7.5	12.9
Europe	47.7	56.8	193.5	10.5	13.0	18.4	20.4	23.3
Middle East	1.0	0.8	4.9	12.3	20.0	0.4	0.3	0.6
Total	258.7	278.4	830.5	8.7	11.5	100.0	100.0	100.0

	United States FDI stock (US\$ billion)			Annualized growth rate (Per cent)		Share in total FDI outward stock (Per cent)		
	1996	2000	2010	1996-2010	2000-2010	1996	2000	2010
Developing Asia	68.0	108.2	349.5	12.4	12.4	8.6	8.2	8.9
China	3.8	11.1	60.5	21.7	18.4	0.5	0.8	1.5
India	1.3	2.4	27.1	23.9	27.5	0.2	0.2	0.7
Hong Kong, China	14.4	27.4	54.0	9.9	7.0	1.8	2.1	1.4
Taiwan Province of China	4.5	7.8	21.0	11.7	10.3	0.6	0.6	0.5
Republic of Korea	6.5	9.0	30.2	11.6	12.9	0.8	0.7	0.8
Singapore	14.9	24.1	106.0	15.0	16.0	1.9	1.8	2.7
Thailand	5.0	5.8	12.7	6.9	8.1	0.6	0.4	0.3
Indonesia	8.3	8.9	15.5	4.5	5.7	1.0	0.7	0.4
Malaysia	5.7	7.9	16.0	7.7	7.3	0.7	0.6	0.4
Philippines	3.5	3.6	6.6	4.5	6.1	0.4	0.3	0.2
North America	89.6	132.5	296.7	8.9	8.4	11.3	10.1	7.6
Latin America	155.9	266.6	724.4	11.6	10.5	19.6	20.3	18.5
Europe	389.4	687.3	2185.9	13.1	12.3	49.0	52.2	55.9
Middle East	8.3	10.9	36.6	11.2	12.9	1.0	0.8	0.9
All countries, total	795.2	1316.2	3908.2	12.0	11.5	100.0	100.0	100.0

Sources: United States Bureau of Economic Analysis at www.bea.gov/international/index.htm#omc and JETRO at www.jetro.go.jp/index.html.

Industrial composition of FDI

Traditionally, JFDI in India has been concentrated in the automobile industry. Among the early entries by Japanese firms in India was Suzuki Motors (Suzuki-Marui, now Marui Udyog). In the reform year (1991), India also saw the entrance of Honda into the automobile industry and Sony into the electronics industry (Choundhury, 2009). According to FDI data from India's Department of Industrial Policy and Promotion, from 2000 to 2007 approximately 41 per cent of JFDI in India went to the automobile industry, 18 per cent to electrical equipment and about 6 per cent to the service and telecommunications sectors.

Table 3 shows industry composition of USFDI stock in India and China from 1990 to 2010. Manufacturing FDI in India declined from 59 per cent in 1990 to 14.4 per cent in 2010 while the share of the service sector, especially professional, scientific and technical services and information, has been rising. The rise of FDI in the service sector is closely linked to an impressive export performance of information technology and software services (Saxsenian, 2002). In the early period of reforms in India, USFDI was heavily concentrated in the capital goods sector, with chemical and machinery accounting for 31 per cent and 15 per cent, respectively, of total USFDI stock. However, as the reforms progressed, these shares started to decline. In 2010, the chemical industry accounted for 4.7 per cent and the machinery industry for 3.2 per cent. Export-oriented MNC production of electronic products has been rapidly growing. Yet, this category only accounts for 1.7 per cent of USFDI.

In contrast, the bulk of USFDI in China remains concentrated in the manufacturing sector despite a decline from 63.5 per cent of FDI stock in 2000 to 49 per cent in 2010. In particular, computers and electronic products accounted for 31.4 per cent in 2000, although by 2010 the figure had declined to 13.2 per cent.

Table 3. USFDI stock in China and India, 1991-2010

	(Unit: Per cent)							
	India				China			
	1991	1999	2000	2010	1991	1999	2000	2010
All Industries, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Manufacturing	50.6	48.7	46.2	14.4	46.0	61.6	63.5	48.8
(US\$ million)	(210)	(1 163)	(1 098)	(3 886)	(196)	(5 787)	(7 076)	(29 477)
Food	0.2	2.3	2.6	0.2	2.8	3.0	2.6	5.4
Chemicals	30.8	10.5	10.8	4.7	12.7	10.6	10.1	10.7
Primary and fabricated metals	2.7	3.8	3.3	(D)	-0.2	2.4	1.4	2.1
Machinery	11.1	10.7	13.0	3.2	2.8	2.3	2.0	2.1
Computers and electronic products	1.4	-0.5	-0.5	1.7	(D)	25.6	31.4	13.2
Electrical equipment, appliances and components	0.0	1.3	2.0	0.5	0.0	4.2	4.1	1.0
Transportation equipment	0.7	5.0	2.4	1.8	(D)	6.7	5.9	6.9
Other manufacturing	3.9	n.a.	n.a.	(D)	8.9	n.a.	n.a.	7.5
Petroleum	-0.2				27.5			
Wholesale trade	(D)	12.6	11.0	12.2	22.1	4.1	3.4	6.6
Information	0.0	-1.2	-6.1	23.0	0.0	0.5	0.7	1.3
Depository institutions	38.6	(D)	14.6		(*)	0.7	0.6	22.2
Finance (except depository institutions) and insurance	(D)	12.3	12.0	11.5	0.2	0.1	0.4	3.1
Professional; scientific and technical services		6.5	6.6	18.5		3.3	2.2	1.5
Holding companies (non-banking)	0.0	n.a.	n.a.	1.4	0.0	n.a.	n.a.	5.7
Services	2.7				(D)			
Other industries		5.1	8.9	(D)	(D)	15.3	11.4	4.8

Source: United States Bureau of Economic Analysis at www.bea.gov/international/index.htm#omc.

Notes: Negative values of FDI net outflows show that the value of direct investment made by domestic investors to external economies was less than the value of repatriated (disinvested) direct investment from external economies. (D) indicates suppression to avoid disclosure of data of individual companies; n.a. = unavailability of data.

3. Operations of Japanese and United States MNCs in India and China

(a) *Data*

This section examines in detail the operational characteristics of Japanese and United States MNC affiliates in India and China. The Japanese MNC affiliate data were taken in 2010 from the online database of Research Institute of Economy, Trade and Industry (RIETI), which stores various indicators of MNC affiliates in a breakdown of industries from 1989.³ The data for the United States MNC affiliates was taken from the survey, “US Direct Investment Abroad”, which is maintained by the United States Bureau of Economic Analysis (BEA).⁴ The BEA data, which are known for their high quality and reliability of estimates, have been used in many important studies on United States MNC activities. BEA maintains publicly accessible electronic versions of the survey data, aggregated up to industry level. Two of the key differences between Japanese and United States MNC data are that (a) the BEA data coverage of variables is more comprehensive, and (b) high quality is maintained due to mandatory reporting. In contrast, Japanese MNC data reporting is not mandatory and the survey response rate varies across years.⁵

(b) *Employment*

Table 4.1 presents employment data for Japanese MNC affiliates in India and China for 1992-2005. Japanese MNC employment in India increased from 14,500 persons in 1992 to almost 40,000 persons in 2005. The annual average growth rate was 8.1 per cent, although there was some slowing down between 2000 and 2005 (upper panel of table 4.1).

The industry with the largest employment rate is the transport equipment industry, accounting for around 60 per cent of total jobs created by Japanese MNCs in India. This focus on transport equipment is underlined by a long history of Japanese automakers in India (e.g., in 1983, Suzuki Motors partnered with the indigenous firm of Maruti established an assembly factory in New Delhi). Japanese MNCs also create employment in more skills-intensive manufacturing industries such as chemicals, accounting for some 9 per cent of total employment by Japanese MNCs in 2005. While most sectors experienced some employment reductions between 2000 and 2005, non-manufacturing employment actually registered a healthy 10 per cent increase during the same period, led by the service sector. Employment by Japanese MNCs in this category

³ See <http://www.rieti.go.jp/en/database/FDI2010/index.html>. The original data source was the survey, “Overseas Business Activities of Japanese Firms (OBAJF)”, conducted by the Ministry of Economy, Trade and Industry (METI), Tokyo. This annual survey is designed to trace the scale and functions of foreign affiliates of Japanese MNCs operating overseas.

⁴ See www.bea.gov

⁵ The quality of the METI survey has been questioned from time to time. The response rate varied from 33 per cent in 1980 to 51 per cent during 1983-1992. However, in more recent years, the response has increased somewhat. For example, in 2005, the questionnaire was sent to 4,564 Japanese firms; 3,176 firms returned the questionnaire, giving a return rate of 69.6 per cent. Information on foreign affiliates operating in developing host countries is far less satisfactory than that on those operating in developed host countries.

stood at 1,600 persons in 1995 but climbed to 5,500 persons in 2005, accounting for a 14 per cent share in total employment created by Japanese MNCs in India.

While employment by Japanese MNCs in India is concentrated in transport equipment, it is more concentrated in the electronics and computers sectors in China. In 2005, computers and electronics alone attracted 289,000 workers for Japanese MNCs, which have experienced a 15-fold increase in employment since 1992 (lower panel of table 4.1). Similarly, computers and electronics achieved a 10-fold increase in employment during the same period. These industries added together accounted for around 40 per cent of total employment created by Japanese MNCs in China in 2005. However, the employment shares of these industries have not changed drastically since 1992. For example, the employment share of electronic equipment was recorded at 12 per cent in 1992 and 2005.

In contrast, the transport equipment industry grew steadily from 2,600 workers in 1992 to 181,000 workers in 2005, with an annual employment average growth of 38 per cent. In 2005, transport equipment accounted for 19 per cent of employment by Japanese MNC affiliates in China, up from only 3 per cent in 1992. This increasing share of transport equipment is particularly noteworthy when compared with the stagnant contribution of JFDI to the employment share of electronic equipment during the same period.

Employment of Japanese MNCs in a category of other manufacturing, including more labour-intensive clothing and footwear, climbed strongly from 30,000 in 1992 to 120,000 in 2005. However, in terms of employment share in total, this category has been declining, accounting for 34 per cent of total employment in 1992 but only 12 per cent in 2005. Overall, a pattern of employment by Japanese MNCs in China is ongoing, transforming it from more labour-intensive to more skills-intensive industries; this trend is broadly consistent with the overall employment transition of the Chinese economy. It is noteworthy that since 2000 Japanese MNCs have been focusing more on transport equipment, suggesting their goal of tapping into the expanding automobile sector supported by the growing middle-income group of the population.

Table 4.2 shows the employment distribution of United States MNC affiliates in India and China from 1992 to 2008. In India, United States MNC employment increased from 11,000 persons in 1992 to 313,000 persons in 2008. Employment distribution of United States MNCs in China appears similar to that of Japanese MNCs, with more weight given to computers and electronics. Employment in this area by United States MNCs increased from 70,000 in 2000 to 140,000 in 2008, achieving an average annual growth rate of 9 per cent during that period. A notable difference from Japanese investment is seen in India.

Relatively speaking, employment by United States MNCs is more concentrated in non-manufacturing sectors, such as information and professional, scientific and technical services, generating around 140,000 jobs, meaning that these sectors accounted for almost 50 per cent of total employment by United States MNCs in India in 2008. Between 2000 and 2008, the average annual employment growth of the information sector was 54 per cent, with a similar growth rate being recorded for the professional, scientific and technical service sectors. This is a stark difference when compared to the more skewed employment distribution of Japanese MNCs in transport equipment. In 2008, employment in transport equipment only accounted for 5 per cent of total

employment by United States MNCs in India (versus 60 per cent by Japanese MNCs); however, employment in transport equipment has been growing.

In sum, it is noteworthy that Japanese MNCs in India contribute to the expansion of relatively more labour-intensive medium skill-intensive sectors such as transport equipment, whereas United States MNCs create more jobs in information-related scientific and technical services in India. In China, both countries' MNC affiliates are relatively more concentrated in computers and electronics. A fuller analysis of the implications of the difference in employment emphasis by Japanese and United States MNCs for the future growth strategy of India is beyond the scope of this paper. However, the employment pattern of United States MNCs in India appears to fit in well with the emerging view that the prospects for India's future growth are largely driven by the expansion of high-skilled service sectors, led by innovative software and information technology-related services (Eichengreen and Gupta, 2010). Some commentators have praised the emerging Indian growth model, driven by skills-based service sectors, for bypassing the phase of typical labour-intensive export industrialization, as exemplified by East Asian countries (e.g., Rodrik and Subramanian, 2005).

On the other hand, the employment distribution of Japanese MNCs is concentrated in medium skill, labour-intensive industries in transport equipment. It has yet to be seen whether India will follow the path of the East Asian type of industrialization, creating more employment in relatively labour-intensive, export-oriented manufacturing industries (Panagariya, 2006). However, many experts have pointed out that India's intrinsic comparative advantages rest on labour-intensive industries, given its abundance of relatively cheap labour. On this point, the employment pattern of Japanese MNCs matches with India's comparative advantages. It appears that the expansion of United States MNCs, on the other hand, has a role in boosting India's service-led growth.

Table 4.1. Employment of Japanese MNC affiliates in India and China

India	Employment (‘000)				Share in total (Per cent)				Annual average growth (Per cent)		
	1992	1995	2000	2005	1992	1995	2000	2005	1992-2005	1992-2000	2000-2005
Food and related products	0	X	X	X	0						
Chemicals and allied products	2.1	0.3	3.4	3.6	15	1.0	7.0	9.0	4.2	6.0	1.3
Primary and fabricated metals	X	X	0.8	X			1.7				
Industrial machinery and equipment	0.8	1.3	1.4	1.8	5.0	6.0	3.0	4.0	6.5	7.6	4.8
Electronic equipment	2.2	3.7	4.2	3.7	15	16	8.0	9.0	3.8	8.3	-2.9
Computers and electronics	X	1.2	1.6	1.0		5.0	3.0	3.0			-8.2
Transportation equipment	8.6	13.7	35	23.9	60	60	69	60	8.1	19.1	-7.4
Other manufacturing	0.7	1	0.9	0.4	4.9	4.3	1.8	1.1	-3.6	3.4	-13.7
Non-manufacturing	X	1.6	3.4	5.5		7	7	14			10.1
Total	14.5	22.8	50.8	39.9	100	100	100	100	8.1	17	-4.7
China	1992	1995	2000	2005	1992	1995	2000	2005	1992-2005	1992-2000	2000-2005
Food and related products	2.2	12.7	38.3	32.5	2	4	7	3	22.8	42.6	-3.2
Chemicals and allied products	3.5	14.7	21.6	31.6	4	5	4	3	18.4	25.4	8
Primary and fabricated metals	2.4	12.1	26.2	34.8	3	4	5	4	22.8	34.8	5.9
Industrial machinery and equipment	5.7	18.6	49.4	98.6	6	6	9	10	24.5	31	14.8
Electronic equipment	10.8	26.8	61.5	104.8	12	9	11	11	19.1	24.3	11.3
Computers and electronics	18.4	74.8	156.2	289.0	20	26	29	30	23.6	30.6	13.1
Transportation equipment	2.6	23.5	43.8	181.1	3	8	8	19	38.4	42	32.8
Other manufacturing	30.8	86.1	115.4	120.4	34	29	21	12	11.1	18	0.9
Non-manufacturing	13.7	22.7	31.4	74.3	15	8	6	8	13.9	10.9	18.8
Total	90.2	292	543.6	967.1	100	100	100	100	20	25.2	12.2

Source: RIETI FDI data 2009, available at <http://www.rieti.go.jp/en/database/FDI2010/index.html>

Notes: X indicates suppression to avoid disclosure of data of individual companies.

Table 4.2. Employment of US MNC affiliates in China and India, 1992-2008

(Unit: '000)

	1992	2000	2005	2008	Share in total (%), 2008	Average growth 2000-2008	1992	2000	2005	2008	Share in total (%), 2008	Average growth 2000-2008
	India						China					
Petroleum	0.2						0.2					
Mining		0.6	0.4	0.9	(0.3)	5.2		1	1.2	1.5	(0.2)	5.2
Utilities		0.1	(*)	(*)				0.4	G	0.2		-8.3
Total manufacturing	10.4	48	62.8	92.2	(29.4)	8.5	13.4	193.6	319.6	409.9	(52.9)	9.8
Food	0.4	2.4	2.8	5.4	(1.7)	10.7	0.5	7.6	17.1	22.8	(2.9)	14.7
Chemicals	2.9	8.8	11.2	18.7	(6.0)	9.9	2.7	24.1	39.3	56	(7.2)	11.1
Primary and fabricated metals	0	G	1.8	0.3	(0.1)		0.3	8	15.2	18.6	(2.4)	11.1
Machinery	I	15.5	14.6	16.9	(5.4)	1.1	0.5	17.7	33.6	38.9	(5.0)	10.3
Computer and electronic products		3.5	8.5	14.0	(4.5)	18.9		70.1	112.2	139.9	(18.1)	9.0
Electrical equipment, appliances, components	0	2.8	G	4.4	(1.4)	5.8	I	38.8	41.4	45.8	(5.9)	2.1
Transportation equipment	0	7.3	9.8	17.5	(5.6)	11.5	0	9.8	18.1	26.2	(3.4)	13.1
Other manufacturing	G				(0.0)		F				(0.0)	
Wholesale trade	0.6	12.2	19.5	24.2	(7.7)	8.9	2	9	25.5	40.9	(5.3)	20.8
Information		1.1	14.4	34.9	(11.1)	54.1		2	8.8	9.8	(1.3)	22.0
Finance and insurance	(*)	1.2	3.5	2.2	(0.7)	7.9	0	G	H	H		
Professional, scientific and technical services		5.7	66.1	109	(34.8)	44.6		4.4	7.7	13.6	(1.8)	15.1
Other industries	0	1.7	18.6	50.0	(16.0)	52.6	0	K	154.0	M		
All industries	11.4	70.8	185.2	313.4	(100)	20.4	15.8	252	521.8	774.2	(100)	15.1

Source: United States Bureau of Economic Analysis, available at <http://www.bea.gov/international/index.htm#omc>.

Notes: G indicates an employment range of 1,000-2,499. H indicates an employment range of 2,500-4,499. M indicates an employment range of 100,000 or more. Finance excludes depository institutions.

(c) *Local sales and exports*

Table 5 reports local sales and export orientation of Japanese and United States MNC affiliates in India and other developing Asian countries in total manufacturing from 1989/90-2004/05. Japanese and United States MNC affiliates in India are predominantly local market-oriented. In 2004/05, the local sales rate of Japanese MNC affiliates in India was 78 per cent, whereas that of United States MNCs stood at 86 per cent. In 2000/01, 91 per cent of sales by United States MNC affiliates went to local Indian markets and the figure remained at 86 per cent in 2004/05. Among the economies listed in table 5, the local sales rate is the highest for India for MNCs of both countries. This is consistent with the view that MNCs mainly came to India driven by the “tariff-jumping” nature of investments (Athukorala, 2010).

Exports to Japan accounted for only 0.6 per cent of sales by Japanese MNC affiliates in India in 2004/05, compared with 36 per cent in China, 32 per cent in Malaysia and 37 per cent in Thailand. As discussed in the previous section, the creation of production networks by Japanese MNCs usually revolves around developing close linkages with parent firms in Japan. This is especially the case when it comes to the initial stage of developing production networks and supply chains. Therefore, as discussed above, the weak linkage of MNC affiliates to parent firms in Japan shows the immature stage of Japanese production networks in India.

However, the rate of exports to other countries by Japanese MNCs in India actually increased from 6 per cent in 2000/01 to 22 per cent in 2004/05. It is also interesting to note that this rate is comparable to that of other MNC export-platform economies such as Singapore (28 per cent), Taiwan Province of China (16 per cent) and Thailand (27 per cent).

As pointed out by Greaney and Li (2009), Japanese MNC affiliates in China are more export-oriented compared to United States MNC affiliates. Some 34 per cent of total sales of Japanese MNC affiliates went to local markets in China, and the remaining sales were exported either to Japan (36 per cent) or other countries (30 per cent) in 2004/05. In contrast, 64 per cent of total sales of United States MNC affiliates in China were directed towards the domestic market in 2004/05. Contrary to popular perception (Branstetter and Foley, 2010), there is no evidence to suggest that United States MNC affiliates in China are primarily export-oriented. In 2004/05, 27 per cent of sales were exported to other countries, up from 14 per cent in 1989/90; 9 per cent of sales were exported back to the United States in 2004/05, up from less than 1 per cent in 1989/90. The relatively lower sales share that is exported back to the United States reflects differences in distance-related trade costs. Compared to Japanese MNC affiliates, the export orientation of United States MNC affiliates was generally lower with the exception of Malaysia, from where 42 per cent of sales by United States MNC affiliates in Malaysia were exported back to the United States and 29 per cent of sales were exported to other countries in 2004/05. This unique position of Malaysia reflects the dominant presence of major United States electronics producers such as Intel Corporation, whose assembling operations are closely connected with headquarters.

Table 5. Local sales and export orientation of United States and Japanese MNC affiliates in manufacturing, 1989-2005

Japanese MNCs	(Unit: Per cent of sales)								
	1989/90	2000/01	2004/05	1989/90	2000/01	2004/05	1989/90	2000/01	2004/05
	Local sales			Exports to home			Exports to other countries		
India	100	93.3	77.8	0.0	0.6	0.4	0.0	6.1	21.8
China	59.6	40.4	33.8	20.6	38.0	36.0	19.8	21.5	30.2
Hong Kong, China	77.1	44.3	56.5	14.0	21.9	21.3	8.8	33.8	22.2
Indonesia	64.4	71.3	76.9	16.1	15.7	11.4	19.4	13	11.6
Republic of Korea	27.1	26.5	48.6	18.4	29.4	20.5	54.5	44.1	30.9
Malaysia	45.1	17.0	23.7	17.5	45.1	31.5	33.9	37.9	44.8
Philippines	44.0	47.6	39.1	14.4	17.5	13.3	41.6	34.9	47.6
Singapore	68.5	45.6	52.6	10.4	30.2	19.8	21.0	24.2	27.6
Taiwan Province of China	45.4	51.1	55.3	18.8	28.4	28.8	35.8	20.4	16.0
Thailand	0.0	47.1	36.6	0.0	21.7	36.5	0.0	31.2	26.8
Viet Nam	57.5	66.1	69.5	17.7	19.3	14.2	24.8	14.6	16.3
United States MNCs	1989/90	2000/01	2004/05	1989/90	2000/01	2004/05	1989/90	2000/01	2004/05
	Local sales			Exports to home			Exports to other countries		
India		90.6	86.0		4.1	5.4		5.3	8.6
China	84.9	63.5	63.9	0.6	13.2	8.7	14.1	23.3	27.4
Hong Kong, China	32.2	37.3	50.7	38.8	31.4	18.6	29.0	31.3	30.7
Indonesia	46.2	83.9	84.2	0.0	1.3	1.5	0.0	5.8	14.2
Republic of Korea	65.2	79.4	72.4	27.7	9.1	7.4	7.1	11.5	20.2
Malaysia	23.9	19.7	29.2	47.9	32.8	42.1	28.3	47.5	28.7
Philippines	66.4	35.1	30.3	16.1	16.1	25.7	17.6	14.7	44.0
Singapore	14.5	30.8	39.0	54.7	34.5	15.1	30.9	34.6	45.9
Taiwan Province of China	56.2	54.8	60.7	27.2	23.2	17.8	16.6	22.0	21.5
Thailand	13.4	40.1	55.0	17.1	10.9	11.9	37.9	48.9	33.1
Viet Nam	-	-	-	-	-	-	-	-	-

Sources: United States Bureau of Economic Analysis, available at www.bea.gov/international/index.htm#omc, and RIETI, available at www.rieti.go.jp/jp/database/d08.html.

(d) *Industry level*

Table 6 summarizes local sales, exports to home and exports to other countries as a percentage of sales at the industry level by Japanese and United States MNCs in China and India. Although the industries are not strictly comparable because of the different industry classifications across the two countries, the data do reveal some similarities and differences.

Overall, Japanese MNC affiliates in India are predominantly local-market oriented, with little going to the export markets (especially to Japan). However, some variations occur across industries. Around 50 per cent of sales by Japanese MNC affiliates in the machinery industry were exported to countries other than Japan in 2005. In the transport equipment industry, while the bulk of sales went to local markets, around 23 per cent of sales were still exported to third countries (Maruti-Suzuki is a prime example, as discussed above).

In general, there are two possible explanations for the larger share of local sales in transportation equipment. First, most of emerging countries are continuing to use high import protection to nurture the domestic automobile industry, especially in China and India. Therefore, FDI in this sector is naturally local-market oriented. Second, compared with parts and components of electronics, automotive parts (body parts, vehicle bumpers and vehicle engines) are much heavier and bulkier, resulting in higher transportation costs relative to the export value of goods (i.e., a higher value-to-weight). Consequently, there is a tendency for producers of automotive parts to locate their plants in the proximity of the assembly plants in a host country.

Geographical distance is a crucial factor in transportation costs of automotive products. Therefore, it is still unclear whether Japanese automobile MNCs in India will become integrated more with parent firms in Japan, even though the Japan-India FTA should benefit such a process, particularly in the context of the growing presence of middle-incomes in local markets and intensified domestic competitions in India.

A similar pattern can also be observed for computers and electronics, with 23 per cent exported to other countries and 76 per cent going to local markets. Hence, there is some indication that Japanese MNCs in India export to third countries, but are not integrated with the FDI home country.

The export proportion of sales by Japanese MNC affiliates in China is relatively higher than in India, especially in electronics-related industries. This is consistent with available evidence that Japanese MNCs use China as the assembly export point in their global operations in the world electronics markets (Athukorala and Yamashita, 2006). In 2005, 48 per cent of sales in the electronic equipment industry were directed towards local markets in China, whereas 36 per cent of sales were exported to Japan and 16 per cent to other countries, with a similar pattern observed in computers and electronics. In comparison, Japanese MNC affiliates in transport equipment are more local market-oriented, with about 70 per cent of total sales going to local markets. In addition, some 26 per cent of transport equipment sales were exported to Japan in 2005 (compared with less than 1 per cent for India), again suggesting differences in production networks in the automobile sector.

United States MNC affiliates in the computers and electronics industry in India were relatively less export-oriented, compared to Japanese counterparts (table 6.b), with 10 per cent of sales exported to other countries (versus 23 per cent for Japanese MNCs) in 2005. In the case of transport equipment, 8 per cent of sales were directed to other countries by United States MNCs (versus 23 per cent for Japanese MNCs) in 2005, while 86 per cent of sales went to local markets. In addition, exports to the home country have accounted for a relatively smaller share of exports, compared with their Japanese counterparts, especially in transport equipment, with United States MNC affiliates in India exporting only 4 per cent of sales to the United States; the figure for Japanese MNCs stood at 26 per cent in 2005.

Perhaps, as discussed above, geographical distance, associated with transportation costs, is an impediment to exporting to the United States. In comparison, United States MNCs in professional, scientific and technical services, which enjoy free transport costs, exported a significant amount (48 per cent) of sales to the United States in the same period.

Table 6.1. Sales and exports by Japanese MNC affiliates, by industry, in India and China, 2005

	(Unit: Per cent of sales)					
	India			China		
	Local sales	Exports to Japan	Exports to others	Local sales	Exports to Japan	Exports to others
Food	-	-	-	73.3	20.4	6.2
Chemicals	98.0	0.0	2.0	78.6	14.8	6.6
Primary and fabricated metals	-	-	-	72.3	11.8	15.8
Machinery and equipment	49.2	2.3	48.5	47.0	32.2	20.7
Electronic equipment	95.7	1.8	2.5	47.9	35.7	16.4
Computers and electronics	75.4	1.6	23.0	33.0	33.2	33.8
Transportation equipment	76.6	0.4	23.0	69.5	26.0	4.6
Other manufacturing	94.7	3.9	1.4	52.1	38.1	9.7

Source: RIETI, available at www.rieti.go.jp/jp/database/d08.html.

Table 6.2. Sales and exports by United States MNC affiliates, by industry, in India and China, 2005

	(Unit: Per cent of sales)					
	India			China		
	Local sales	Exports to United States	Exports to others	Local sales	Exports to United States	Exports to others
All industries	78.4	11.9	9.8	67.9	9.3	22.8
Mining	98.8	0.8	0.4	(D)	(D)	1.3
Utilities	(D)	0.0	0.0	100.0		
Manufacturing	84.9	5.6	9.4	59.7	9.9	30.3
Food	97.9	0.3	1.8	91.1	0.7	8.1
Chemicals	94.4	0.2	5.4	86.7	3.5	9.8
Primary and fabricated metals	(D)	(D)	8.9	71.6	12.5	16.0

Machinery	58.9	19.7	21.5	64.8	9.8	25.4
Computers and electronic products	87.1	2.8	10.1	45.2	11.6	43.2
Electrical equipment, appliances and components	(D)	(D)	(D)	39.4	25.4	35.2
Transportation equipment	85.5	6.6	7.8	84.4	3.9	11.7
Wholesale trade	93.6	3.2	3.2	90.0	4.8	5.2
Information	(D)	19.2	(D)	(D)	(D)	2.3
Finance and insurance	90.6	7.3	1.9	(D)	(D)	(D)
Professional, scientific and technical services	34.2	47.8	18.0	67.7	24.0	8.3
Other industries	(D)	17.0	(D)	(D)	(D)	(D)

Source: United States Bureau of Economic Analysis, available at www.bea.gov/international/index.htm#omc.

Note: (D) indicates suppression to avoid disclosure of data on individual companies

Table 7 presents sourcing patterns of Japanese MNCs (as a percentage of total purchases) in India and China in 2005. (Similar data for United States MNCs are unfortunately unavailable). In his study of auto-component supply chains in India and China, Sutton (2004) found that as supply chains further developed, key components (cylinder heads and blocks) were manufactured either in-house or outsourced within a host country, gradually creating less dependency on imported components from the FDI home country.

The local purchase ratio by Japanese MNCs in India is quite high for chemicals (87 per cent of total purchases), computers and electronic products (64 per cent) and transport equipment (60 per cent), even though they also depend on imports from Japan. In transport equipment, imports from Japan accounted for 38 per cent of total purchases. An interesting case is a sourcing pattern in computers and electronics, with 64 per cent of purchases locally sourced and 33 per cent imported. It is also notable that Japanese MNC affiliates in other areas of manufacturing (mainly labour-intensive industries such as clothing and footwear) heavily depend on imports from Japan; 72 per cent of total purchases came from Japan. Interestingly, Japanese MNC affiliates in transport equipment in China still depend extensively on imports (84 per cent) from Japan, while only 15 per cent was locally sourced.

In sum, the high ratio of local purchases reflects the fact that Japanese MNCs in India appear to be developing supply chains in local markets in India, consistent with the findings by Sutton (2004).

Table 7. Local purchases and imports by Japanese MNCs in India and China, 2005

(Unit: Percentage of purchases)

	India			China		
	Local purchases	Imports from Japan	Imports from others	Local purchases	Imports from Japan	Imports from others
Food and related products				57.3	3.9	38.8
Chemicals and allied products	88.6	3.1	8.3	64.1	30.1	5.8
Primary and fabricated metals				37.7	58.5	3.8
Industrial machinery and equipment	45.6	54.4	0.0	50.7	31.5	17.8
Electronic and other electric equipment	57.4	33.2	9.4	59.8	28.6	11.6
Computers and electronic products	63.8	3.0	33.2	27.6	40.1	32.3
Transportation equipment	60.1	37.7	2.2	15.0	83.5	1.5
Other manufacturing	26.3	72.0	1.6	57.2	32.6	10.2
Non-manufacturing	4.4	0.6	94.9	51.6	40.1	8.3

Source: RIETI, available at www.rieti.go.jp/jp/database/d08.html.

4. Conclusion

This study examines the economic operations of Japanese and United States affiliates in India and China, using previously little-exploited MNC affiliate-level data. The main findings suggest that while Japanese and United States MNC affiliates in China are relatively more concentrated in computers and electronics, their investment focus is quite different in India. While Japanese MNCs hold the predominant position in the transport equipment industry in India, creating more than 20,000 jobs, with the bulk of sales going to local markets as well as exports, the United States counterparts are concentrated more in information technology-related service sectors, thus strengthening service-led growth of the Indian economy. In addition, it appears questionable whether Japanese MNCs in automobiles will further develop export orientation while incentives are becoming greater for focusing more on local markets due to India's increasing number of middle-income households and current weak links with parent firms in Japan. The Japan-India FTA may have a positive impact on creating such a linkage; however, extending export-creating operations of Japanese MNCs in India connected with global production networks calls for much improvement in infrastructure and the investment climate.

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