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Integrating India with Asian Production Networks: Prospects and Challenges

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Integrating India with Asian Production Networks: Prospects and Challenges

Abstract

The formation of regional production networks (RPNs) is one of the most important drivers of growth in East and Southeast Asia. In view of slowdown in growth and even recession in advanced economies as a result of the adverse impact of the global financial crisis of 2008 and the ongoing European debt crisis, RPNs need to reorient their production and exports toward rising middle class of Asia. To successfully implement the new initiative of “Make in India”, India needs to be integrated significantly with the RPN. The paper attempts to assess how far intra-industry trade in the form of production and service networks will grow and contribute to the rapid growth in China, India, and Southeast Asian countries, especially from India's perspective. It also examines the trends and patterns; and prospects of integration as well as the prospects for, and the challenges and risks of, significantly integrating India with the RPN. The paper focuses on electronics, automobiles and auto parts and components. The paper finds that in view of high competitiveness in providing outsourced information technology and R&D services in a wide range of industries, India has tremendous potential to integrate with RPN and become a key player like the PRC. India should improve technological capability, ease of doing business, infrastructure, and local support industries as well as EASE efficient governance and regulatory system, including full transparency in the application of the law.

JEL-Codes: F150, F200, L140.

Keywords: Asian regional production network, ASEAN, India, People Republic of China, FTA, manufacturing and service sectors.

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1. Introduction

One of the most important phenomena in the process of globalization and regionalism is the continued significance of regions as focuses of economic activity where systemic processes of rapid technological change, enhanced capital mobility, and inter-regional competition for investment trigger the regional development. There has been specific focus on inter-firm networks and global value chains which are recognized as key drivers of globalization. Drastic shifts in trade patterns from one-way trade to intra-industry trade have occurred within regions, especially in East and South East Asia. Globalization has given rise to new and more complex trade patterns, particularly trade associated within regional production networks (RPNs). It has been widely recognized that the formation of RPNs has become one of the most important drivers of growth in East and South East Asia. A rapid increase in trade in intermediate goods and parts and components (P&C) of manufacturing industries provides the clearest evidence for the presence of RPNs in the region. Global value chains and associated production networks are emerging as the organizing framework for production, investment, and trade in an expanding range of product groups such as garments, agro industry, furniture, automobiles and automotive parts, machinery, consumer electronics, telecommunications, and information and communication technology (ICT), as well as various services.

In the mid-1980s, RPNs were developed in East Asia in response to the sharp appreciation of the Japanese yen against the United States (US) dollar. Due to adverse impact of strong yen on price competitiveness, Japanese companies moved their labor-intensive assembly operations to other emerging Asian countries. At first, Japanese firms channelled their investments in the production of intermediate goods to Taipei, China and other newly industrialized economies (NIEs) such as Singapore; Republic of Korea (henceforth, Korea); and Hong Kong, China. However, as the currencies of these economies appreciated, Japanese firms relocated their lower-end labor-intensive assembly to People's Republic of China (PRC) and major economies in the Association of South East Asian Nations (ASEAN). (Thorbeck and Salike, 2011).

Firms in the Asian NIEs also started transferring their factories to developing Asia. This is called the "flying geese" model. Other factors also contributed to the surge in foreign direct investments (FDI) in the region. These include favorable domestic factors in developing South East and East Asian countries such as FDI liberalization, strong macroeconomic fundamentals, and the presence of well-educated low-wage labor, together with favorable external factors such as the US market boom and advances in ICT (Urata 2002). Abundant sources of inputs, proximity of suppliers, managerial organization, and adoption of international standards are the major factors determining investment in RPNs in South East and East Asia (Machikita and Ueki 2010).

As RPNs grew, production and trade in P&C increased, characterized by vertical specialization in production networks. This has intensified intra-industry trade in P&C, especially in some specific industries such as ICT and electrical machinery (Ando and Kimura 2003). One of the salient features of the expansion of RPN is the spectacular rise of the PRC as the central hub of the production network. East Asian RPNs have played a decisive role in increasing these economies' competitiveness, enabling each of them to climb up the value chain and thus reducing the development gap through raising per capita income within and among countries and generating employment for rural laborers, thereby reducing poverty.

However, while the major East Asian economies joined East Asian RPNs and supply chains linked to international markets for manufactured products and they became a part of the world's production factory, India and other South Asian economies and low-income South East Asian countries have not been able to join existing networks nor established their own

networks. Despite the potential benefits of India's expanding economy, coupled with a large pool of low-cost and well educated labor, "India has largely been left out of the global division of labor, particularly with regard to the production of parts, components and accessories production" (Rajan and Sen 2002:6). Only in recent times, some attempts by Indian companies are visible to link their production/supply chain with foreign vendors, especially in the automobile sector (Nag 2011). Other sectors such as textile and machinery also have a potential to become part of the Asian RPNs.

In view of the adverse impact of the global financial crisis of 2008 and the ongoing European debt crisis, the advanced economies—Asia's principal export markets—are facing a slowdown in growth and recession. Nowadays, Asian economies need to depend more on intra-regional trade and domestic consumption for sustaining their growth. Deepening, expanding, and integrating Asian production networks to include India and low income ASEAN economies with large middle class markets as well as other major South Asian economies, through India as a gateway, is the need of the day. At the same time, RPNs need to reorient their production and exports toward rising middle class of the PRC, India, and the ASEAN countries (henceforth called ACI)¹ as well as the rest of Asia (Bhattacharyay, 2015).

This paper attempts to understand how far intra-industry trade in the form of production and service network will grow and contribute to the rapid growth in the ACI, especially from India's perspective. It also examines the trends and patterns as well as the prospects, challenges, and risks in significantly integrating India in the Asian production network and in forming India's own network, with a medium-term forward-looking approach until 2030. It focuses on the manufacturing sector in specific industries, such as electronics, automobile and auto component, P&C, and garment industries, and examines the trends and patterns as well as the prospects, challenges, and risks of India's RPN formation as well as integration in the Asian production networks. Furthermore, it examines the prospect of an Asian services value chain with particular emphasis on service sector integration through free trade agreements (FTAs) and the investment by multinationals from Asia and other regions of the world. The concluding part of the paper provides policy recommendations for integrating Indian manufacturing and service sectors with Asian production networks.

2. Trends in the Development of Regional Production Network

Ernst and Kim (2002) described an RPN as a major innovation in the organization of international business, combining concentrated dispersion of a value chain across countries with a parallel process of integrating hierarchical layers of network participants. Global value chains and associated production networks are emerging as the organizing framework for production, investment, and trade in an expanding range of product groups such as garments, agro industry, furniture, automobiles and automotive parts, consumer electronics, telecommunications, and information and communications technology (ICT), as well as various services.

Ernst and Kim (2002) consider that production relations between multinational companies (MNCs) and suppliers have been affected by rapid trade liberalization and an ICT revolution which have helped these firms to become increasingly integrated. Kojima (2000) argues that a shortening of product life cycles is one more reason firms are being forced to fragment their production process, hence locating in different countries. This not only reduces production costs, but at the same time helps firms to launch new products simultaneously in different countries, providing them with quicker access to their consumer base.

¹ ASEAN, the PRC, and India

At the beginning of the 1990s, trade in machinery products was dominated by countries such as Germany, Japan, the United Kingdom (UK), and the US. By 2000, however, this had changed, with many developing East Asian countries having become top world traders of such products. A second indication of the presence of RPNs is the growing importance of vertical intra-industry trade.

Athukorala and Yamashita (2006) went further and analyzed in detail the trade in machinery, parts, and components. Kimura and Ando (2004) highlighted the role of Japanese firms in investing in the P&C sector in East Asia. They argued that parent companies established their foreign affiliates with the objective of conducting a subset of activities that originally were to be undertaken by the parent companies. This is a typical strategy of firms involved in manufacturing operations, which finally leads to both-way trade between parent and affiliates and essentially reflects the existence of product fragmentation. Nag and De (2008), in the context of the car component sector, point out that international production networks, comprising economies like Japan; Korea; Taipei, China; and the PRC work well in East Asia. Gradual integration of the East Asian market with South East Asia is helping these production networks to spread in this sub-region as well. Thailand, Malaysia, and Indonesia already have a large car components sector while other countries like Viet Nam are starting to receive investment in this sector. India and South Asia, however, still outside the regional groupings of East and South East Asian countries, are not as yet in a position to reap the benefits of trade integration.

At World Trade Organization (WTO) talks in 1996, major information technology (IT)-producing economies agreed to bind their most-favored nation (MFN) tariffs at zero for specific IT goods, including computers, telecommunications, semiconductors, semiconductor manufacturing equipment, software instruments, and apparatus. Concerning intra-regional trade, three points need to be highlighted. First, Southeast and East Asia (particularly the ASEAN and the PRC) mutually trade P&C for manufacturing final products within the region. Second, Japan exports the bulk of its products to ASEAN and the PRC, and imports final goods from them. Finally, East Asia's production networks are closely linked with the North American Free Trade Agreement (NAFTA) and the European Union (EU), which export a large portion of their products to ASEAN and the PRC. The PRC and ASEAN economies export mostly consumer goods to these advanced regions. Production networks that exist in the Asian region can be explained by policy factors. First is the tendency of the so-called hollowing out of the Japanese economy in the 1980s that triggered the relocation of the Japanese firms to its neighbouring countries (Baldwin 2007). This hollowing out was motivated by an erosion of competitiveness of the Japanese industries that resulted from an increase in unit labor costs. The rapid growth in wages and incomes in the Japanese economy during the 1980s and 1990s was not compensated by a similar increase in labor productivity. This triggered a policy response, covering both investment and trade, by the economies which had been the target of this industrial relocation. The increased importance of RPNs in East Asia provides the basis for the integration of various Asian economies (De 2011) which is reflected in growing trade in P&C.

In a recent book by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP 2011), the authors argued that RPNs in the region have been driven by increasing trade between economies and that trade liberalization played an important role. However, definitive proof that FTAs have helped the spread of RPNs is lacking. RPNs have been mainly market-driven in Asia, rather than having being driven by trade policy. Regional trade agreements (RTAs) signed by the PRC, Indonesia, and India, for instance, exclude certain industries, in particular automotive, from the agreements or do not provide enough liberalization content. Also, the costs of complying with procedures to obtain preferential tariff

rates often outweigh the benefits. Instead of creating a more supportive environment for exports, a multitude of RTAs, with varying rules of origin, impede the flow of goods containing inputs from economies outside the RTAs. This is very common in current international production practice. Relatively low tariff rates for manufacturing goods—as a result of unilateral and multilateral liberalization—along with higher administration costs make the negotiated concessions no longer attractive to the business community in the region. Also, the Asia-Pacific Trade Agreement (APTA), the only trade agreement with both the PRC and India as members, is partial in its scope and it fails to foster RPNs between the two countries due to exclusion of P&C in concessions currently offered by the said agreement. Nevertheless, more positive stories come from the trade agreement between Thailand and India. This agreement has resulted in reduction in trade barriers for specific automotive components, such as gearboxes and parts for spark ignition in engines. This in turn has increased trade in automotive P&C between the two countries.

Table 1: Imports and Tariff Rates of Textile, Car Components, and Electronic Goods, 2007 and 2008

Selected Trade Blocs	Textile			Auto components			Electronic/integrated Circuits		
	2008 Import Value	2008 Growth Rate	2007 Tariff Rate	2008 Import Value	2008 Growth Rate	2007 Tariff Rate	2008 Import Value	2008 Growth Rate	2007 Tariff Rate
	(US\$'000)	(%)	(%)	(US\$'000)	(%)	(%)	(US\$'000)	(%)	(%)
ASEAN-ASEAN	2,545,599	12	7.42	5,620,119	153	8.81	21,347,068	4	0.95
ASEAN – PRC	4,068,580	28	11.48	1,389,665	148	10.17	5,330,720	107	0.79
ASEAN – India	603,339	57	12.63	200,089	197	12.5	21,081	130	2.5
ASEAN – SAARC	832,663	25	14.24	202,871	187	16.18	25,130	153	5.4
ASEAN – Singapore	235,932	83	7.42	608,398	165	8.81	4,956,510	13	0.95
ASEAN – Thailand	486,809	2	7.42	2,749,917	183	8.81	1,834,902	14	0.95
PRC – India	1,375,429	200	12.69	57,524	59	12.50	34,300	305	2.5
India – Thailand	107,377	68	21.29	279,669	290	14.34	5,195	-43	2.5
Japan – Singapore	2,523	-61	6.86	24,086	19	0.39	1,303,362	15	0

Notes: ASEAN= Association of Southeast Asian Nations; PRC= People's Republic of China. SAARC: South Asian Association for Regional Cooperation

Source: Nag and De 2011

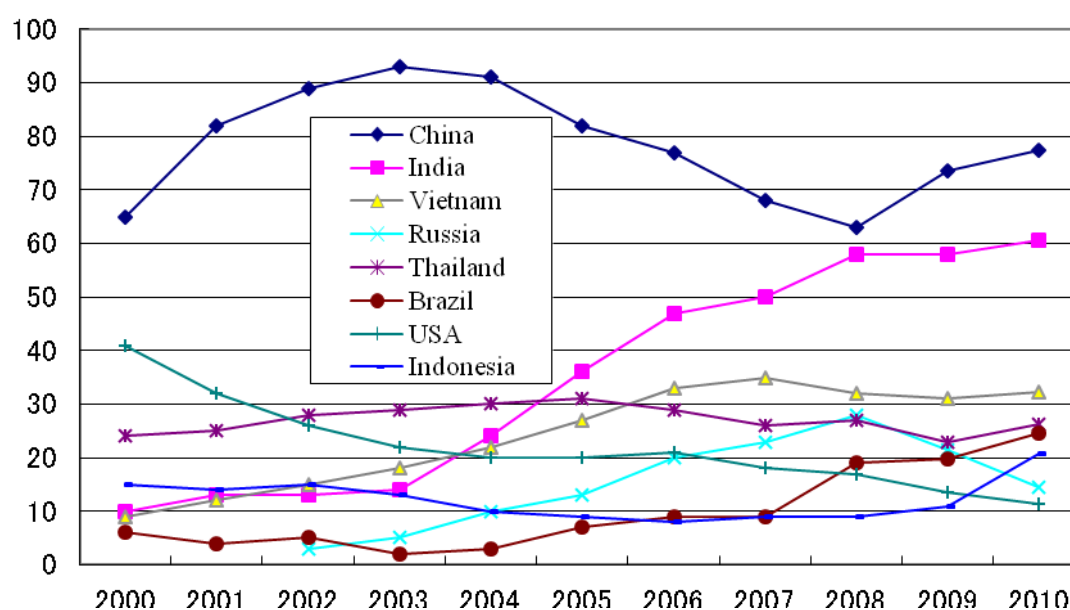
Although India and Korea are already part of the APTA, the RTA between the two countries has gone beyond tariff concessions of trade in the goods outlined in APTA. Apart from tariff concessions, the RTA—known as the India-Korea Comprehensive Economic Partnership Agreement (IKCEPA)—also includes trade in services, intellectual property rights, measures of trade facilitation, and investment liberalization. Kumar (2007) found that soon after the start of negotiations, Tata Motors of India acquired Daewoo Motors of Korea in 2005, and begun an RPN strategy for producing small and medium-sized cars. This business strategy was implemented in order to gain early advantage when the RTA entered into force on 1

January 2010. In particular, IKCEPA includes the promotion of cooperation, either through investment and/or tariff reductions, in several sectors including the automotive sector.

3. Barriers to Entry of International Firms: Insights From a Survey of Japanese Investors

A 2010 survey of Japanese manufacturers' foreign investment plans for the next three years by the Japan Bank for International Cooperation (JBIC)² revealed valuable insights on barriers to entry of foreign investments. In the said survey, while the PRC has remained the overwhelming primary destination of FDI by Japanese manufacturers in the past 10 years, India has been observed to be gaining fast (Figure 1).

Figure 1: Promising FDI Host Countries for Surveyed Japanese Firms, 2000-2010 (% of response)



Source: Japan Bank for International Cooperation (JBIC)

According to the JBIC survey, the most important motive for Japanese FDI in Asia—especially in the PRC and India—is sales in host markets. The next major considerations in many Asian countries are availability of low-wage labor and supply bases for assemblers. These observations suggest that many Japanese parts suppliers are expanding their business with Japanese assemblers in these countries.

However, Japanese investors do not consider India as an attractive export platform. This indicates that Japanese firms may not be planning to include India in regional production networks in the near future. Also, industrial clusters or agglomeration is not a relatively significant factor in influencing Japanese FDI in India, compared with that in the PRC and certain ASEAN countries. These are in contrast with strategies of Korean companies like

² JBIC has been conducting a questionnaire survey on overseas operation of Japanese manufacturing firms annually since 1989. For the 2010 survey (JBIC, 2010), a questionnaire was sent in July 2010 to 961 Japanese manufacturing firms with at least three overseas affiliates by post. JBIC received responses from 605 firms, and thus the response rate was 63 percent.

Hyundai, which export vehicles from India. Moreover, based on the studies conducted by Nag (2011), India has a promising export opportunities in the automobile sector, particularly for markets in Europe and Africa.

Meanwhile, the survey also revealed a number of problems that Japanese firms face in conducting business in these countries. Tough domestic competition is one problem (Table 2), albeit that this benefits the host economies. Another is the lack of transparency in the application of the law, which is considered a more serious problem for Japanese firms' operations. This problem is particularly acute in the PRC and rather serious in India, Viet Nam, and Indonesia. Other sets of problems apply to specific countries like underdeveloped infrastructure which are the top concerns in India and Viet Nam.

**Table 2: Problems Faced by Surveyed Japanese Firms
in Selected Asian Countries, 2010**

JBIC Survey Ranking	1	2	3	4	6	9	10	10
Country	PRC	India	Viet Nam	Thailand	Indonesia	Korea	Taipei, China	Malaysia
# of respondents	377	294	156	128	98	30	28	25
Underdeveloped legal system	15.1	18.7	19.2	5.5	11.2	-	0.0	-
Lack of transparency in legal matters	57.8	26.9	24.4	8.6	22.4	3.3	3.6	-
Complicated tax system	12.7	24.5	4.5	5.5	4.1	-	-	-
Lack of transparency in tax treatment	31.8	16.3	11.5	6.3	10.2	3.3	7.1	-
Heavy taxes	22.0	5.4	2.6	4.7	5.1	10.0	-	12.0
FDI restriction	27.3	11.9	12.8	7.0	7.1	-	-	12.0
Complicated/non-transparent FDI screening	25.2	15.6	9.0	3.1	6.1	-	3.6	-
Insufficient IPR protection	50.7	8.2	6.4	4.7	8.2	3.3	-	8.0
Restriction on foreign exchange dealings	33.7	9.2	7.7	3.1	3.1	6.7	3.6	-
Import restriction/Problematic customs	18.8	11.6	9.0	5.5	8.2	6.7	7.1	-

procedures								
Difficulty in recruiting engineers	17.5	9.5	17.3	21.9	16.3	3.3	7.1	24.0
Difficulty in recruiting middle management	25.5	17.7	26.3	30.5	18.4	10.0	14.3	32.0
Rising wages	63.7	17.3	21.2	25.0	18.4	20.0	17.9	20.0
Labor relations	36.1	16.0	9.0	11.7	11.2	10.0	-	8.0
Tough competition with other firms	56.5	31.6	19.9	32.8	25.5	66.7	57.1	28.0
Difficulty in collecting payment	31.3	8.5	3.2	1.6	4.1	-	3.6	-
Difficulty in obtaining finance	5.8	6.1	3.8	0.8	2.0	-	-	4.0
Underdeveloped local supporting industry	5.8	12.2	16.0	3.1	7.1	-	-	-
Unstable exchange rate/prices	4.5	4.1	9.0	1.6	10.2	6.7	-	-
Underdeveloped infrastructure	11.9	47.6	30.8	7.0	17.3	-	-	4.0
Insecure social environment	10.1	19.0	3.2	50.0	28.6	6.7	3.6	4.0
Lack of information on FDI host	1.6	20.4	14.1	3.9	8.2	6.7	-	4.0
<p>The proportional shares of responding firms indicating the motive in total number of respondents.</p> <p>Three items receiving three highest proportions for each country are shaded.</p> <p>Source: JBIC (2010)</p>								

Rapid integration of India into the RPNs could be a major opportunity for expanding production networks across Asia. There are signs that India is becoming a growing source of automobile and electronic components for products assembled in East Asian countries and for export to Europe and the Middle East. India's imports of electric machinery and

transportation machinery P&C from East Asia have increased more than six-fold and nine-fold, respectively, from 2000 to 2009, while the country's exports went up by 11-fold for final electric machinery products and by nearly 10-fold for transportation machinery.³ The involvement of India in RPNs will increase if it can successfully attract FDI and develop its manufacturing base. India also needs to improve its skill-base and technological capability. Given the country's competitiveness in providing outsourced information technology and R&D services in a wide range of industries, India has enormous potential.

4. Regional Production Network in Manufacturing and India's Trade

Many companies, particularly smaller enterprises, are finding that success and value creation may be achieved through specialization in a limited set of activities, outputs, and market niches. However, in order to participate in such value chains and networks, firms must be able to deliver a specified product, in the right quantity, with the required quality, and at the right time while meeting an expanding range of increasingly stringent global market standards like labor conditions and environment concerns, to name a few. Japanese investment in the early years initiated the process. Later, several small and medium enterprises (SMEs) moved up the value chain through improving process capability and product upgrading.

Ando and Kimura (2003) concluded that the most important change in the trade pattern of the region was the explosive increase in the trading of machinery P&C, including general machinery, electrical machinery, transport equipment, and precision machinery. In this context the present study focuses on a few major industries—electronics, P&C, textiles, and car components associated with the formation of RPNs and their interlinkages, in the Indian context, with different nations in Asia.

4.1 Electronics Industry

The electronics industry takes top position, especially in Asia, in terms of forming RPNs. Promoted by Japanese companies at the initial stage, the industry has reached maturity in East Asian economies such as Taipei, China and the PRC. Gradually it has spread into South East Asia, into economies such as in Thailand and Malaysia. The large number of component manufacturers across the region are specializing in several areas such as micro-processors, printed circuits, telecoms and computer parts, resistors, capacitors, inductors, crystals, resonators, speakers, audio-visual (AV) equipment, consisting of radios and optical discs players, hi-fi equipment, TV sets, and MP3/MP4 players, among others.⁴ As India is a major market for the electronics industry, it is interesting to observe how Asian economies are performing in these industries. It is also worth noting that India's electronics industry has been evolving very fast and it is now a consistent supplier of several commodities to the world. Solectron, Flextronics, Jabil Circuits, Samtel, Moser Baer, Hical Magnetics, and Midas Communication, among others are some of India's most promising companies.

³ Computed from the RIETI trade database.

⁴ To analyze the trade data, we have considered several product categories in the electronics industry comprising items falling in Chapter 85 of HS codes and HS 8415, HS 8418, HS 8471, and HS 8473.

4.1.1 Exports

The export volume of the electronics industry in India was US\$7.6 billion in 2010–2011, more than four times compared with US\$ 1.57 billion in 1999–2000. In terms of exports by type of electronic products, most exports of the electronics industry in India are in the form of electronic components, followed by industrial electronics, and computers (US\$273 million). In general, a rising trend has recently been observed in electronics exports, but with some exceptions (Appendix 1). In 2009, the primary export partner of India for its electronics products was the US, followed by Singapore; United Arab Emirates (UAE); Germany; and Hong Kong, China (Table 3). The composition of exports markets indicates that while India primarily supplies to Western countries, it is slowly getting linked with Asian partners.

Table 3: Major Destinations of India's Electronic Exports, 2009

Country Name	Value (US\$ Million)
United States	809.23
Singapore	452.15
United Arab Emirates	449.83
Germany	369.31
Hong Kong, China	317.66
Netherlands	270.66
PRC	256.11
Indonesia	189.29
Nigeria	157.04
Romania	154.30
Others	2033.94
Total	5459.53

Source: World Integrated Trade Solution (WITS) (Accessed December 22, 2011)

4.1.2 Imports

Total imports of the electronics industry in India reached US\$ 18.17 billion in 2010–11, more than four (4)-fold of US\$ 4.19 billion in 1999–2000. About 21% of the electronics imports of India were used as input for the consumer electronics segment. This indicates that intra-industry trade in intermediate products in the electronics industry of India is becoming visible. Table 4 exhibits major sources of India's electronic imports by countries. Table 5 presents volume of imports of electronic products by major category during 2006–2011. For instance, imports of audio-visual electronics parts and accessories (HS 8523) and telecom equipment (HS 8517) have increased substantially in the recent past (Table 5).

Table 4: Major Sources of India's Electronic Imports, 2009

Country Name	Value (US\$ Million)
PRC	12178.47
Singapore	1933.71
United States	1558.66
Germany	1471.64
Korea	1359.58
Japan	1224.75
Malaysia	883.86
Hong Kong, China	859.12
Sweden	744.36
Finland	732.15

Source: WITS (Accessed December 22, 2011)

Most of the electronics imports of India in 2009 came from the PRC; Singapore; Korea; Japan; Malaysia; and Hong Kong, China. The PRC, Singapore, and US were India's top three import partners (Table 4). This implies that India is already a major market for products originating in Asia, but as discussed previously, it has also started exporting to these countries.

Table 5: Imports of Indian Electronics Industry (Values in US\$ Million)

HS	Commodity/Product	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011
8501	Elctrc Motrs & Genrtrs(Excl Genrtng Sets)	244.92	421.93	452.93	441.67	464.85
8502	Electrc Genrtng Sets & Rotary Cnvrtrs	114.21	359.99	192.82	183.65	166.3
8503	Parts Sutbl Fr Use Solely/Pncply With Themchns Of Hdg No.8501 And 8502	427.02	415	435.82	364.19	382.58
8504	Electrc Transformers, Static Cnvrtrs (For Example, Rectifiers)& Inductors	558.3	869.5	1,124.71	997.18	819.28
8505	Electro-Mgnt; Prmnent Mgnts & Artcls To Makeprmnent Mgnt;Electro Mgntc/Prmnent Devices Electro Mgntc Cltchs,Brks & Lftng Hds	60.71	63.23	71.02	67.55	83.87
8506	Primary Cells & Primary Batteries	65.83	66.42	419.55	203.36	80.48
8507	Elctrc Accumltrs,Incl Separators Therefore W/N Rectangular(Incl Sq)	173.73	385.77	366.5	275.7	240.62
8509	Electro-Mechnc Domestic Appliances With Self-Contained Elctrc Motor	11.02	19.22	7.25	9.51	9.44
8510	Shavers,Hairclippers & Hair-Removng Appliances,With Self-Containd Elctric Motor.	1.16	2.21	2.43	3.03	5.04

8511	Electrl Igntn/Strtng Eqpmnt Fr Sprk-Igntn Etc Gnrters Etc & Cut Outs Of A Kind Used In Conjunction Wth Such Engines	76.31	78.13	137.36	160.96	118.14
8512	Electrl Ligtng/Signalling Eqpmnt (Excl Articles Of Hd No.8539)Wind Scrn Etc Used For Cycles/Motor Vehicles	45.54	58.43	64.42	64.66	69.22
8513	Portable Elctrc Lamps Designed To Function By Their Own Source Of Energy Other Than Lighting Equipments Of Hdg No.8512	8.42	10.39	13.3	32.59	20.16
8514	Indstrl/Laboratory Elctrc (Including Inductn/ Dielctrc)Furnaces Etc;Othr Indstrl/ Laboratory Inductn/Dielctrc Htng Eqpmnts	49.52	77.79	102.73	74.99	67.19
8515	Elctr(Incl Elctacly Htd Gas)Laser/Othr Light/Photon Beam Etc,Brzng/Sldrng Mchns Etc Fr Hot Spryng Of Mtls/Cermets	118.37	189.81	229.31	170.27	121.06
8516	Elctrc Wtr & Imrsn Htr ; Elctrc Spaces & Htng Aprts;Elctro Thrmic Hair Drssng Aprts&Hnd Dryrs;Smlr Elctrc Aplncs Fr Dmstc Use	90.11	110.55	118.76	139.67	155.26
8517	Electrl Aparats Fr Line Telephny/Telgrphy, Incl Telphon Sets Wth Cordls Handset Carier-Curent Line Systm; Videophone	1,952.21	4,310.30	8,960.91	8,335.89	7,065.96
8518	Mcrophones&Stnds Thrfr;Loudspkr,W/N Mntd Headphone,Earphone & Combnd Mcrophone/Spkrsets;Audio Frqncy Amplfyr;Snd Amplfyr Sets	132.64	183.16	297.39	238.12	204.09
8519	Turntables (Recorddecks)Record-Players Cassette Players Etc Nt Incorporating A Sound Recording Device	49.19	67.97	98.82	108.86	77.91
8521	Video Recording/Reproducing Apprts	73.44	105.63	117.12	119.29	94.6
8522	Prts & Acssrs Of Apprts Of Hdgs Nos. 8519 To 8521	89.87	89.89	113.15	93.21	85.14
8523	Preprd Unrecorded Media For Sound Recrdng/Smlr Recrdng Of Othr Phenomena,Othr Thn Prdcts Of Ch.37	100.78	222.64	1,817.81	2,107.99	882.08
8525	Trnsmisn Aparats Fr Radio,Telephny Etc W/N Incrprtng Reception Apprts/Sound Recording/Reprdcng Apprts;Tv Cameras Etc	4,105.14	4,064.39	868.97	359.35	276.42

8526	Radar Aparats, Radio Navigational Aid Apparatus & Radio Remote Control Aparats	33.35	124.8	67.34	36.38	31.13
8527	Reception Apprts Fr Radio Telephony Etc W/N Cmbnd, In The Same Housing, With Sound Recording/Reprdcng Apprts/A Clock	72.8	83.49	121.49	25.06	59.64
8528	Reception Aparatus, Wh/Not Incorpntng Radiobrcdst Recivrs/Sound/Video Rcordng/Reproducing Aparatus, Video Monitors Etc	344.67	703.6	1,064.42	971.23	915.53
8529	Prts Suitbl Fr Use Solely/Prncply With Apprts Of Hdgs Nos 8525 To 8528	810.7	796.04	1,054.18	800.51	657.1
8530	Othe Parts Of Hdg 8525 To 8528 Eqpmnt Fr Rlwys, Trmwys, Roadwys, Wtrwys Etc (Othr Than Those Of Hdg Nos. 8508)	20.59	32.12	37.5	46.94	10.75
8531	Elctrc Sound/Visual Signllng Apprts (E.G. Bells Sirens Etc.) Othr Thn Those Of Hdg No. 8512/8530	73.52	86.57	99.41	145.77	91.89
8532	Elctrl Capacitors Fixd, Variable/Adjustable (Pre-Set)	135.25	153.31	375.82	224.6	180.58
8533	Elctrl Resistors (Incl Rheostats & Potentiometers) Othr Thn Htng Resistors	64.9	78.16	107.83	109.62	68.99
8534	Printed Circuits	76.91	76.98	296.16	155.72	95.88
8535	Elctrl Apprts Fr Swtchnng/Protctng Elctrl circuits Etc. (E.G. Swtchs, Fuses, Lightning Arresters Etc) Fr A Vltg Excdg 1000 Volts	50.95	68.6	107.02	142.9	128.79
8536	Elctrls Apprts Fr Swtchnng/Prctng Elctrl circuits Etc. (E.G. Swtchs Relays Etc.) For A Voltage Not Excdg 1000 Volts	462.3	584.6	816.63	693.98	549.45
8537	Bords Panls Etc Equipd With Two Or More Apprts Of Hdg 8535/8536, Incl Those Incorpntng Instrmnts/Apprts Of Ch 90	128.31	211.53	218.95	198.64	165.51
8538	Prts Suitbl Fr Use Solely/Prncply With The Apprts Of Hdg No. 8535, 8536/8537	406.45	530.71	553.16	518.33	412.29
8539	Electric Filmnt/Discharge Lamps, Incl Beam Lamp Units & U-V/Infra-Red Lamps Etc.	124.92	147.92	153.6	141.46	124.93

8540	Thermionic Cold Cathode/Photo-Cathode Valves & Tubes(E.G.Vacuum/Vapour/Gas Filled Valves Tubes Etc.)	167.96	202.07	207.83	217.94	229.06
8541	Diodes,Transistors & Smlr Semi-Conductors Devices Etc.W/N Assmbl In Modules/Made Up Into Pnls Etc Mntd Piezo-Electrc Crystls	359.95	474.61	923.34	667.93	465.73
8542	Electrnc Integrtd Circuits & Micro-Assmbls	670.69	728.86	1,246.96	1,036.50	693.41
8543	Electrl Mchns & Apprts, Having Individual Fcnctns N.E.S. In This Chapter	310.18	436.42	567.59	385.05	354.78
8544	Insulated(Incl Enmld/Anodise)Wire Etc. Optcl Fbre Cables W/N Fitted Wth Cnnctrs/ Assembled With Electric Conductors	488.34	921.81	871.86	689.54	532.99
8545	Crbn Elctrds,Crbn Brshs,Lamp Crbns Etc. Othr Artcls Of Graphite/Othr Crbn,Wth/ Wthout Mtl Of A Knd Used For Electrl Purps	64.48	88.96	131.09	151.04	135.18
8546	Electrical Insulators Of Any Material	28.49	46.15	61.63	67.56	62.1
8547	Insltng Fttngs Fr Electrl Mchns Etc. Electrl Conduit Tubing & Joints Therof Ofbse Mtl Lined Wth Insulating Matrl	32.44	57.6	70.64	73.62	63.98
8548	Wast & Scrap Of Primary Cells,Batrs & Electrc Acumultrs; Spent Prmry Cels, Batrselctrc Acumultrs, Electrl Prts Of Machinery	14.68	15.75	26.55	11.24	7.19
8415	Aircondtng Mchns,Cmprsng Motr-Drvn Fan & Elmnts Fr Chng Tmprr & Humdty ,Incl Those mchns In Whch Humdty Cantt Be Sprtly Rgltd	283.69	450.67	389.2	63.68	45.77
8418	Rfrgrtrs,Frzrs & Othr Rfrgrtng/Frzng Eqpmnt,Electrc/Othr;Ht Pumps Excl Air Condtnng Mchns Of Hdg No.8415	176.29	214.71	256.63	167.97	114.06
8471	Automtc Data Prcsng Mchns & Units;Mgntc/ Optcl Readrs,Mchns Fr Trnscrbing Data Onto Data Media In Coded Form N.E.S.	2,664.52	3,044.35	2,253.12	257.88	249.25
8473	Prts & Accssrs(Excl Covers,Carryng Cases Etc)Usd Wth Mchns Of Hdg No.8469 To 8472	1,376.49	1,354.83	1,311.86	239.62	239.62
	Total	17,992.26	23,887.57	29,404.89	22,792.4	18,175.27

Source: Ministry of Commerce and Industry, Government of India.

4.1.3 Barriers and policy initiatives for the electronics industry

India has the potential to develop and manufacture electronics/IT hardware for the global market and increase its global share in the converging areas of information, communication, and entertainment. However, the removal of duty protection coupled with the relatively small domestic market with low purchasing power and the inward orientation of Indian manufacturers have resulted in the closure of a large number of local manufacturing units. The Information Technology Agreement (ITA-I) of the WTO, to which India is a signatory, in 2005–2006 obliged India to remove import duties on 217 tariff lines concerning a range of electronics components and products. Under the Early Harvest Scheme (EHS) of the India-Thailand FTA, duties on some electronics products imported by India from Thailand also dropped significantly. This caused problems for final goods producers. For instance, customs duty on color television sets were reduced to 0% on 1 September 2006, but duties on a number of inputs for the production of color televisions remained as high as 12.5%. Hence, to help domestic final good producers survive and compete, it has become necessary to reduce the duty on certain imported inputs. This inverted duty structure in the Indian electronic industry has been identified as a serious issue which needs an urgent review. Moreover, Indian trade is suffering from lack of promotion and direction. Some of the issues are highlighted below:

- Non-exemption from income tax of the electronics/IT hardware export industry.
- Hurdles in the smooth operation of electronics and IT units under the Export Oriented Schemes [Software Technology Parks (STP)/Electronic Hardware Technology Park (EHTP)] due to mandatory customs bonding.
- Delays in import, procurement, and production processes caused by a very bureaucratic procedure of issuing certificates (e.g., Import Certificate, Procurement Certificate, and Re-warehousing Certificate).

4.1.4 Integrating Indian Electronic Industry

India has been very active in bilateral and regional cooperation through FTAs or Comprehensive Economic Cooperation Agreement (CECA). For instance, the country signed a Framework Agreement for an FTA with Thailand in 2003 and a Comprehensive Economic Cooperation Agreement (CECA) with Singapore in 2004. The FTA with Thailand presently covers only trade in goods while the CECA with Singapore covers trade in goods and services as well as investment. Moreover, India has drastically slashed duties on many electronic goods and this is considered to have helped several East and Southeast Asian countries as it provided easier access to Indian market.

Economies like Taipei, China; Korea; Malaysia; and more recently, the PRC, have recorded much higher growth in electronics and IT hardware industry. These countries are exporting worldwide, accounting for 20% of global electronics and IT hardware production. The PRC has already emerged as the 3rd largest manufacturer of electronics and IT hardware, after US and Japan. The Indian electronics sector is comprised of a few large companies, several SMEs, and a large number of micro and household enterprises. Most of the micro enterprises are in an unorganized sector, which supply small components to relatively bigger players. Nevertheless, benefits from the current structure of Indian electronics sector are expected to materialize once the complementarity between the multinational enterprises (MNEs) and the SMEs triggers the emergence of RPNs.

4.2 The Automobile and Auto-components Industry

4.2.1 Automobile Sector

The Indian automobile industry, which is one of the world's fastest growing automotive industries, expanded at a compounded annual growth rate (CAGR) of approximately 17% in the past five years (Society of Indian Automobile Manufacturers 2008). It is now the world's eleventh-largest manufacturer of passenger cars, the fourth-largest manufacturer of commercial vehicles, and the second-largest manufacturer of two-wheelers, producing 13 times more cars than it did 20 years ago (World Bank 2005). India is now among the top 10 countries that have designed, developed, and mass produced their own cars.

The Indian automotive sector has a presence across all vehicle segments and key components. In terms of volume, two-wheelers dominate the sector, followed by passenger vehicles. Until the 1990s, the industry had few players and was protected from global competition. After the government removed the requirement for licensing in 1993, the arrival of global players has resulted in a highly competitive Indian automotive sector.

Automobile manufacturing units are located all over India. However, as noted by the Automotive Component Manufacturers Association of India (ACMA), they are concentrated in pockets such as Chennai and Bangalore in the south, Pune in the west, the National Capital Region (NCR), which includes New Delhi and its suburban districts, in the north, Jamshedpur and Kolkata in the east, and Pithampur in the central region. Following global trends, most auto suppliers are located close to the manufacturing locations of original equipment manufacturer (OEM), forming regional automotive clusters. The three main clusters are centred around Chennai, Pune, and Delhi.

In terms of market, the three major export destinations of Indian automobiles in 2009 were UK, Italy, and Germany. However, the level of India's exports of automobiles is still considered low and it mainly caters to Western economies, South Asia, and Africa (Table 6).

Table 6: Top 10 Export Destinations of Indian Automobiles, 2009

Country Name	Value (US\$ Million)
United Kingdom	414.70
Italy	367.08
Germany	343.11
Netherlands	197.66
Sri Lanka	141.06
Nigeria	138.26
Bangladesh	130.89
South Africa	126.80
Algeria	119.84
France	117.36

Source: WITS (Accessed December 22, 2011)

In terms of automobile segments, passenger cars outnumbered other categories when it comes to exports, as it posted a very strong growth in the past five years. However, the level of value of automobiles' export from India remained low (Figure 2).

In 2009, India sourced most of automobile imports from the western automobile manufacturers (Table 7).

Similar to the export trend, automobile imports of India were mostly passenger cars in the past five years. In terms of value of import payments, this automobile segment has significantly overtaken other automotive products, especially in recent years. This indicates that total automobile trade (both exports and imports) in India is dominated by passenger cars while other segments have remained significantly low.

Figure 2: Export Trend of Automobiles from India, 2004–05 to 2009–10



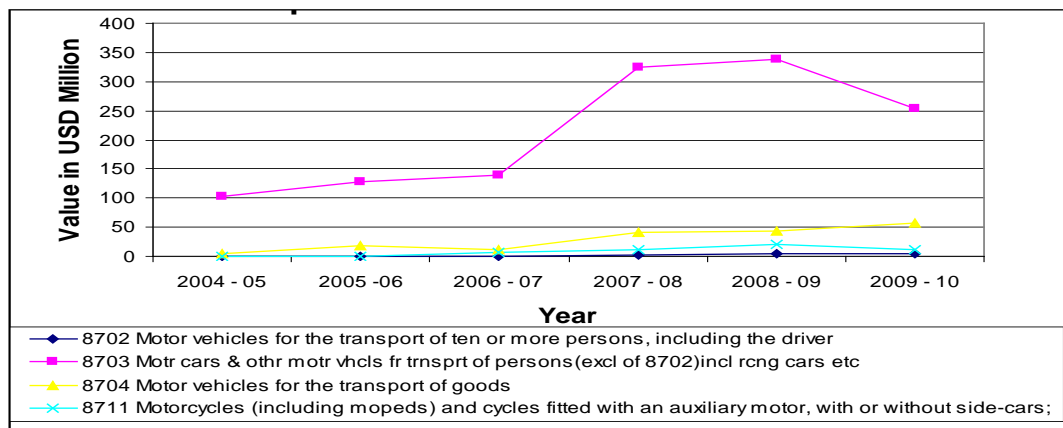
Source: Centre for Monitoring Indian Economy (CMIE), India Trades (Accessed 22 December 2011)

Table 7: Top 10 Sources of Indian Automobile Imports, 2009

Country Name	Value (US\$ Million)
Germany	163.20
Japan	24.79
United States	20.98
United Kingdom	18.83
Slovak Republic	13.24
Netherlands	11.82
Korea	10.07
PRC	8.51
Thailand	7.75
Sweden	5.73

Source: WITS (Accessed December 22, 2011)

Figure 3: Import Trend of Automobiles in India, 2004–05 to 2009–10



Source: Centre for Monitoring Indian Economy (CMIE), India Trades (Accessed December 22, 2011)

As previously discussed, from the mid-1990s onwards, the entry of a number of global players in the Indian automotive sector has caused a rapid transformation in the Indian market as it became increasingly competitive. Hyundai has emerged as the second-largest car manufacturer, after Maruti Udyog Ltd.⁵, in a very short period of time. The arrival of these MNCs also boosted the components sector, which advanced further with the liberalization of the investment and import regime. Hyundai set up a 100%-owned subsidiary (the largest investment of the company outside Korea) in 1998. This initially brought in 14 Korean component suppliers to the Hyundai plant, since supplier of components was not originally available in Chennai. In total, Hyundai has about 70 major component suppliers, of which only 14 are Korean joint ventures (JV) and the rest are mainly Tamil Nadu-based firms. Suzuki also set up several JV suppliers around the Maruti factory in Gurgaon that provide advice on absorbing new technology and improving production efficiency.

Following the liberalization of policies and the high growth of domestic demand, several other MNCs, such as Toyota, Honda, and Ford, also entered the Indian market. A number of them have full production facilities while others still import major components and assemble them in India. As the import duties on used vehicles and new completely built units (CBU) remained very high (100% and 60%, respectively), these companies found that setting up production facilities or importing cars in completely knocked down (CKD) form and having an assembly plant in India was more cost effective. Tariffs on components have declined considerably over the past few years. This has not only increased the production possibilities of cars but also fuelled international trade in components. Exports and imports of components have experienced somewhat similar growth patterns since 2000 (Nag, Banerjee, and Chatterjee 2007). The change of policy has infused new life into the component sector as many original equipment manufacturing (OEMs) are increasingly buying from domestic component manufacturers.

4.2.2 Auto component Industry

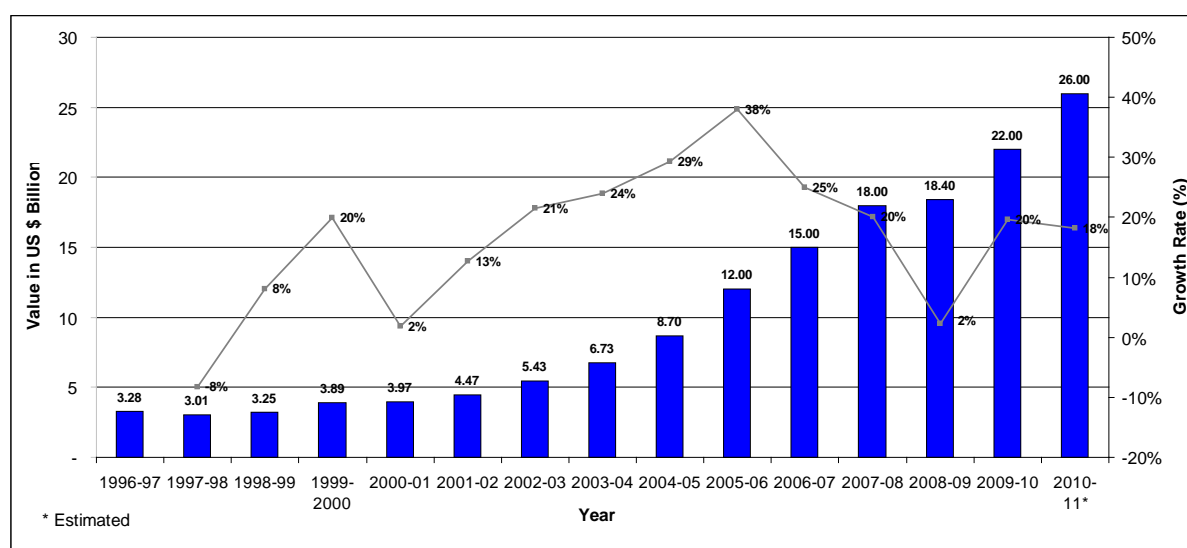
Component suppliers are the strength of the emerging automobile industry in India. The Indian automobile component sector is relatively labor-intensive by global standards and is

⁵ Maruti was set up in collaboration with Suzuki. It remained as a joint venture company for a long time. Suzuki bought the Indian stakes converting Maruti into a wholly-owned subsidiary of Suzuki.

in the transition stage as a low-cost base for exporting labor intensive products (Saripalle 2005). It is transforming itself from a low volume, fragmented market into an internationally competitive industry, building on the advantage of skill-oriented, labor-intensive components. Indian component suppliers have displayed a growing capability to cater to the engineering and production needs of some of the world's biggest car companies and many of the big car companies are now outsourcing several components from India. The manufacturing costs in India are 25–30% lower than the Western counterparts. However, despite this growth, the share of Indian exports in the global auto component market is still considered to be very small. The dynamics of the industry are undergoing drastic restructuring and tiering. Various technological and non-technological innovations have been brought in by the industry to capitalize on the opportunities that are being created.

The Indian automotive component industry is highly fragmented. There are nearly 6,400 players in the sector, of which only about 6% is organized and the remaining 94% are small-scale, unorganized players (KPMG Report 2006). In terms of value-added, however, the organized players account for nearly 77% of the output in the sector. Recently, automotive production in India has increased significantly, rising from around US\$4,000 in 2000–01 to US\$26,000 million in 2010–11, although the estimated growth rate followed a fluctuating trend (Figure 4).

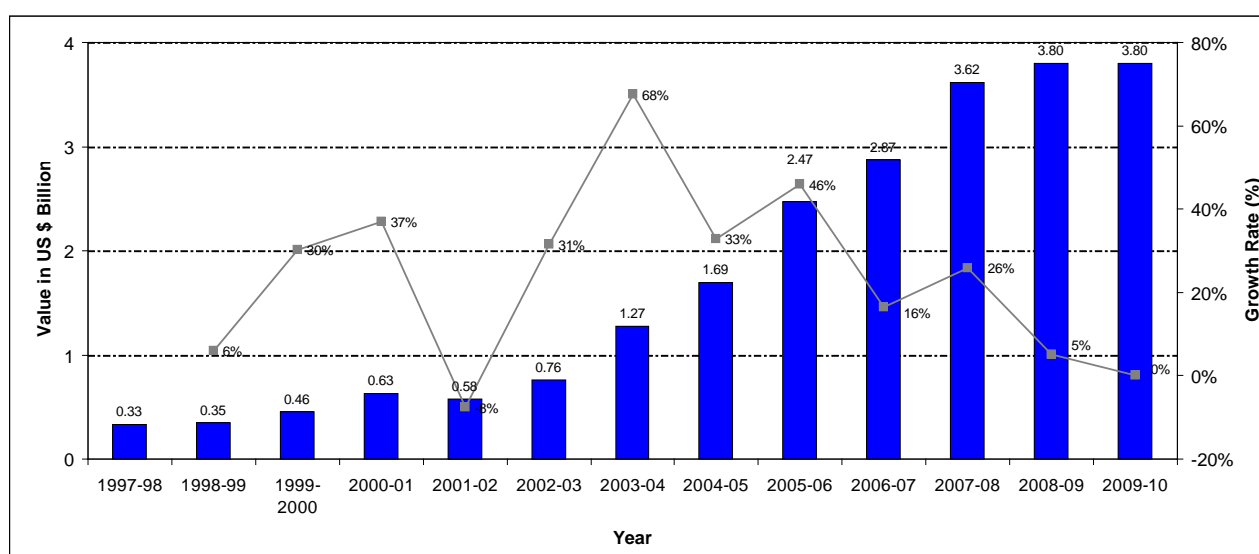
Figure 4: Auto Component Sector Production in India, 1996–97 to 2010–11



Source: Society of Indian Automobile Manufacturer's Association (SIAM) (Accessed 22 December 2011)

In terms of exports, the automotive components from India posted a sharp increase in the period 2002–2007. However, due to global recession, growth slowed from 2008 onwards. In 2009–10, total exports of auto component were around US\$ 3.8 billion.

Figure 5: Auto Components Export of India, 1997–98 to 2009–10



Source: SIAM (Accessed December 22, 2011)

4.2.3 Barriers and Policy Initiatives

The decline in tariff rates in automotive components has led to rapid growth of this sector. Demand for automotive components is driven in part by the drop in prices due to customs and excise cuts, and in part by excise cuts for automobiles. Other factors driving automotive component production are rapid income growth and the resulting expansion of demand. As per the earlier policy, OEMs had to increase the share of domestic inputs which led to the foundation of the component industry. Subsequently, the sector became quite confident in facing competition from abroad. The reforms of 1991, followed by the entry of global OEMs and Tier-1 suppliers in India, paved the way for the expansion of a range of technologies and automotive component manufacturers. The vehicle manufacturers started outsourcing most of their components from automotive component manufacturers. With the de-licensing of the passenger car segment in 1993, the Indian auto industry has grown bigger with new international players entering the market. Since 2000, there have been many significant policy developments, such as the removal of Quantitative Restrictions on automobile imports and the decision to allow 100% FDI in the sector. Financial liberalization meant easier access to credit for consumers and this resulted in an increase in car loans in India—a key driver of demand for automobiles. A cut in import tariffs on commercial vehicles increased competition in the Indian commercial vehicles (CVs) sector. As CVs are required in the development of infrastructure, the duty reduction on CVs may provide a boost to the improvement of India's infrastructure.

4.2.4 Integration of the Auto Industry

Much progress has been made towards the global integration of the Indian automobile industry. The bilateral and regional trade agreements were a significant step in achieving this, although the full benefits will not materialize until these agreements become fully operational. In case of the India-Thailand FTA, under the EHS, few auto components that

had experienced a rapid increase in trade volume soon after the implementation of the agreement were included (e.g., gearboxes).

However, major stakeholders deem that Indian component manufacturers are still not in a position to compete with their counterparts in East Asia and Southeast Asia. As a result, some automotive components (such as engines) remain in the “negative list” in case of all forthcoming agreements with Asian countries. The industry has identified 77 items to be included in the negative list for all proposed bilateral and regional agreements India is currently negotiating with the region. Some key items proposed for the negative list are two-wheelers with 75-cc to 250-cc engine capacity, petrol and diesel engines for all vehicles, and all commercial vehicles. Strict rules of origin (RoO) were also proposed and supported by the domestic industry.

A favorable initial industry environment and efficiency levels are necessary for reaping the benefits of RTA, or the result may only be a one-way trade. At present, the SMEs may not be in a position to integrate with the production network, which is mainly driven by MNCs. Moreover, SMEs require handholding in terms of dissemination of trade information, affordable technology, and easy financing.

With regard to a possible circular flow of final goods and components, India is linked more strongly with Western economies than with the economies of East Asia and Southeast Asia, from which the country is mainly importing.

Hence, there is still an apprehension about the inclusion of automotive components in RTAs with Asian countries. Technological collaboration and the capability to move up the value chain with innovative management skills are necessary requirements to enable an Indian auto component manufacturer to enter a production network.

4.3 Parts and Components

Through foreign trade and investment, East Asian economies have obtained technology and management know-how from foreign countries and these have contributed to economic growth of East Asian host countries by improving their production and technological capability. The composition of trade is shifting from low-skill products, such as textiles and garments, to higher-skill, higher technology products, especially machinery, which now accounts for over 40% of East Asia’s exports and over 50% of intraregional exports. Among machinery exports, electronics and electrical products are the most substantial. The trend started in the electronics industry and subsequently spread into many other industries such as sport footwear, automobile and components, televisions and radio receivers, sewing machines, office equipment, electrical machinery, power and machine tools, cameras and watches, and printing and publishing machinery.

4.3.1 Trade Scenario

The export of P&C from India has been increasing gradually in the last five years, reaching around US\$51.8 billion in 2010. The major P&C export item of India is power generating machinery. Other important machinery exported by India are professional scientific instruments and metal working general and specific machinery (Table 8).

Table 8: Parts and Components Exports of India, 2005–2009
(Value in US\$ Million)

HS	Commodity	2005	2006	2007	2008	2009	2010
71	Power generating machinery	15857.9	16091.55	19824.89	28466.39	29202.94	25253.98
72	Machinery for particular industries	3813.4	5598.8	6557.83	7533.31	4516.13	5668.89
73	Metal working machinery	2814.6	3403.8	5222.54	5782.65	4081.31	5307.19
74	General industrial machinery	1520.73	3037.8	2917.12	1817.36	1802.59	5030.14
75	automatic data processing machines	21.22	27.53	27.21	24.67	23.44	24.22
76	Telecommunications & Sound recording	606.16	824.77	1124.13	1165.67	1040.56	1067.19
78	Road vehicles parts	17.38	27.58	55.47	29.17	117.53	79.7
79	Transport equipment	45.16	722.39	305.62	406.97	407.12	532.43
87	Professional scientific instruments	3293.2	3766.12	4484.13	3.2392	6169.49	7578.18
88	Photo and optical goods	63.05	77.54	693.28	1467.02	1030.34	1262.33
	Total	28052.8	33577.88	41212.22	46696.45	48391.45	51804.25

Source: WITS (Accessed 22 December 2011)

The bulk of imports of India are in telecommunications equipment. Trade in P&C (both imports and exports) is quite significant in India, although it contributes only marginally to the country's total trade (Table 9).

Table 9: Automotive Parts and Components Imports of India, 2005–2009(Value in US\$ Million)

Product Code	Product Description	2005	2006	2007	2008	2009
71	Power generating equipment	1809.421	2112.099	3090.083	3958.847	3905.792
72	Industry special machine	3795.48	5473.671	6911.69	8315.018	6778.965
73	Metalworking machinery	1109.261	1859.606	2487.976	3450.669	2468.73
74	Industrial equipment (not elsewhere specified)	3615.24	4880.488	6805.561	9176.707	7657.853
75	Office/dat proc machines	3334.711	4152.871	4218.287	4481.422	4316.459
76	Telecomms etc equipment	5754.427	7536.19	9920.038	7259.201	11633.85
78	Road vehicles	996.0201	1276.217	1899.856	3185.88	2749.864
79	Railway/tramway equipment	3950.671	8562.249	6101.146	17214.88	8705.509
87	Scientific/etc instrument	1971.354	2334.578	3024.576	3671.198	3671.347
88	Photographic equipments/clocks	484.0242	537.3898	640.0536	739.95	646.9617
	Total	26820.61	38725.36	45099.27	61453.77	52535.33

Source: WITS (Accessed December 22, 2011)

The trade in P&C is somewhat triangular in nature. In P&C, the developing economies of East Asia are becoming the factory of the world, assembling the P&C supplied by developed and developing economies and selling the finished products to the world market. The structure of trade is triangular in nature—parts produced by Japan are exported to the PRC and the other Asian economies to be assembled as finished products, which are then exported to Europe, North America, or Japan. A range of mutually reinforcing factors have contributed to the rapid expansion of P&C trade in Asia. Firstly, advances in production technology have enabled the industry to slice up the value chain into smaller components. Secondly, technological innovations in communication and transportation have contributed to significant reductions in the cost of service links involved in coordinating international operations. Thirdly, liberalization-related policy reforms (reductions in trade barriers) in both home and host countries have led to massive FDI in these economies. Lastly, high levels of intra-industry trade through RPNs helped the economies to be a part of the global value chain.

4.3.2 Barriers and Policy Issues

India has remained a small player in fragmentation-based international exchange and around 26% of its total trade is in P&C. In recent years, increases in intra-regional trade in East Asia stem largely from fragmentation-based specialization. However, since the share of intra-regional trade to total trade of these countries has not increased, this only confirms that trade in Asia is largely dominated by trade in P&C. While regionalism enhanced the growth of P&C trade in East and South East Asia, the maintained barriers against non-members (while allowing free trade among members) can be seen as a hindrance to the natural expansion of fragmentation-based specialization across countries, especially in South Asia.

Meanwhile, tariff barriers have come down to below 10% but it is not expected to go down further. As profit margins in volume-based P&C trade are very low, a reduction in tariff rates is considered desirable even if it is as small as 5–10%.

As the PRC is heading towards overcapacity and its wage and non-wage costs are increasing, the absence of adequate intellectual property rights protection also plays an important role in an expected slowdown of investment in P&C in the PRC. India could be seen as a natural next choice, but so far FDI in P&C in India remains low. This is probably due to the presence of other small ASEAN members such as Viet Nam, which could be major competitors of India as they can take advantage of the ASEAN RPNs.

The P&C trade is expected to continue to dominate Asian trade. The know-how and investments of MNCs and the aggressiveness and process efficiency of SMEs will provide a new dimension to P&C trade in the future. High labor productivity along with employment generation due to volume-based trade of standardized goods will ensure that the trend of P&C trade will remain stable in the coming years. Indian SMEs have shown a certain degree of resilience and hence Asian MNCs can assist them with funding and technology, which in turn may open possibilities in terms of product and process innovation.

4.3.3 Integrating Parts and Components

The formation of RTAs has simply resulted in substituting the existing tariff concessions, thereby generating new incentives for this trade. The regional economies have undertaken initiatives towards deeper trade and investment integration essentially for four reasons:

- Defensive response to the proliferation of RTAs elsewhere;
- Dissatisfaction with the slow progress of trade and investment liberalization at the global and trans-regional levels;
- Need to improve international competitiveness through exploitation of scale economies; and
- Promotion of deeper regional integration and greater institution building.

One important issue regarding the proliferation of FTAs and economic partnership agreement (EPA) initiatives in East Asia—often dubbed the spaghetti bowl phenomenon—is how to ensure consistency across different regional trade arrangements. In particular, differing treatments of rules of origin can be quite counterproductive and the use of common tariff rates would be preferable. Another issue, common to any regional trade arrangement, is how to maintain WTO consistency, i.e., how to make the East Asian RTAs a building block for multilateral trade and FDI liberalization.⁶ Rules of origin in FTAs can be more binding for fragmentation trade compared with conventional final goods trade. Value-added at each stage of production is generally very small and therefore more sensitive to trade cost and delays arising from rules of origin compliance.

Currently, there are fears in South Asia that SMEs in ASEAN and the PRC could wipe out the South Asian P&C sector. While many South Asian firms, especially from India, are now equipped to compete with their East Asian counterparts, South Asian countries are unable to enter into this value chain.

5.0 The Future of the Asian Integration Process and the Role of India: 2030 Scenario

Asian powers like the PRC and India are being envisaged as the drivers of the future global economy. However, Asia is quite diverse in terms of economic structure, political governance system, population distribution, and so forth. In the next two decades, ASEAN, India, and the PRC will be the engines of growth. However, growth alone is not sufficient to address poverty and inequality and hence, these countries require more prudent and direct domestic policies to handle this issue. In case of manufacturing industries, integration is foretold. The industries considered in this study will be at the forefront of this integration. India's "look east" policy is reflected in the number of FTAs and CECAs it has signed with Asian economies over the last few years. Looking at the time line of these FTAs, it is clear that most of the goods listed for concessions will be almost free by 2020 and countries will further liberalize the products in the negative/sensitive lists with the result that by 2030 most of the trade between ASEAN and India, especially in the goods sector, will attract zero tariffs. However, India and the PRC are now engaged only through APTA which moves slowly. Further initiatives supported by a political motivation seems to be important to bring these two giants agree for a deeper tariff cut. Nonetheless, trade between India and the PRC is rising exponentially.

Negotiation of non-tariff barriers (NTBs) among these countries are crucial for integration. So far the usage of FTA routes by traders has been relatively limited. Although, multiple RTAs/FTAs create confusion in terms of rules of origin or identifying best tariff discounts, NTBs and procedural hazards are the main obstacles to further RTA/FTA-led integration. Some efforts are already visible in streamlining the NTBs. ASEAN is already engaged in harmonizing NTBs across the region. India is considering the use of export and import policies to simplify some of the complex regulations. We expect that in the years ahead,

⁶ Lloyd (2002) argued that bilateralism and FTAs are likely to result in greater multilateralism rather than work against it, but Brown, Deardorff, and Stern (2003) continued to believe in the desirability of a multilateralist approach.

some kind of basic regulatory structures to manage exports and imports will be agreed upon. EU single market directives may provide useful pointers.

In terms of welfare gains from trade agreements between India and ASEAN, several studies have already been conducted. The studies suggest that ASEAN's overall welfare gains from this agreement will be higher than those expected for India, although India's gains will increase substantially if the country's large industries, which benefit from economies of scale can play an active role. India's major gains are expected in terms of "allocative efficiency" whereas ASEAN is expected to achieve significant gains from "terms of trade". This implies that ASEAN will be able to maintain export prices higher than those of India as demand for raw materials and inputs in production activity will be high (due to India's higher consumption and demand growth). On the other hand, India will benefit from more efficient production processes which will generate greater tax and other revenues for the government to spend on development programmes. India's gains in the ASEAN market will come mostly from smaller markets such as Viet Nam, Lao PDR, and Cambodia. Large Indian firms can also draw benefit from ASEAN markets if they focus more on 'economies of scale' and build their brands gradually (Nag and Sikdar 2011). The studies forecast that integration in P&C and semi-finished goods will inevitably result from the agreement.

India has historically been more engaged with the Western economies than with Asia in the industries considered in this paper. Exports of Indian SMEs are mostly to Western countries. Indian SMEs have the ability to quickly move up the value chain as they tend to be good at product and process innovation. Also, good patent acts gives technology suppliers the confidence to work closely with Indian SMEs. However, these advantages are negated by India's appalling infrastructure, lack of modern logistics facilities, complicated layers of state and central regulation, and frequent delays in policy implementation—all factors that have crippled Indian SMEs. Moreover, the inability of Indian SMEs to raise funds is a major obstacle to business development and for them to take advantage of the opportunities provided by Asia's growing RPNs. Meanwhile, Asian companies still lack the confidence of doing business in India, which European and American companies have acquired over many years of being engaged with India.

In East Asia, the entire journey toward developing the regional production networks started with the "flying geese" model in which Japanese companies invested as joint venture (JV) partners in SMEs of those countries which increased both their technological and managerial efficiency and resulted in these companies becoming part of the international supply and value chain by default. On the contrary, in India, SMEs operate independently, possibly due to their capability to develop themselves with little outside help through financing and technology transfer. It is essential for a forum to be developed in which Asian SMEs can interact and bridge the gap, particularly in the identified sectors in this study. We expect that by 2030, a new model, different from the "flying geese" pattern, will have become visible, with Indian companies having become integrated in the Asian RPN.

6. Conclusion

Since 1980s, an Asian production network was one of the major contributor toward the fast trade expansion and economic growth in East Asia. Developed Asian countries like Japan, Korea, and Singapore produces technology-intensive intermediate goods and capital goods and ships them to the People Republic of China (PRC) and ASEAN member countries for assembly by lower-skilled and low-cost workers. The finished products are then exported to advanced economies such as the US, Japan, Europe, and other countries. In view of ongoing global financial crisis that started in 2008 and European debt crisis and the slowdown in growth and recession in advanced economies, the ability of the rest of the world to absorb Asia's exports has decreased. Export production in some Asian countries has also

been subsidized by artificially low prices for labor, land, and energy, and by lax enforcement of environmental regulations. Asian economies should thus rebalance away from relying too much on exporting subsidized goods to developed economies (Thorbeck and Bhattacharyay, 2012).

Asian economies need to rebalance their growth and depend more in intra-regional trade, cross-border investment and domestic consumption while reducing their high dependence on advanced economies as principal export markets. This calls for deepening, expanding and integrating Asian production network and reorienting export of final goods toward Asian Markets as well as markets of other emerging economies. This can be achieved by enhancing cooperation, integration and healthy competition as deeper trade linkages within the region present opportunities through complementary activities, product differentiation, and economies of scale.

In this regard, ACI needs to improve national and regional competitiveness and productivity to ensure self-reliance, higher employment, and sustenance and rebalancing of economic growth in these countries.

In the manufacturing sector, the region's potential can be maximized by expanding the East Asian regional production networks to further integrate regional trade, markets and economies, particularly with India, other low-income ASEAN countries, and South Asia. The region can also benefit by diversifying their products and markets within and outside the region and gearing their target market towards the rising ACI middle class. In addition, ACI needs to develop the service sector in key sectors (both tradables and nontradables such as education, financial services, health, ICT, infrastructure and logistics services, outsourcing and BPO, and tourism and hospitality) to increase internal value. With the increasing role of the service sector in the ACI economies, establishing or strengthening existing service production networks can deepen trade in services within and outside the region.

In 2014, the Indian Government has launched "Make in India" initiative. This initiative plans to enhance the domestic manufacturing industry and attract foreign investors to invest into the Indian economy. The manufacturing sector of India contributes around 15% to the national GDP. The objective of this initiative is to enhance this to a 25% contribution as seen with other developing nations of Asia. This initiative will assist in generating jobs, attracting increased foreign direct investment, and transform India into a manufacturing hub of the world. For the Make in India initiative, the government has identified 25 priority manufacturing sectors for promotion. These sectors include automotive and automotive components; and electrical machinery and electronic systems⁷. In order to implement this program successfully, India needs to be integrated significantly with Asian RPN.

The major conclusions of this study are as follows:

- In view of high competitiveness in providing outsourced information technology and R&D services in a wide range of industries, India has tremendous potential to integrate with RPN and become a key player like the PRC. India has to successfully attract FDI and enhance its manufacturing base. India should improve technological capability, hard and soft infrastructure and local support industries as well as promote efficient governance and regulatory system, including full transparency in the application of the law and thus enhance "Ease of Doing Business".

⁷ <http://www.mapsofindia.com/government-of-india/make-in-india.html>

- Integration in the manufacturing sector is inevitable, but the biggest challenge for this integration is the variety of NTBs across countries. So far the use of FTA routes by traders is relatively little. Multiple RTAs/FTAs create confusion in terms of rules of origin or identifying best tariff discounts. But NTBs and procedural hazards are the biggest stumbling blocks in the RTA/FTA-led integration. Another bottleneck is the poor infrastructure in ports, at border crossings, and complicated time consuming customs procedures.
- From the India-ASEAN FTA, India is expected to gain from the smaller ASEAN market while ASEAN will gain from India's rising demand for machineries and inputs. India's gain will increase substantially if it motivates its large industries with scale economies to play an active role in exploring ASEAN and PRC markets.
- In the sectors identified, historically, India is more engaged with the Western world. The advantage of Indian SMEs who are more linked to the developed Western world has never been explored fully by Asian countries. Indian SMEs have the ability to quickly move up the value chain through product and process innovation. Also, good patent act gives technology suppliers the confidence to work closely with Indian SMEs. However, Indian SMEs have been crippled by appalling infrastructure conditions, lack of modern logistics facilities, complex layers of state and central regulation, and delays in policy implementation, among others. The inability of Indian SMEs to raise funds also poses a big challenge for them, particularly in trying to develop their businesses and taking risks when linking up with the growing Asian RPN.
- It has been noticed that traditionally in the region (except India), service is linked with the manufacturing activity and hence, trade in transportation, and travel, and the like occupy significant position. However, the scenario has been changing and the demand for other services has been increasing sharply. The study finds that from the beginning, India has specialized or attempted to specialize in IT and professional services, whereas other major Asian players (Japan, the PRC, and Korea) have focused on traditional services around the manufacturing process, such as travel and transport services. Hence, India and these players including ASEAN complement each other.
- For service network, FTA seems to be a good route where countries find confidence to liberalize their services sector. Asian countries need to have discussion about service standards which can be linked with mutual recognition agreement (MRA) of certificates/qualification. Other than this, service integration in professional services is very difficult. Countries may identify top institutions in each service and encourage collaboration among them so that eventually, the mutual recognition becomes an easy step forward. For service integration among nations in the near future, the Asian academic institutions have significant role to play which these nations should not undermine.

Another important area which is not discussed in this paper but requires serious attention is the establishment and enhancement of the value chain or production network in agriculture. In view of the high food prices, food security is of great importance for the ACI and Asia as a whole. This network is expected to grow worldwide and the ACI region is no exception. Changing patterns of demand from cereals to horticultural products to packaged food provide new opportunities for agro companies. Moreover, the unleashing of rural demand in many countries of ACI is significant to attract more companies to reach them. Divergence of standards and its complexity in various countries will force companies to streamline their supply chain to have a special look into quality, warehousing and logistics. The emergence of large MNCs in the global food trade is also noteworthy. We expect that by 2030 there will only be a few regional big players that will be trading in the ACI region. The major problem

will remain at the ground level, in terms of the possibility of farmers to comply with the changing standards and volume demanded by these players. The main reasons for this are the slow transmission of information, the lack of technology in farming, low productivity, and inability to connect with the global value chain, among others. India's Twelfth Five Year Plan (2012–2017) proposes higher levels of investments in agriculture, both by the public and private sectors to combat these problems.

A strong, efficient and integrated ACI production network can contribute to a balanced, sustainable, and resilient ACI and Asia which, in turn, can fuel the growth and prosperity and enhance the stability of Asian economies as well as the rest of the world.

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