Chapter 1

India–Japan GVC Integration: New Investment and Supply Chains Amongst India, Japan, and ASEAN

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Chapter 1

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Anita Prakash

Introduction

India's weight in the global economy has expanded rapidly, from 1.5% in 2002 to 3.5% in 2022, thanks to very rapid growth. This growth is mostly driven by domestic demand. Exports have stagnated, with the share of global merchandise exports remaining as low as 1.8%. As such, India could tap into huge external demand if it can increase its international competitiveness and integrate more into the global supply chains.

This chapter reviews the global value chain (GVC) performance and integration of India and Japan, both regionally and bilaterally. However, India–Japan supply chain linkages must also include linkages with the Association of Southeast Asian Nations (ASEAN), which is a major manufacturing and investment destination for Japan and other large economies such as China, the Republic of Korea (henceforth, Korea), the European Union (EU), and the United States (US). The data on GVC participation capture the exports and imports of intermediate goods, which feed other countries' exports. The advantage of such a data set, which focuses on trade in intermediate goods, is that it only counts the value added embedded in exports of the reporting country/region. More importantly, it elucidates the degree of integration in the value chains of trading partners. The trajectory of India's GVC participation suggests that India has been gaining ground and adding more value to GVCs, and its reliance on foreign value added has also significantly dropped thanks to continuous foreign direct investment (FDI) inflows that have bolstered the domestic supply chains.

India and Japan are on an uneven keel when comparing their respective participation in the regional GVCs. Japan promoted the original equipment manufacturer revolution in Southeast and East Asia. The competitiveness of ASEAN's exports and its manufacturing prowess are largely due to the early FDI from Japan in ASEAN Member States (AMS) during the 1970s and 1980s, particularly in Thailand and Indonesia, and later in Viet Nam for the automobile and electronics industries. Japan's investments in India, however, have only recently seen an upswing in the manufacturing sector. Cumulatively, from 2000 until December 2023, Japan's FDI in India has been around US$41.47 billion, ranking Japan fifth amongst source countries for FDI and accounting for 6% of total FDI in India. In recent years, Japanese FDI in India has mainly been in the electrical equipment, general

machinery, chemical and pharmaceutical, financial and insurance, construction, transportation, wholesale and retail, and services sectors (Embassy of India in Tokyo, 2024a).

On the other hand, ASEAN has been consistent in GVC participation but with huge dependence on China for both exports and imports, with more dependencies on imports from China, or backward participation in the GVC vis-à-vis China.

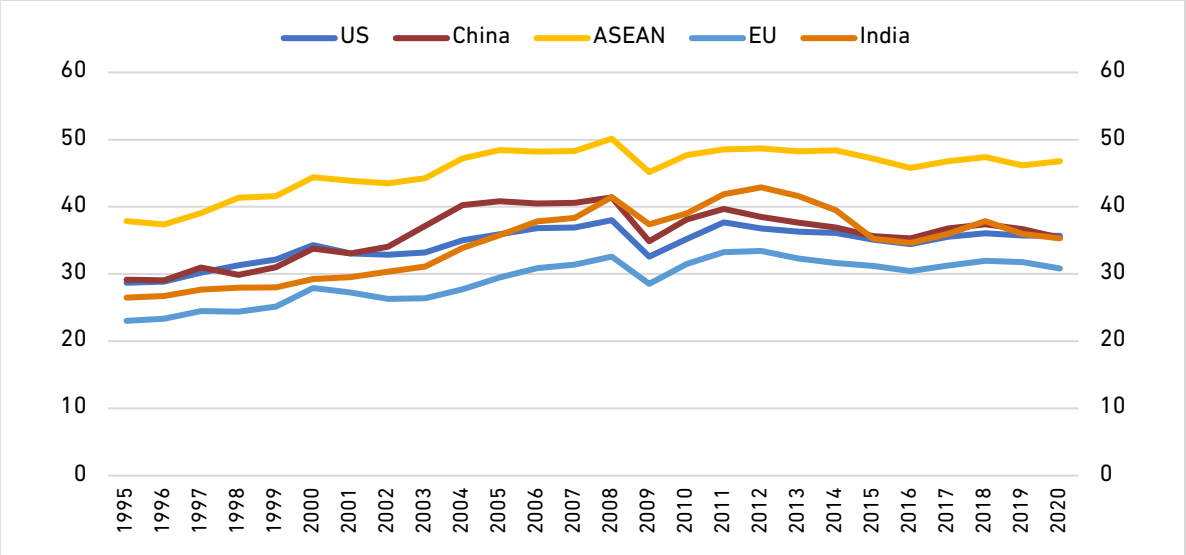
India has improved its GVC participation in several industries, such as chemicals, pharmaceuticals, machinery, and automobile parts and engines. India has also made much progress in global service value chains, especially in the information and communication technology (ICT) sector, in which India now creates 7% of global value added, only behind China in emerging markets.

India is expected to continue its rise in the GVCs, with its promising demography and the prevailing de-risking strategies in major economies regarding China. ASEAN too has an opportunity to consider structural adjustments and corrections in its GVC map, with greater integration with India and Japan than before. The review of the ASEAN–India Trade in Goods Agreement presents an important opportunity for reducing barriers to trade with ASEAN and greater integration with ASEAN both in trade and FDI. In an increasingly protectionist world, regional and trans-regional trade deals are increasingly important means for improved trade relations and supply chain integration.

Developments in Global Supply Chains

Globally, the size of GVCs peaked in 2008. Globalisation trends have recently halted, if not started reversing. Important members of the Indo-Pacific, such as Australia, India, Japan, the US, and the EU have seen moderate improvements in GVC participation since 2016. Most recent input–output data to measure supply chain integration are available up to 2023. For AMS, many of which are now members of the Regional Comprehensive Economic Partnership (RCEP), the Indo-Pacific Economic Framework for Prosperity (IPEF), and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the trend is similar, but their level of integration into GVCs is much higher than for several other Indo-Pacific countries, including India (Figure 1.1).

Figure 1.1: Total Global Value Chain Participation with the World
(% of gross exports)

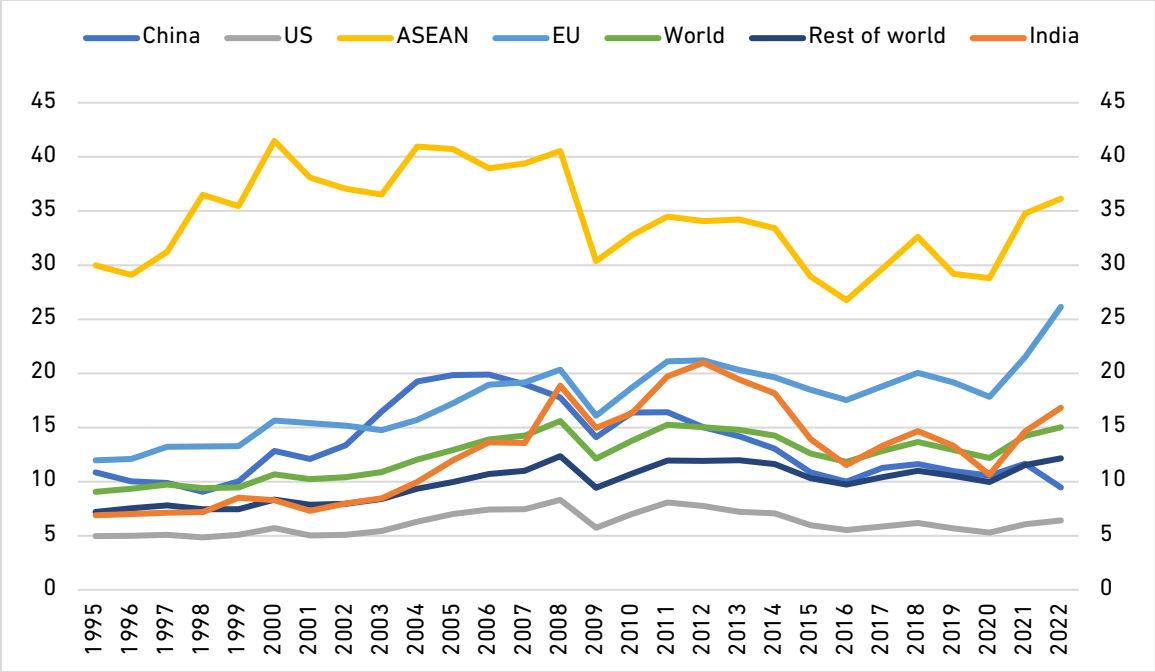


ASEAN = Association of Southeast Asian Nations, EU = European Union, US = United States.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (4 July 2024).

The development of GVCs was prompted by transnational corporations to reduce their costs of production through efficiency gains. GVCs refer to international production sharing, a phenomenon whereby production is broken into activities and tasks are carried out in different countries. The ability of developing economies to tap into their comparative advantage of a cheap labour force through the liberalisation of trade and investment policy, and evolving environmental and labour regulations, has allowed them to gain more productive jobs and capital investment, raise productivity, and generate wealth. From Eastern Europe to China, and most recently Viet Nam and even Bangladesh, the process has lifted millions out of poverty. Indeed, GVCs have shaped the world beyond trade, from the increasing importance of efficiency as a key objective of the production process – and the development of new business models to accommodate it – to the surge in FDI to set up production plants overseas to produce parts and components.

The globalisation process has decelerated significantly, if not started to reverse (García-Herrero, 2022). Figure 1.2 shows the imports of intermediate goods as a share of gross domestic product (GDP), which has generally drifted lower post-global financial crisis for major exporters, especially in emerging markets such as China, India, and ASEAN. It is worth noting, however, that the share of intermediate goods imports has been lifting again in some countries and regions since the coronavirus disease (COVID-19) pandemic began, such as in India, ASEAN, and the EU.

Figure 1.2: Imports of Intermediate Goods
(% of GDP)

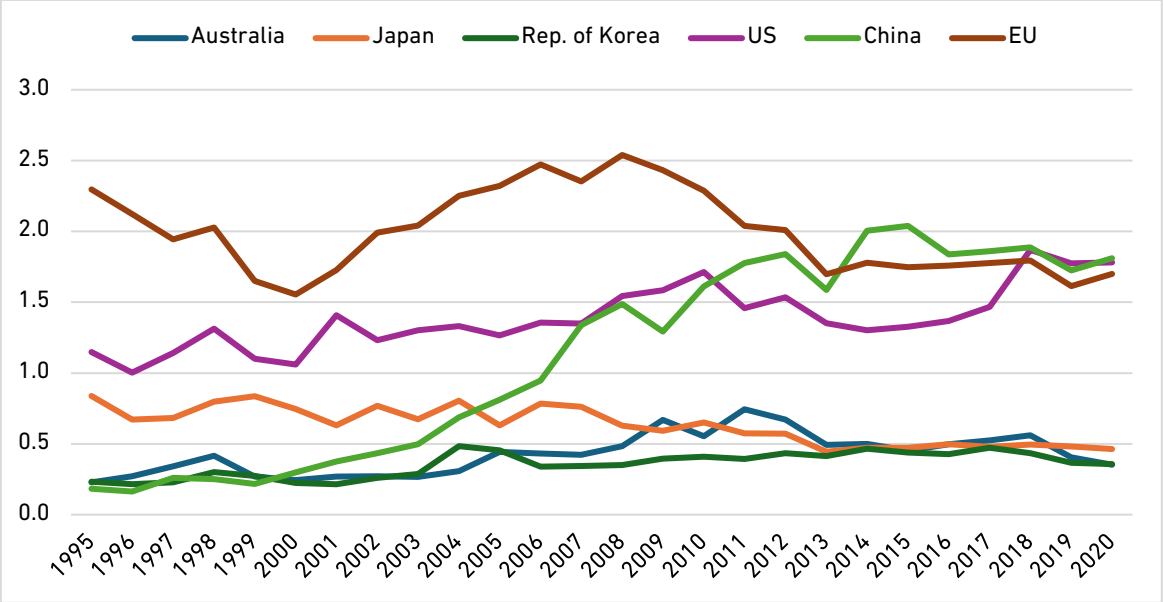


ASEAN = Association of Southeast Asian Nations, EU = European Union, GDP = gross domestic product, US = United States.
Source: UNCTAD (2024), Merchandise: Total Trade Growth Rates, Annual. https://unctadstat.unctad.org/datacentre/dataviewer/US.TradeMerchGR (accessed 4 July 2024).

India, Japan, and ASEAN GVC Integration Performance

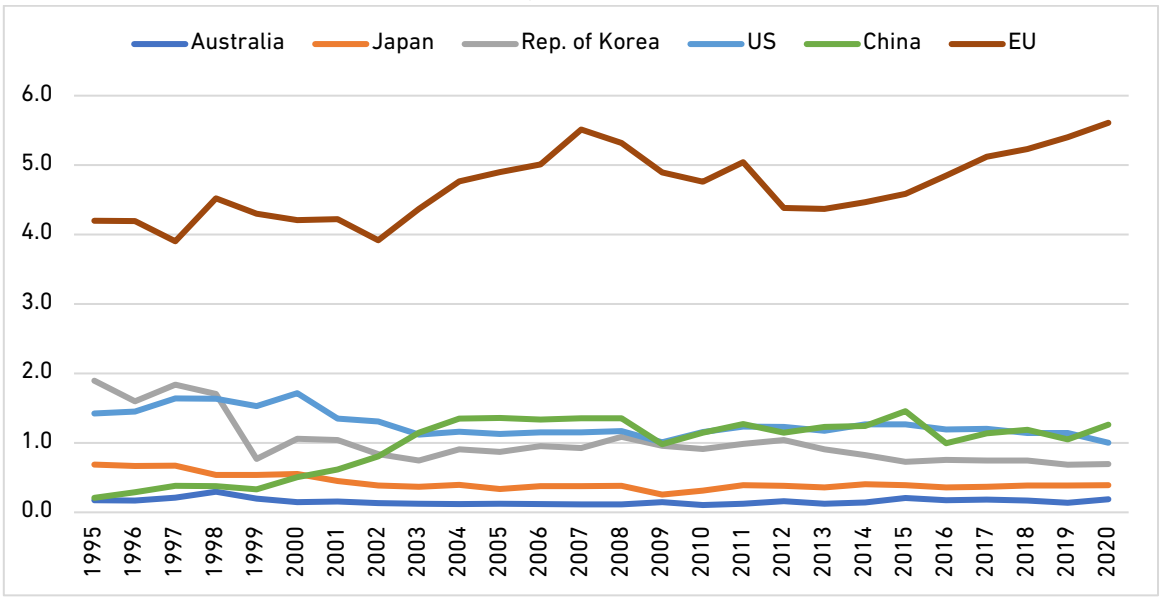
While Japan and ASEAN were better integrated into the regional and global value chains in 2009, India has since been rising in terms of integration into the value chain. The integration has been asymmetric, though. India's imports of intermediate goods to re-export (backward participation) have gone down, while its exports of intermediate goods for other countries to re-export have increased, including with ASEAN (Figures 1.3 and 1.4).

Figure 1.3: India's Backward Participation by Partner
(% of gross exports)



ASEAN = Association of Southeast Asian Nations, EU = European Union, US = United States.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1 July 2024).

Figure 1.4: India's Forward Participation by Partner
(% of gross exports)



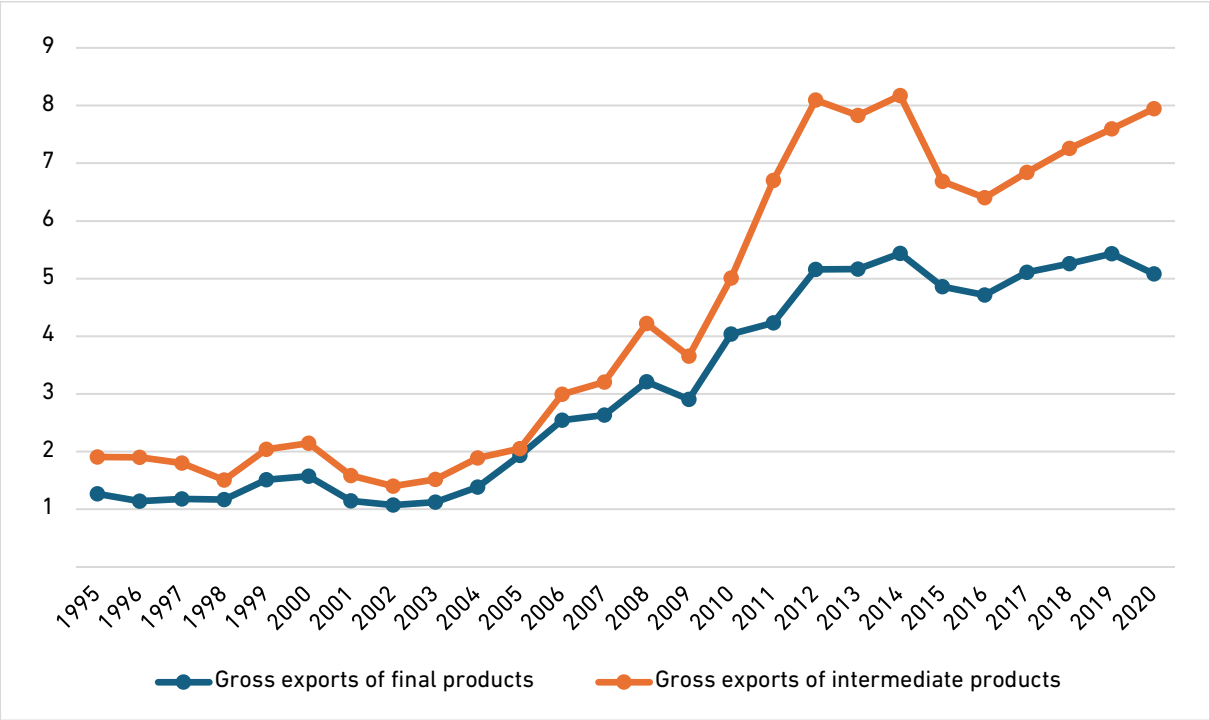
ASEAN = Association of Southeast Asian Nations, EU = European Union, US = United States.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1 July 2024).

When we zero in on India–Japan GVC integration, the trend is consistent with the above figures. India's exports to Japan are on the rise, both for gross exports of final goods and intermediate goods, which is also explained by India's growing forward participation by

partners (Figure 1.5). India is sending more intermediate goods to Japan for Japan's exports to third countries.

Figure 1.5: India's Gross Exports to Japan, Final and Intermediate Goods, 1995–2020

(US$ billion)

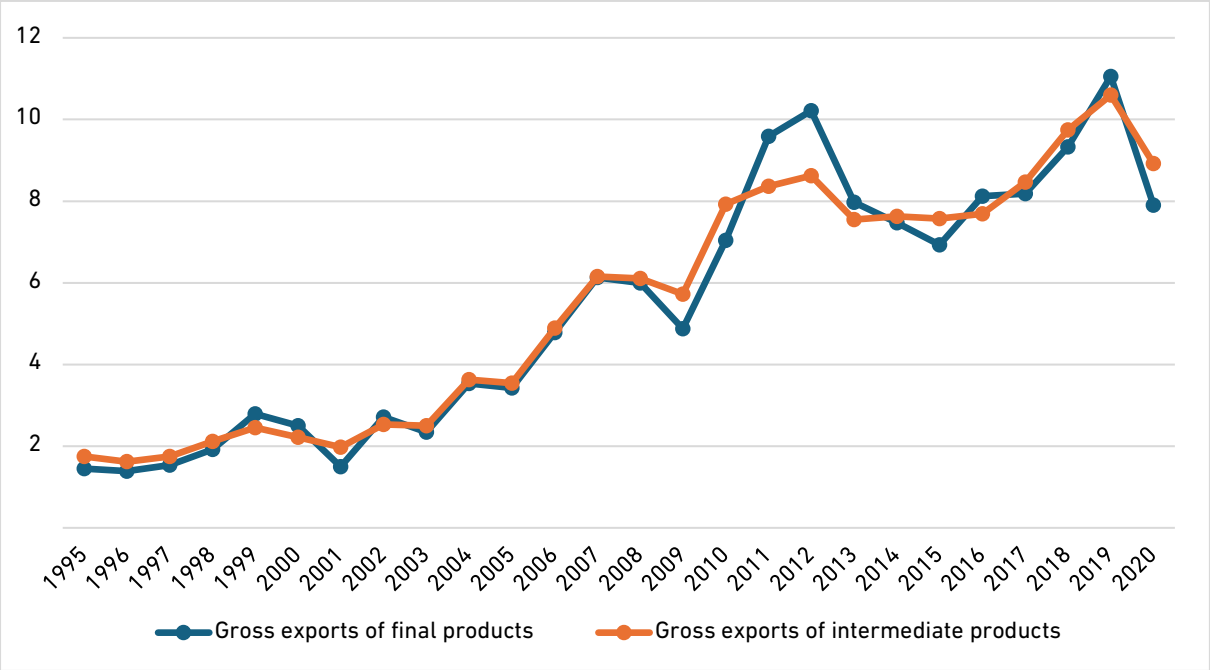


Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 4 July 2024).

The value of Japanese exports of intermediate goods to India in 2020 was US$8.9 billion, only just ahead of India's exports of intermediate goods to Japan (US$7.9 billion) during the same year (Figure 1.6). Given India's ongoing efforts to grow its manufacturing sector, there is potential for increased investment in the manufacturing sector in India and to support India to grow its backward participation in the GVCs both with Japan and other manufacturing hubs in ASEAN.

Figure 1.6: Japan's Gross Exports to India, Final and Intermediate Goods, 1995–2020

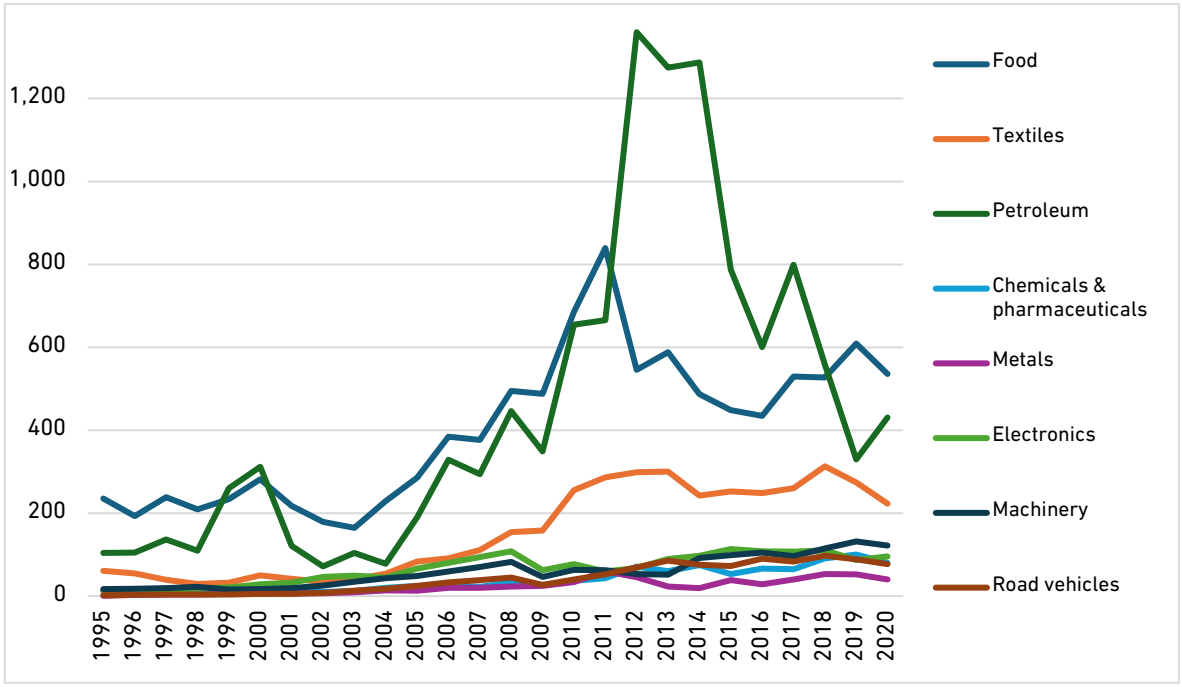
(US$ billion)



Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 4 July 2024).

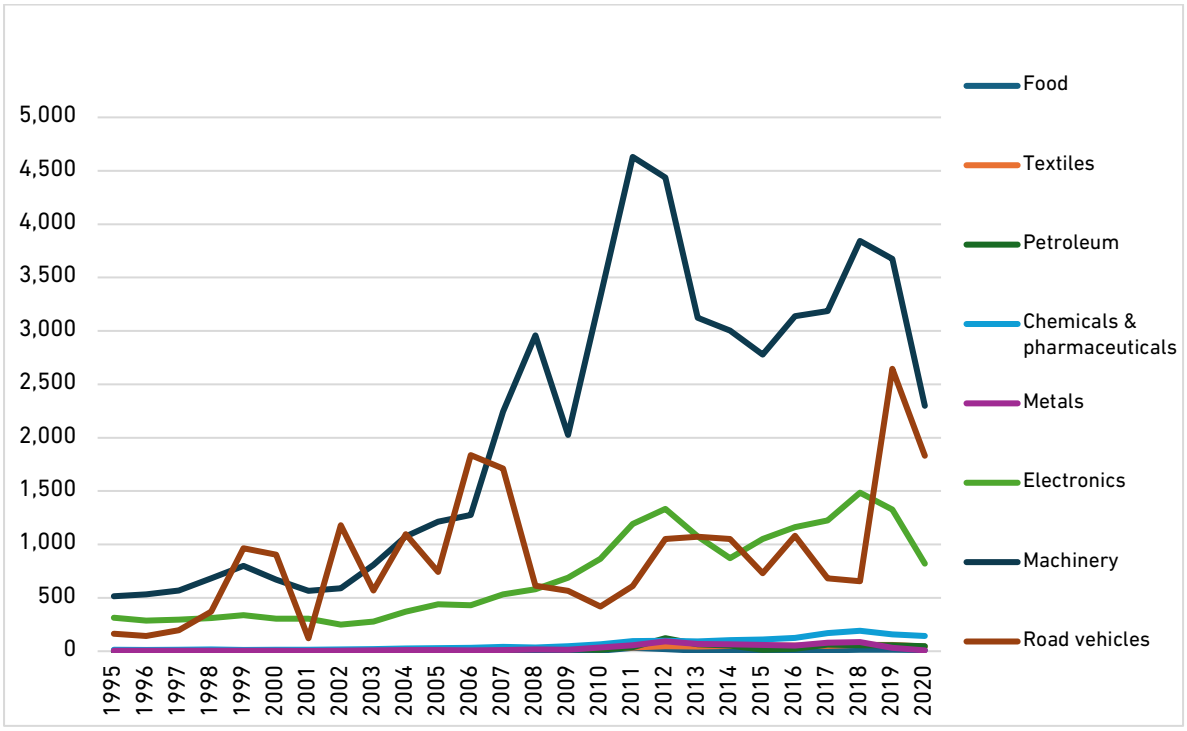
Amongst the reported manufacturing industries, India's exports of final products to Japan are more varied than Japan's exports of final products to India. India sends finished petroleum, food, textiles, electronics, and machinery products (Figure 1.7). Japan's exports of final products to India are dominated by three industries – automobiles, electronics, and machinery – and to some degree chemicals (Figure 1.8).

Figure 1.7: India's Manufacturing Industry Exports to Japan
(US$ million)



Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

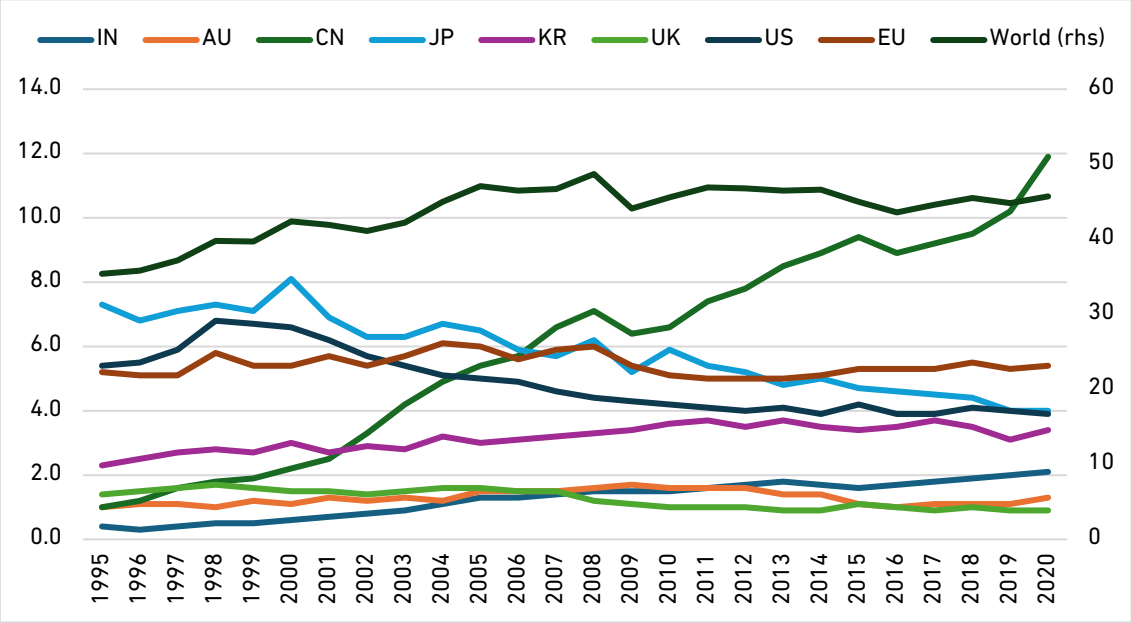
Figure 1.8: Japan's Manufacturing Industry Exports to India
(US$ million)



Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 4 July 2024).

During the same period, ASEAN has consolidated its position in the GVC, albeit with huge dependencies in the manufacturing in China. ASEAN integration with large, developed economies has declined since its peak in the late 2000s, keeping a steady negative trend vis-à-vis the US and Japan, while we observe a partial recovery with respect to the EU. On the other hand, ASEAN has become increasingly integrated with China, which has become the main individual partner in GVCs (Figure 1.9). Its integration with India has also grown during the same period, but the 'China centrality' in GVCs is remarkable. Within developed economies, a steady negative trend has been observed for ASEAN integration with the US and Japan since its peak in the late 2000s. In contrast, a partial recovery took place in recent years with respect to the EU, which remains the main integration partner for ASEAN amongst developed economies.

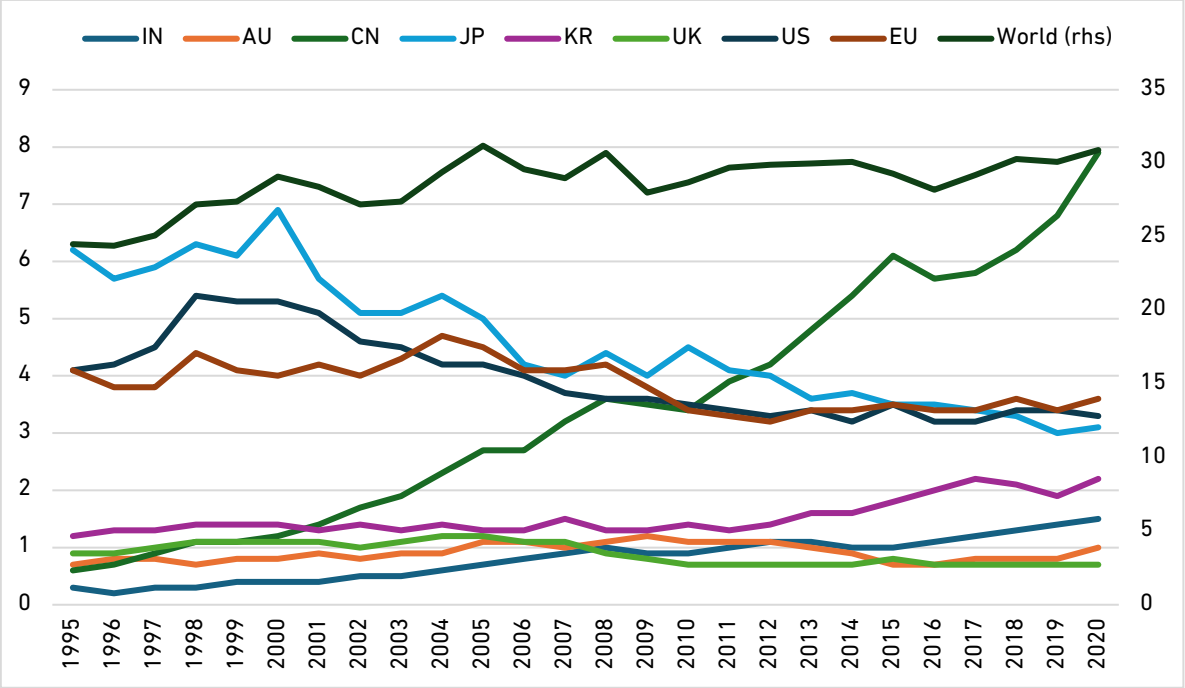
Figure 1.9: ASEAN's Total Global Value Chain Participation by Partner
(% of gross exports)



Note: ASEAN = Association of Southeast Asian Nations, AU = Australia, CN = China, EU = European Union, IN = India, JP = Japan, KR = Republic of Korea, rhs= right-hand side, UK = United Kingdom, US = United States. Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

On a structural basis, the GVC integration of ASEAN with other economies predominantly corresponds to backward participation, i.e. importing foreign products that are incorporated into ASEAN exports (Figure 1.10). The share of foreign value added in gross exports – or backward integration – accounts for almost two-thirds of ASEAN participation in GVCs, stressing its global upstream position as final exporter.

Figure 1.10: ASEAN's Backward Participation by Partner
(% of gross exports)



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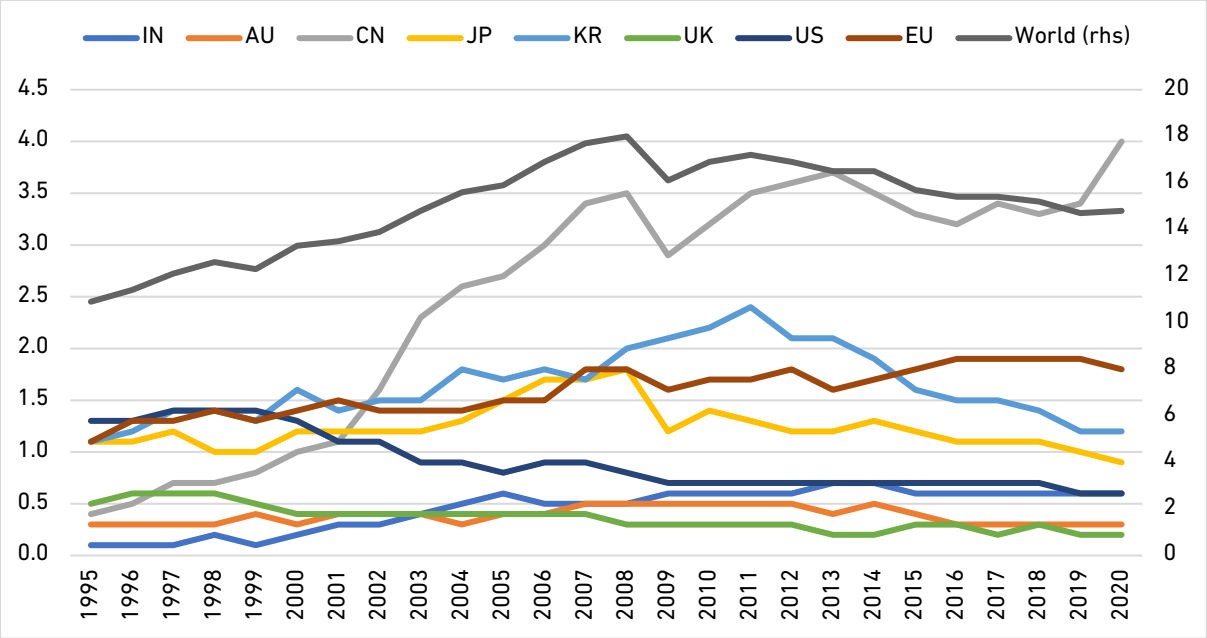
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

This contrasts with the predominant role of the share of domestic value added in foreign exports – or forward integration – in the US and Japan, both specialised in intermediate exports (Figure 1.11). This trend is particularly strong vis-à-vis the US and Japan, while it is more balanced with the rest of the world. The nature of bilateral integration has changed over time, positioning ASEAN more upstream with respect to the EU and downstream with respect to China, accounting for greater participation of Chinese inputs in ASEAN exports.

Figure 1.11: ASEAN's Forward Participation by Partner
(% of gross exports)



Note: ASEAN = Association of Southeast Asian Nations, AU = Australia, CN = China, EU = European Union, IN = India, JP = Japan, KR = Republic of Korea, rhs= right-hand side, UK = United Kingdom, US = United States.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

India–ASEAN GVC Integration is Crucial for Participating in Japan's Manufacturing Industries

From a manufacturing perspective, intra-ASEAN investments in manufacturing are the highest amongst all investors. With the growing importance of the ASEAN Economic Community's first pillar – single market and production base – manufacturing attracted the largest share of intra-ASEAN FDI, at around 33%, followed by real estate and financial and insurance activities. On the other hand, top FDI flows from outside ASEAN (the US) primarily went to financial and insurance; professional, scientific, and technical; and manufacturing activities. Similarly, FDI flows from the EU were largely directed towards financial and insurance, wholesale and retail, and manufacturing activities. Meanwhile, Chinese investors significantly invested in manufacturing, wholesale and retail, and real estate activities. These trends highlight the diverse priorities and economic interests of investors from different regions, shaping the economic dynamics within ASEAN. In 2023, the financial and insurance industry was the primary recipient of inward FDI flows in ASEAN, attracting US$91.9 billion, which constituted 40.0% of the total inward FDI, followed by manufacturing (22.0%) and professional, scientific, and technical activities (9.0%) (ASEAN, 2024). Zeroing in on investments in manufacturing, Japan is a leading investor in the manufacturing industries in ASEAN. The presence of Japanese manufacturing firms in ASEAN is large. According to data from the ASEAN–Japan Center in Tokyo, in 2023, there were 15,887 Japanese firms in ASEAN, of which about two-thirds

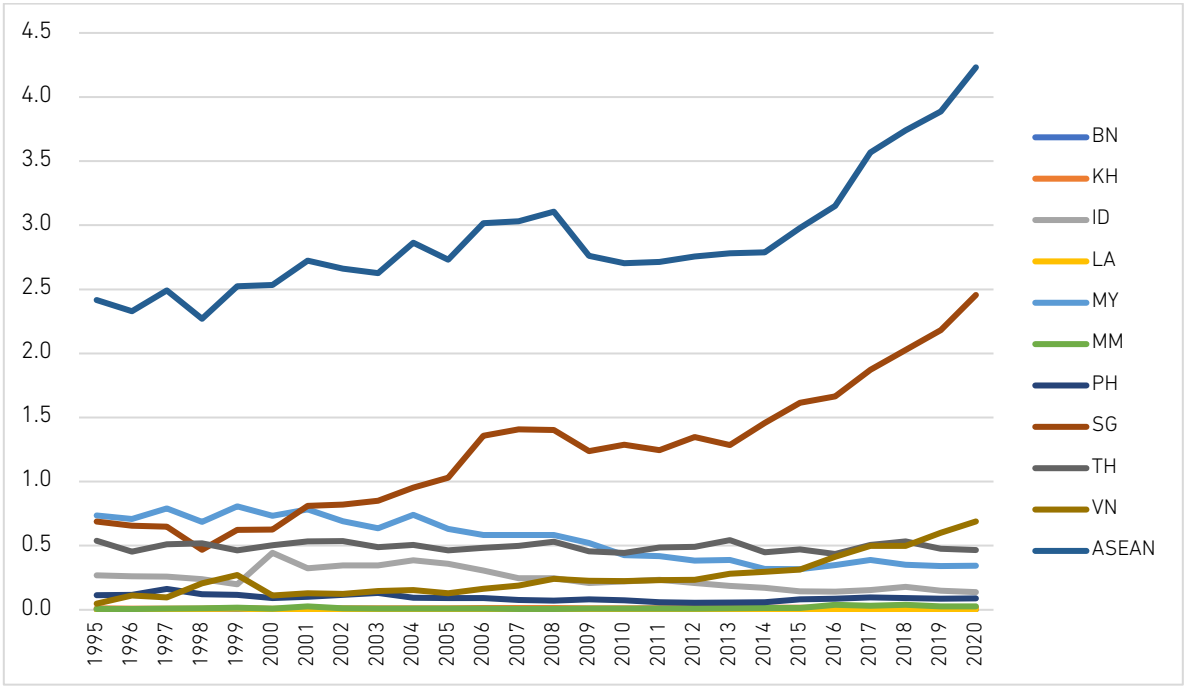
were manufacturing firms. As such, India's GVC integration with manufacturing firms in ASEAN is significant both for India–ASEAN trade and investment and India–Japan supply chain linkages.

From 2010 to 2020, India's GVC integration with ASEAN increased the most – by 1.3% of its gross exports – followed by 0.3% with China and the EU. Thanks to ASEAN's FDI to India, the progress in ASEAN–India GVC integration is dominated by India adding more value to ASEAN's exports, or India's forward participation with ASEAN.

As the FDI between ASEAN and India is also growing, it should contribute to enhancing supply chain linkages between the two partners. The increased FDI should be reflected in manufacturing, rather than services, as is mostly the case now.

In 2020, India ranked higher in GVCs than ASEAN, meaning that India exported more value added to the world. Investment from ASEAN has helped India move up in GVCs to surpass ASEAN. The rise of India–ASEAN GVC integration has been predominantly driven by forward integration with Singapore and to a lesser extent Viet Nam (Figure 1.12).

Figure 1.12: India's Forward Participation with ASEAN Member States
(% of gross exports)

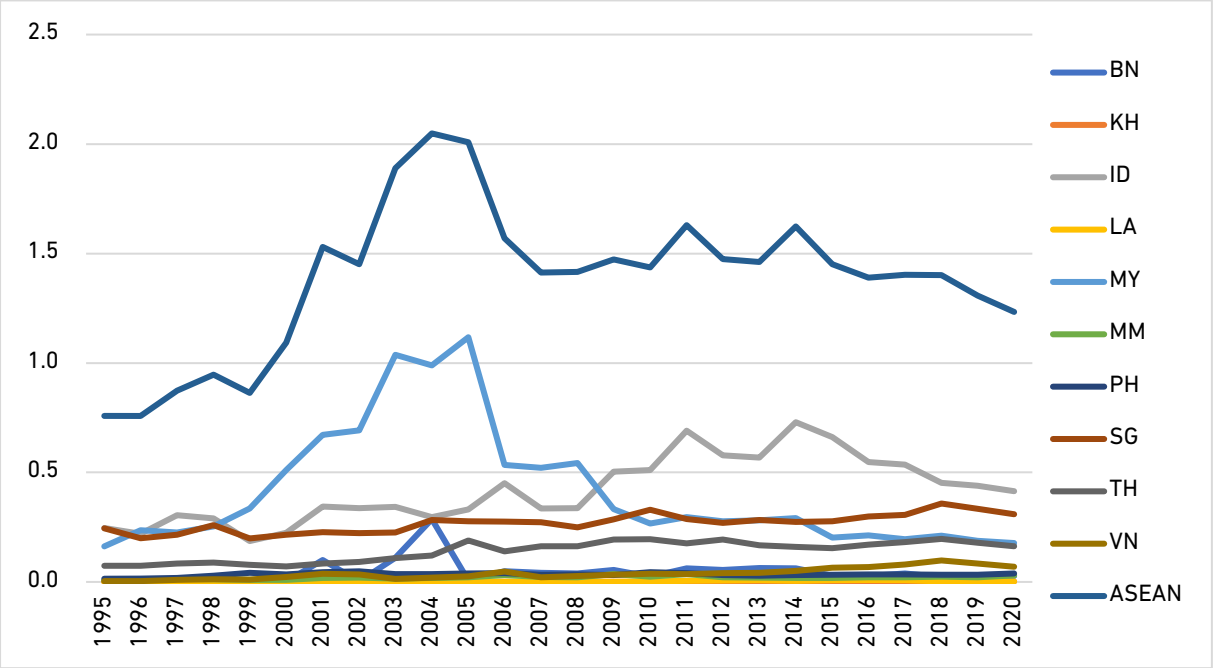


ASEAN = Association of Southeast Asian Nations, BN = Brunei Darussalam, ID = Indonesia, KH = Cambodia, LA = Lao People's Democratic Republic, MM = Myanmar, MY = Malaysia, PH = Philippines, SG = Singapore, TH = Thailand, VN = Viet Nam.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 4 July 2024).

Meanwhile, India's backward participation with ASEAN has dropped significantly since 2006 when the country cut its imports of crude oil from Malaysia. India's backward

participation seems to be decreasing with Indonesia too, as India seeks to diversify its imports of raw materials. Backward participation with other AMS remains stable (Figure 1.13).

Figure 1.13: India's Backward Participation with ASEAN Member States
(% of gross exports)

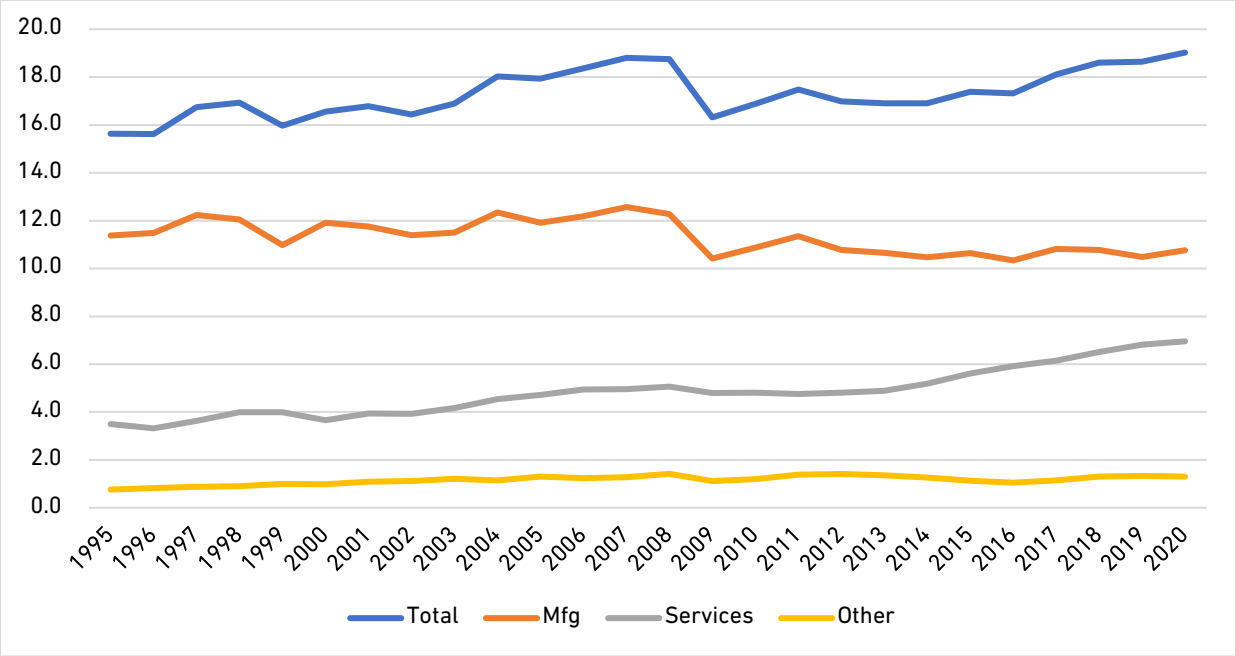


ASEAN = Association of Southeast Asian Nations, BN = Brunei Darussalam, ID = Indonesia, KH = Cambodia, LA = Lao People's Democratic Republic, MM = Myanmar, MY = Malaysia, PH = Philippines, SG = Singapore, TH = Thailand, VN = Viet Nam.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 4 July 2024).

Sectoral Performance in India–ASEAN GVC Participation

Prior to 2008, India's forward GVC participation was on a steady rise, showing a gain of 3.2 percentage points since 1995, with the manufacturing sectors contributing 1.2% and services 1.6%. After the global financial crisis, India's rise in global manufacturing value chains stagnated due to stalled FDI inflows, but the service sectors continued to perform well, especially since 2014, mainly in the ICT sector (Figure 1.14).

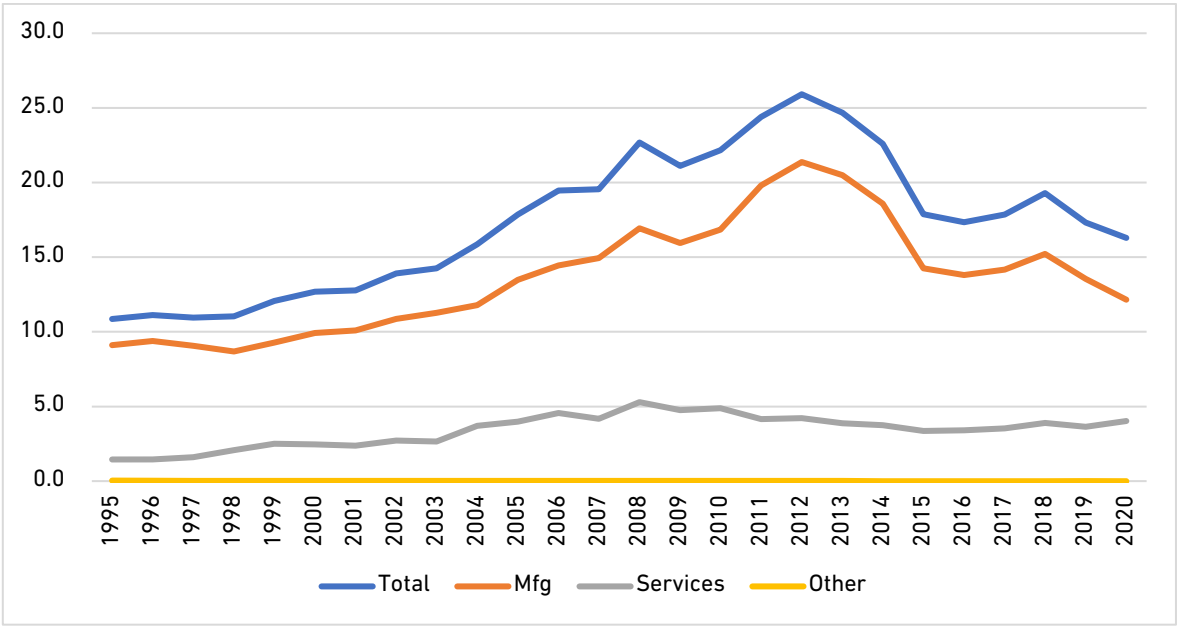
Figure 1.14: India's Forward Participation by Sector
(% of gross exports)



Mfg. = manufacturing.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 4 July 2024).

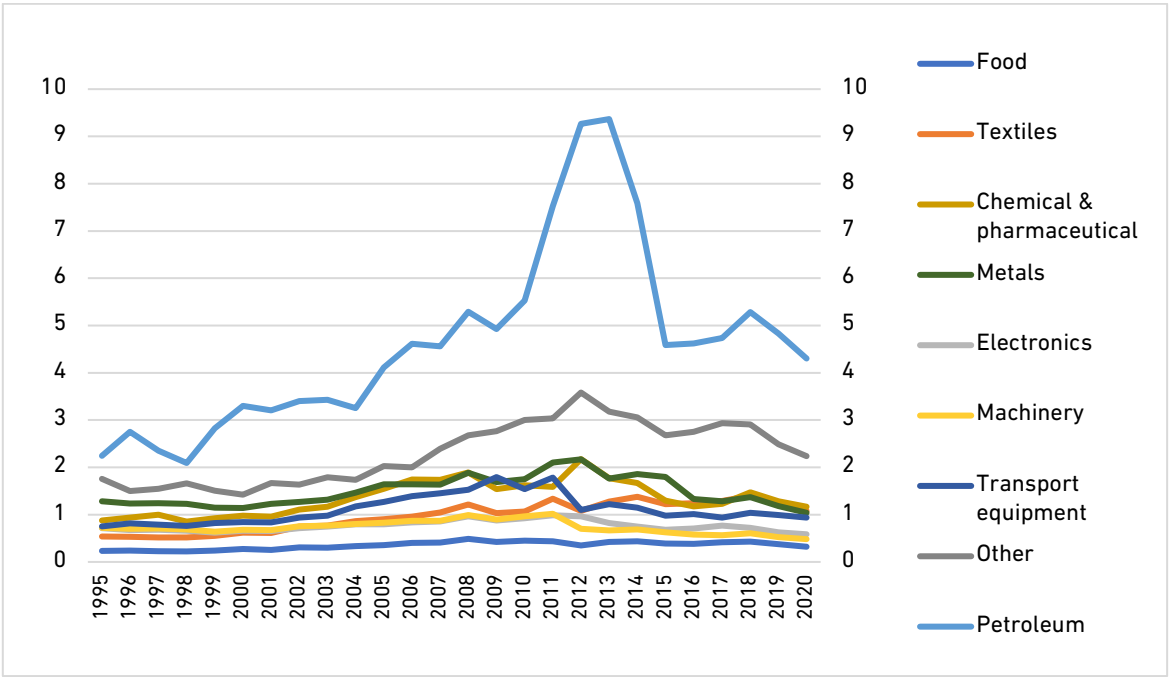
On the other hand, India has seen a major decline in backward participation in the manufacturing sectors, which was discussed in the previous section, while services have also helped but to a lesser extent (Figure 1.15). India's backward participation peaked in 2012 as it rapidly integrated into GVCs, but this trend then reversed as India's domestic supply chains started to replace part of the foreign value added for GVCs. The progress of domestic inputs is quite notable in a few industries, such as petroleum refining, metals, chemicals, pharmaceuticals, and transport equipment (Figure 1.16).

Figure 1.15: India's Backward Participation by Sector
(% of gross exports)



Mfg. = manufacturing.
Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

Figure 1.16: India's Backward Participation of Manufacturing Industries
(% of gross exports)

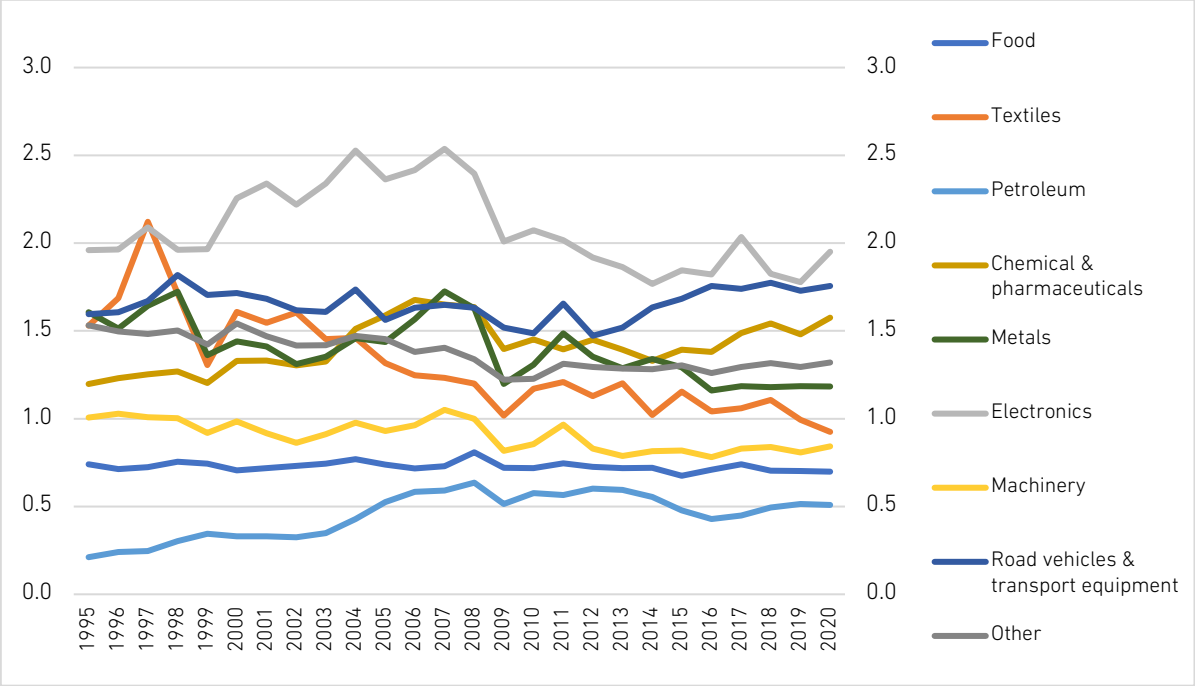


Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

However, the growth of India's forward GVC participation in the manufacturing sectors remains sluggish due to the low FDI, compared with ASEAN. The exported value added in most of India's manufacturing sectors is flat or down in recent years, except for transport equipment, chemicals, and pharmaceutical manufacturing (Figure 1.17).

Figure 1.17: India's Forward Participation of Manufacturing Industries

(% of gross exports)

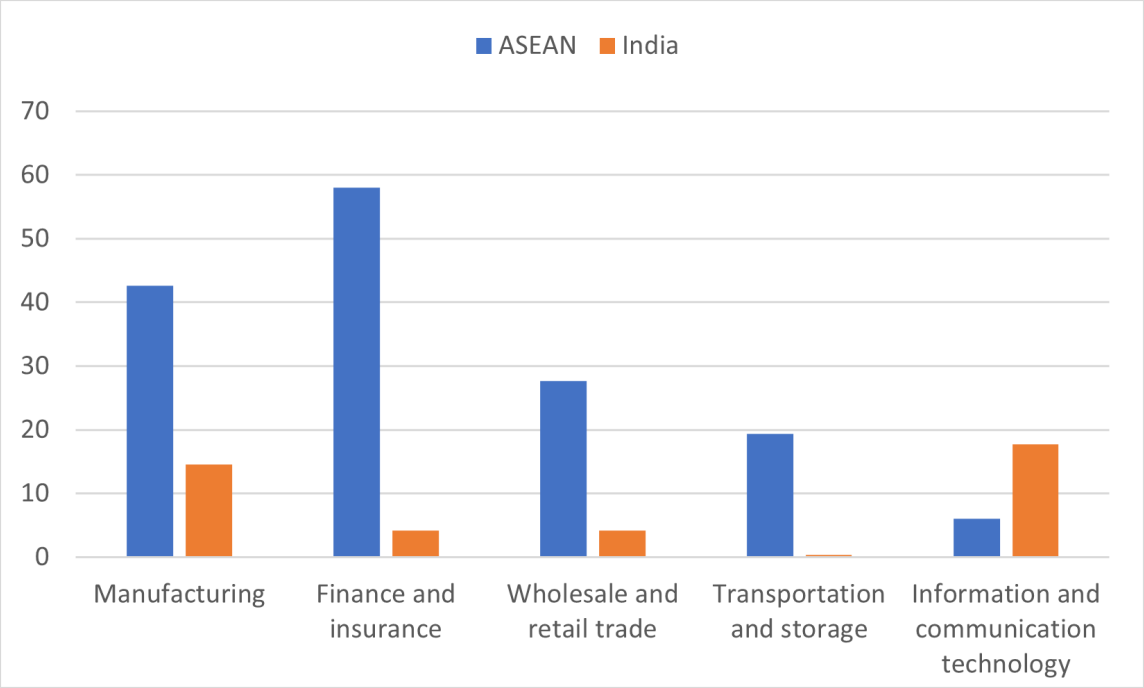


Source: OECD (2023), Trade in Value Added (TiVA) database. https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

FDI is the Key to Competitiveness

Although the FDI received by India has been on the rise for many manufacturing sectors (e.g. the automobile, pharmaceutical, renewables, and electrical and electronics sectors), the FDI values remain underwhelming (Figure 1.18) with most of the FDI going to the digital sector. As a comparison, ASEAN received FDI of $9.5 billion for its electronics industry in 2022, which is in stark contrast to India's $539 million (ASEAN and UNCTAD, 2023).

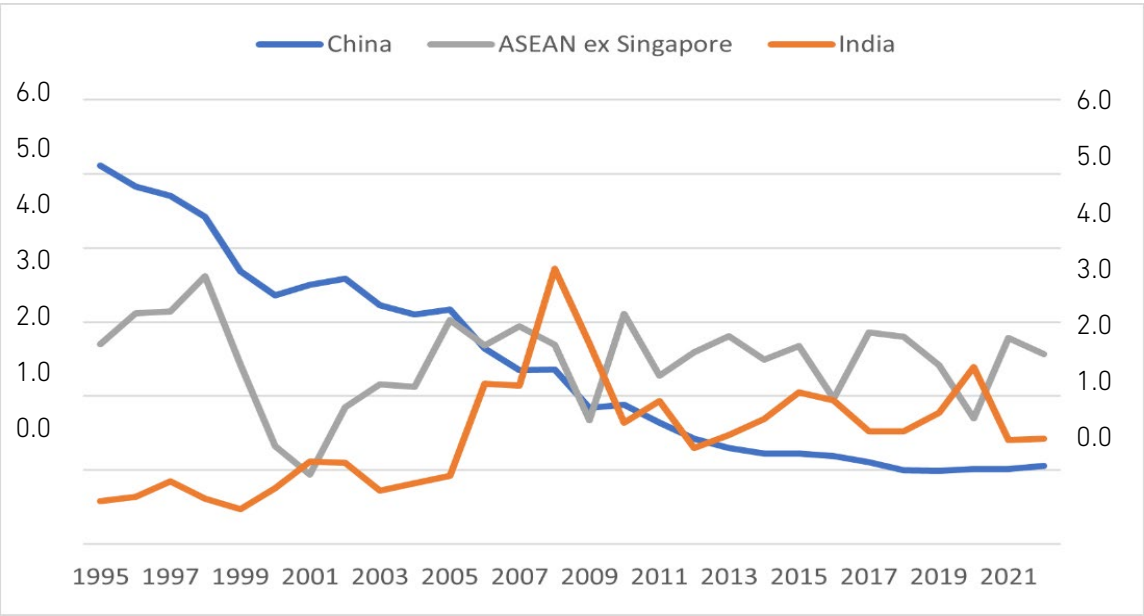
Figure 1.18: Foreign Direct Investment by Industry
(US$ billion, 2020–2022 average)



ASEAN = Association of Southeast Asian Nations.
Sources: ASEAN and UNCTAD (2023); and Department for Promotion of Industry and Internal Trade, India (2024).

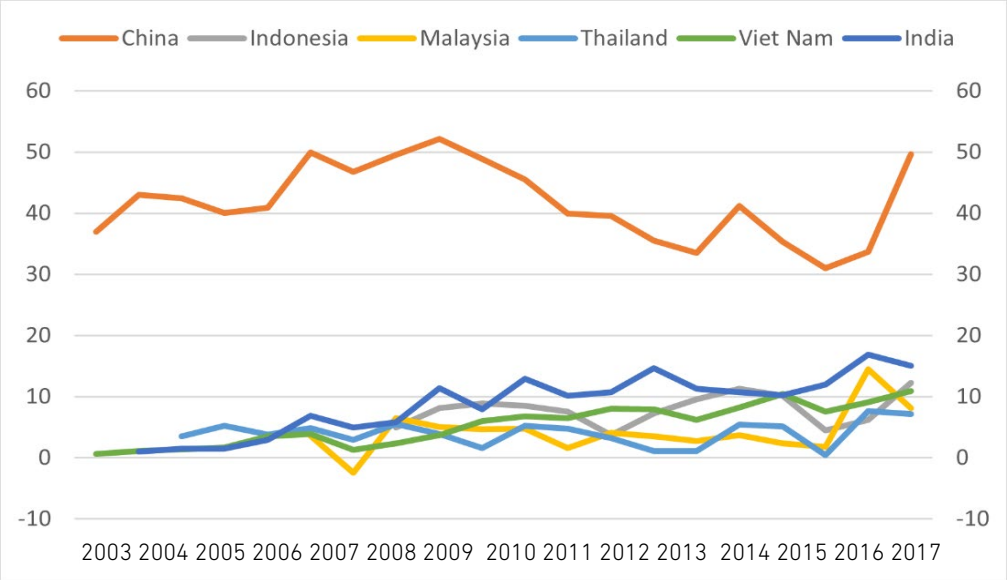
Although India receives higher inflows in absolute value compared with individual AMS, together AMS outnumber India by more than twice (Figures 1.19 and 1.20).

Figure 1.19: Foreign Direct Investment Inflows Comparison
(% of GDP)



ASEAN = Association of Southeast Asian Nations, GDP = gross domestic product.
Source: UNCTAD (2023)
https://unctadstat.unctad.org/datacentre/dataviewer/US.FdiFlowsStock. (accessed 4 July 2024).

Figure 1.20: Manufacturing Foreign Direct Investment Inflows
(US$ billion)



Source: CEIC (n.d.), https://www.ceicdata.com/en (accessed 23 July 2024).

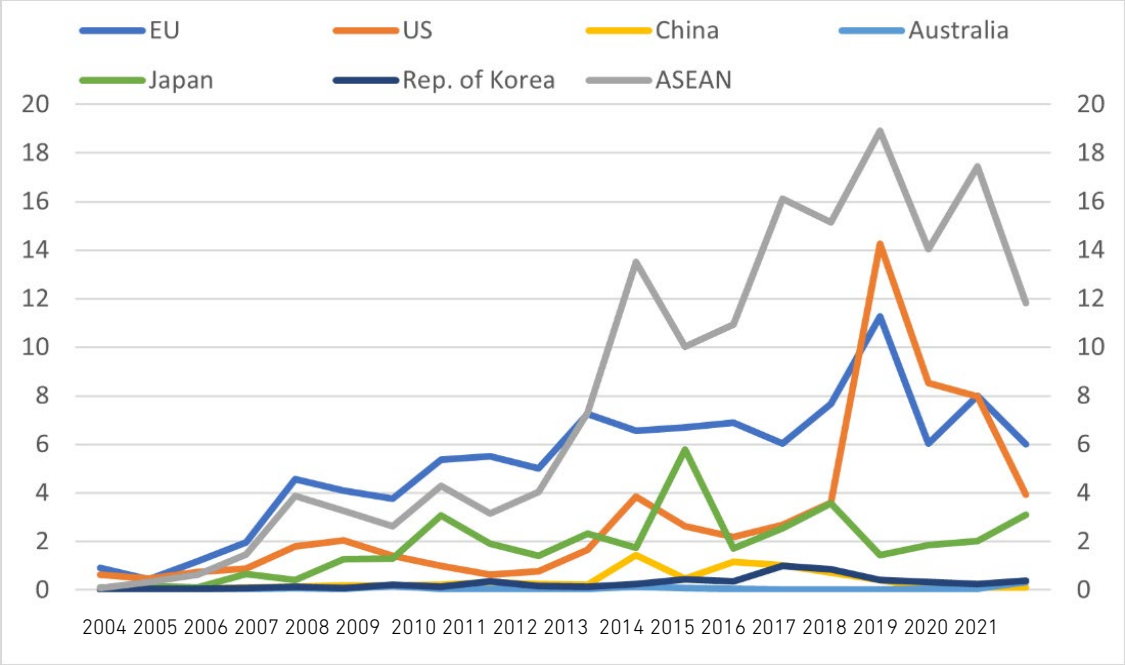
AMS have been receiving more FDI than India, especially from East Asian countries like China, Japan, and Korea (Table 1.1). In contrast, India's FDI mainly comes from ASEAN, the EU, and increasingly the US (Figure 1.21).

Table 1.1: ASEAN's Foreign Direct Investment Inflows by Source, 2022
(US$ million)

Country/Region	Value (million US$)	Share (%)
ASEAN	449,834.5	22.9
United States	290,964.5	14.8
China	290,766.5	14.8
EU 27	176,377.9	9.0
Japan	133,310.9	6.8
Hong Kong	114,689.7	5.8
Korea, Rep. of	80,883.2	4.1
India	70,619.0	3.6
Taiwan	58,836.4	3.0
Australia	51,989.0	2.6
Top 10 Country/Region	1,718.271.5	87.6
Others	243,864.6	12.4
Total	1,962,136	100

ASEAN = Association of Southeast Asian Nations, EU = European Union.
Note: Totals may not be exact due to rounding.
Source: ASEANstats (2023), Flows of Inward Foreign Direct Investment (FDI) into ASEAN by Source Country. https://data.aseanstats.org/fdi-by-hosts-and-sources (accessed 17 July 2024).

Figure 1.21: India's Foreign Direct Investment Inflows by Source
(US$ billion)



ASEAN = Association of Southeast Asian Nations, EU = European Union, US = United States.
Source: Department for Promotion of Industry and Internal Trade, India (2024).

India's Growing GVC Participation: Creating Momentum for Japanese Investments in India

India has built considerable comparative advantage since 2009 and excelled in a few sectors. It currently ranks ninth for the whole manufacturing sector in terms of value added to GVCs and has an enviable seventh rank for services. The ninth rank for all industries is calculated after excluding intra-EU trade. Table 1.2 summarises the details by industry. India's manufacturing value added outweighs services, but increasing the share and global rank will require transforming the demographic advantage in manufacturing through professional training, investments, and scaling up high-skill manufacturing.

Table 1.2: India's Export Value Added

Industry	Value added (US$ million)	Share of global value added (%)	Rank
Total	**88,002**	**3.1**	**9**
Manufacturing (Total)	**47,233**	**2.4**	**11**
Food products, beverages, and tobacco	2,983	3.0	9
Textiles, wearing apparel, leather, and related products	3,977	4.1	8
Wood and paper products and printing	994	2.8	9
Coke and refined petroleum products	1,989	1.2	18
Chemical and chemical products	5,469	3.4	9
Pharmaceuticals, medicinal chemical, & botanical products	1,989	3.2	8
Rubber and plastics products	1,989	3.1	9
Other non-metallic mineral products	497	2.2	12
Basic metals	3,480	2.3	12
Fabricated metal products	1,492	2.6	11
Computer, electronic, and optical products	6,463	1.6	15
Electrical equipment	2,486	2.3	11
Machinery and equipment n.e.c.	3,977	2.8	12
Motor vehicles, trailers, and semi-trailers	5,966	2.7	9
Other transport equipment	1,492	2.2	14
Business Sector Services (Total)	**34,803**	**4.7**	**7**
Wholesale and retail trade; repair of motor vehicles	6,961	3.9	8
Transportation and storage	7,955	3.9	8
Accommodation and food service activities	497	3.6	9
Information and communication	9,944	7.0	6
Financial and insurance activities	4,475	4.3	8
Professional, scientific, and technical activities	2,983	4.8	7
Administrative and support services activities	1,492	4.3	7

Source: OECD (2023), Trade in Value Added (TiVA) database https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html (accessed 1–4 July 2024).

Table 1.2 brings a positive impetus for both Japan and ASEAN to increase their FDI in India. This could be accompanied by increased policy negotiations on tariffs and non-tariff measures that slow down India's competitiveness and attractiveness as an investment destination.

India has been growing, and re-accelerated in recent years in exporting car parts (Harmonised System (HS) code 87), machinery (HS code 84), electrical and electronic

parts and components (HS code 85), and transport equipment other than cars (HS code 88) since the early 2000s. It is important for India to gain traction in these products since they require higher production technology and thus carry higher value added compared with labour-intensive goods. During the rise of these industries in India, overseas demand from ASEAN helped significantly as India shipped as much as 25% of total orders for these products to ASEAN. This remarkable growth in exports of goods from HS code 84 to 90 has seen an overall drop in exports to ASEAN since 2014. The growth in exports to Japan has increased marginally year on year. The scope for an increase in investment in production and supply chains therefore remain immense.

Meanwhile, ICT services remain India's most valuable sector in service exports, and its contribution of 7% of global value added in ICT is only lower than that of China (11%) amongst all emerging markets. Transportation and storage, wholesale and retail trading, and financial and professional services are also gaining traction thanks to the push of an uptick in FDI inflows. Therefore, increased attention to the services component of trade will be important for the review of India–Japan investments.

Making India–Japan–ASEAN Supply Chains Fit for the Production of Goods of the Future

'Green and digital trade' is an emerging area of concern for all trading nations, as evidenced by the increasing inclusion of chapters and provisions dealing with these areas in free trade agreements, as well as their incorporation in work by the major multilateral agencies concerned with trade, e.g. through a concern with the links between trade and climate change, or the implications of digital transformation for trade and development.

Against this background, the role of green and digital trade in the India–Japan supply chains and investment is very important, making this partnership facilitate the supply chain linkages and increased trade in environmentally friendly products, as well as digital products that promote foreseeable structural changes in the regional and global economy. Producing green and digital goods and promoting critical mineral supply chains between India and Japan, with other partners such as ASEAN and Australia, which are important upstream and downstream contributors, must be embodied in the plans.

How does the India–Japan bilateral trade feature green and digital goods, and the supply chain of components for manufacturing such goods? What sorts of policy changes could facilitate future growth in trade? These questions will need to be addressed if the India–Japan supply chain and investment plan is made fit for future trade.

Identifying Select Goods to Establish ASEAN–India Trade in Goods of the Future

Green and digital goods are not a recognised part of any product or industry classification used in international settings. As countries and international organisations have come to recognise the importance of policy in these areas, they have developed ad hoc rosters of goods that fall into different categories relating to the overall green and digital classification, using existing HS code classification systems. Since countries are

frequently unable to agree on which goods should be included in particular classifications, we can select a few clusters of green and digital goods from the HS standard structure (at the 6-digit level) as these represent important parts of green and digital supply chains and are regarded as economically and strategically important for the manufacturing of green and digital products.

The first cluster is low-carbon technology goods, which are a key part of the global fight against climate change. Trade in low-carbon goods is particularly important because their development has been led by high-income countries, but there is an urgent need for diffusion to low- and middle-income countries in the context of the Paris Agreement and the global commitment to achieve net zero carbon dioxide emissions by 2050. Research by Pigato et al. (2020) identified a list of low-carbon technology products using the 2017 revision of the HS, and this list is maintained by the International Monetary Fund (IMF, 2017a).

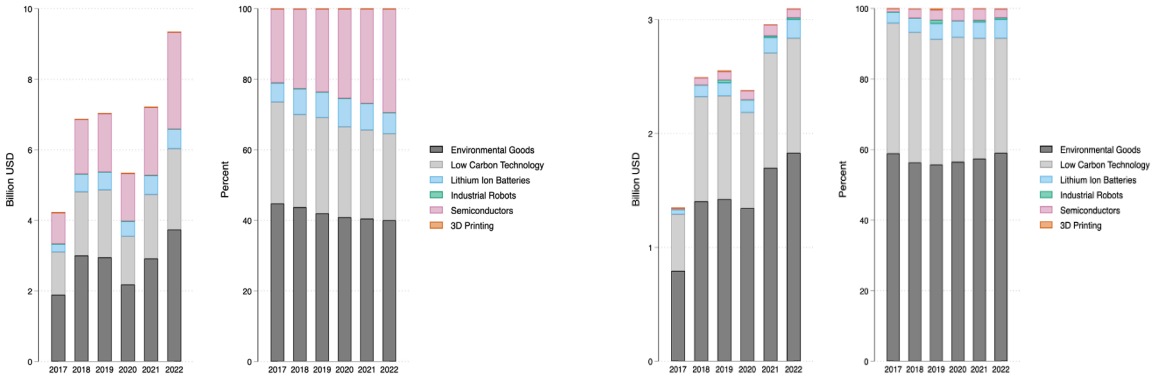
The second cluster is environmental goods. This group refers to products that have significant potential to improve environmental conditions in a variety of ways. The IMF has produced a list of environmental goods using the 2017 revision of the HS (IMF, 2017b).

The third cluster is the lithium-ion battery supply chain. The rationale for choosing this cluster is that lithium-ion batteries are crucial to many green applications, including electric vehicles and renewable energy storage. Based on research by McMahon (2022), which identified a list of goods from the 2017 revision of the HS that relate to this supply chain, the US Government adopted this list in full. This cluster is also important for the strategic partnership between ASEAN and India in the larger context of cooperation for resilient and diversified GVCs in the Indo-Pacific region.

Amongst digital goods, there is benefit in focusing on emerging and new technologies, as well as goods that are important for supply chains. Instead of analysing trade data for personal computers or smartphones, three aspects of digital trade that are of emerging importance and have been identified by countries as strategically important are analysed below: equipment used for 3D printing (HS 2017 code 847790), semiconductors (HS 2017 codes 8541 and 8542), and industrial robots (HS 2017 code 847950). Whereas the first three clusters of green goods required extensive combing of the HS to identify relevant products, these industrial products or digital goods are much better catalogued in the standard nomenclature and can be identified using a small number of product codes. All are important in emerging digital supply chains.

Figure 1.22: Exports of Selected Green and Digital Goods, 2017–2022
(US$ billion, % of total trade)

ASEAN to India | India to ASEAN



ASEAN = Association of Southeast Asian Nations.
Source: UN Comtrade, accessed via World Bank (n.d.), World Integrated Trade Solution. https://wits.worldbank.org/ (accessed 1 April 2024).

There are intensive inter-industry exchanges between India and ASEAN in the green and digital space, which is consistent with trade complementarities between the two, as evident from trade in semiconductors and lithium-ion batteries, which are important inputs into some environmental goods (Figure 1.22). ASEAN's exports to India in green and digital products have generally been increasing over time, reaching nearly US$10 billion in aggregate in 2022 from just over US$4 billion in 2017. Over time, ASEAN's exports are becoming more oriented towards semiconductors, and to some extent lithium-ion batteries; the role of environmental goods and low-carbon technology is not declining in absolute terms but is a smaller share of total ASEAN exports to India in green and digital products in 2022 relative to 2017. India's exports to ASEAN have surged too, albeit from a lower baseline than ASEAN, to over US$3 billion in 2022. India's exports have grown mainly in environmental goods and low-carbon technology, although lithium-ion batteries, and to a lesser extent semiconductors, have also seen growth. In the absence of distortionary policies, this pattern of trade would be consistent with different patterns of comparative advantage in the two regions, whether due to resource endowments or technology, or some combination of these and other micro-level factors. Two-way trade in similar but differentiated products is relatively limited in terms of the overall flows between ASEAN and India, which is reflective of distinct patterns of specialisation and broader economic factors in the bilateral trade relationship.

India has major investment needs in renewable energy and is developing the capacity to be an important player in that sector in the region and potentially beyond. India, Japan, and ASEAN must initiate more collaboration in this area, which has important synergies with the development of regional manufacturing capacity in lithium-ion batteries, electric vehicles, semiconductors, and other goods pertaining to the digital and green economy.

There is more policy activity in environmental goods than in semiconductors, which is perhaps partly a factor of the larger number of individual HS products involved. ASEAN maintains, in general but subject to exceptions, a relatively open trade regime for environmental goods and semiconductors, as was the conclusion from the analysis of tariffs. In India, the number of newly implemented policy measures for environmental goods is much higher than in ASEAN. Compared with ASEAN, the balance is far more towards restriction than liberalisation in India, which is using new tariffs and non-tariff measures to limit access to its market for environmental goods, usually with the objective of boosting reliance on domestic production.

India lags its more prolific and highly competitive neighbour ASEAN in the manufacturing sectors for two main reasons. The first is on the geostrategic front. In the rapid globalisation process which centred around China, ASEAN is better positioned than India given the cost advantage in transportation and raw materials. FDI from China, Japan, and Korea built up the manufacturing supply chains in ASEAN, especially in Malaysia and Viet Nam. Another factor lies in India's underdeveloped inland transportation and power infrastructure, which is key to manufacturing supply chains. However, India has prioritised the building of infrastructure in its landmark PM Gati Shakti National Master Plan, aiming for connectivity amongst all economic zones.

India is expected to continue its rise in the GVCs, with its promising demography and the global de-risking strategies regarding China. To use these opportunities, India will need to relax its tariffs and non-tariff measures further (to assess if the domestic producers of intermediate goods can still compete with producers outside India) and push forward more trade and investment deals to attract more FDI inflow to improve its domestic manufacturing industries.

ASEAN's huge dependency on Chinese inputs in ASEAN's exports has supported the competitiveness of its exports. However, the current turnaround in trade policies in large developed markets like the US and the EU, which favour diversified and resilient supply chains, and the emergence of new production centres in India, South Asia, West Asia, and Africa, may be a new opportunity for ASEAN to diversify its trade linkages. This may be especially important in the emergent digital and green economy, where the technology and supply chains of environmental and digital goods will be closely monitored by ASEAN's important trading partners.

For India, given its low backward participation, both with ASEAN and the rest of the world, it reduces India's dependence on the rest of the world and increases self-reliance while promoting domestic companies. But it increases the costs of intermediated goods into domestic products (as it is mostly a consequence of high tariffs on imports and other trade-related barriers to imports). For a sustainable future of manufacturing in India and for increased exports, import tariffs will need to be reduced to assess if the domestic producers of intermediate goods can still compete with producers outside India. This is the point where Japan's GVC integration with India will grow.

The key to deeper GVC integration and better quality of trade will lie in more bilateral FDI between India and Japan. Finding complementarities in manufacturing and the digital economy, including capacity enhancement, is the way forward for India and Japan to deepen their economic relations.

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