

What does India's Participation in Global Value Chain Reveal?: Exploring the Facts for Macro Analysis

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Abstract

The paper attempts to understand the India's participation in Global Value Chain (GVC) in leading exporting industries/sectors for the period of 1990 -2018. With the help of input output database and Trade in Value Added database, the study finds out forward and backward linkages in global value chain in selected industries/products of India with selected countries namely China, Indonesia, and South Korea. The study also estimates of inter-country input output table which analyses the decomposition of gross exports of India at the aggregate Level. The present study also estimates and analyzes the import content (forward linkages) in Indian exports of Electrical and Machinery industry being the highest shares in value addition in gross exports using the Hummel et al. (2001) approach. The study suggests that domestic production should be promoted to increase India's participation in GVC as it will increase forward linkages in the domestic value chain. Because of the poor infrastructure, India is still in the downstream segment of GVC participation. Consequently, the study recommends to improve the trade infrastructure of the nation by attracting more investment.

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1. Introduction

Global Value Chain (GVC) is more prominent in the integration of services and goods at world level. It has increased the interconnectedness of economies and led to a growing specialization in specific activities and stages in value chains, rather than in entire industries. GVC provides an avenue through which countries can industrialize from a much earlier stage of development; producing firms choose to offshore fragments of the production value chain to countries where labor is cheaper or where other locational advantages confer a competitive cost advantage on the whole GVC. GVC is especially important for low-income countries where most of the firms are SMEs and they improve their capabilities. GVC encourages the upward movement by rewarding skills, learning, and innovation (Cusolito et al 2016). According to UNCTAD Report, 2013 Global Value Chain has a significant contribution to international development. It contributes value-added trade about 30% to the gross domestic product of developing countries and significantly more than it does in developed countries (18%). In developing countries, GVC is an important way to build their productive capacities which include technology dissemination and skill building. Keeping in view of its significance, the present paper is an attempt to study the growth and performance of Global value chain for the period of 1990-2018.

In this paper, the study also attempts to understand where India stands in the global value chain with respect to the particular industry i.e. electrical and machinery industry. After nearly two decades of trade liberalization and favourable foreign direct investment (FDI) policies, the gap in the country's electronics hardware demand and its domestic production capabilities has only been widening (Francis 2016). The electronics industry is one of the largest contributors to India's merchandise imports, second only to petroleum and petroleum products (Saripalle 2015). The motivation behind choosing the electrical and machinery industry is recognizing its importance in technologically intensive sector, the Indian government has identified it as one of the champion sectors under the Make-in-India program. In the era of splintered production process, it is important for a country to not only be part of global value chain which enables a country to benefit from the spillover effect but upgrade and move to higher value adding activities to achieve sustained economic growth and development. Currently, India is heavily import dependent in this particular sector and existing literature states the reason for this is the signing of Information

Technology Agreement (ITA-I) in 1995 where India committed to the removal of all custom duties by 2005 (Dash & Chanda, 2017).

The study is focused on the following objectives:

- I. To study growth and performance of India's Global Value Chain for the period of 1990 to 2018
- II. To analyze the India 's Inter Country Input Output (ICIO) table for understanding the content of domestic and foreign value added overall and particularly Electrical and Machinery industry
- III. To examine the overall India's GVC forward and backward participation index and particularly Electrical and Machinery industry

1.2. Review of Literature

There is not a vast literature on the current theme of the study . But still an attempt has been made to understand the role of GVC in Asia.**Banga (2016)** has also investigated the impact of Global Value Chain on employment in India. The study evaluates that how increasing Foreign Value Added in output through Foreign Value Added in exports to backward linkages and Domestic Value Added in exports of intermediate goods affects the employment growth by forwarding linkages. The study covers three sectors manufacturing, services, and agricultural sectors and applies the methodology of fixed effects of the generalized method of moments during 1995-2011. The study examines how is the impact on employment growth in the industry-level of participation in Global Value Chain. The result shows that higher backward linkages have negatively influenced the employment growth. But higher forward linkages did not have any statistically significant impact on employment. The study concludes that higher backward linkages displacing domestic labor and higher forward linkages are not able to boost employment as well as the net effect of Global Value Chains participation on employment growth in Indian.**Kiyota et al., (2017)** explored the competitiveness of global value chain in the Asian countries. The study examines the competitiveness of industries in six Asian countries China, India, Indonesia, Japan, South Korea, and Taiwan. The study has used the methodology of World Input-Output Database tables from 1995 to 2011. The study measured competitiveness by the value-added industries contribution to

the production of final goods, which they refer to as global value chain income, rather than by gross exports. They find that GVC income in Asian countries presents a different picture in European countries. **Koponen (2012)** has examined to better precisely the creation and distribution of value in the level of an individual product of global value chain in the machinery industry. The study defines both organizational as the geographical distribution of value chain. The methodology aimed at gathering data for accurate comparisons different product sizes locations of production as well as regions of sales. The study finds that provides a great value distribution in the machinery industry through the global value chain, which has introduced the product, production, sales of different scenarios. The study suggests that the global economies of companies are becoming complex in the different webs and networks. **Wang et al. (2016)** highlighted the characterizes of the global value chain. The study analyzes the extent of both outsourcing and offshoring varies by sectors and countries. The study has developed a set of country sector level measures of global value chains regarding average production length, the intensity of participation and relative upstream positions on a production network. The study found that distinguish production activities are inside a country and cross borders once or multiple times. The study uses measures of characterized cross-country production shared patterns and evolutions for 35 sectors and 40 countries over 17 years. The study analyzes interest variations in the length, participation, and positions across different country-sectors of the production chain for the world. The study result shows a better understanding of the contribution to the character of various global value chains and patterns of participation by individual

1.3. Methodology

This paper is entirely based on secondary data analysis. Secondary data on trade in value added is available for India with China, Indonesia and South Korea, it studies the overall and bilateral trends and patterns in trade which gives the information on trade in value added. This paper has used euro database and WIOD, TIVA data source. In this paper, the input-output model has been used, which was developed by Leontief (1951). The study has tried to bridge the current divergence between input-output and value distribution approaches to Global Value Chain analysis. The study has also represented the backward and forward linkages of interrelating countries on the behalf on the basis of input-output econometric analysis. The study has evaluated out of vertical specialization of international trade domestic and foreign contents in a country's gross exports, the development of

value-chain in a global production network. The study has basically measured from the OECD inter-country input-output (ICIO) database (TIVA, 2016). The analysis has been carried at aggregate level. The study has used the following selected indicators of the world ICIO table.

Table 1 :List of Indicators (Decomposition of Gross Exports)

	Gross Exports(Goods and Services)	E*	E*(1+9)
1.	DV in direct final goods exports	DVA_FIN	DVA
2.	DV in intermediates exports absorbed by direct importers	DVA_INT	
3.	DV in intermediates re-exported	DVA_INTrex	
4.	DV in intermediates that returns via final imports	RDV_G	RDV
5.	DV in intermediates that returns via intermediate imports	RDV_G	
6.	Double counted intermediate exports produced at home	DDC	PDC
7.	FV in final goods exports	FVA_FIN	FVA
8.	FV in intermediate goods exports	FVA_INT	
9.	Double counted intermediate exports produced abroad	FDC	
10.	DV in intermediates re-exported		FL
11.	Global Value Chain(GVC)		FVA+FL
12.	Vertical Specialization	VS	VS*(5+6+7+8)

Source:Koopman et al., 2014

GVC participation index can be computed by the sum of forward and backward linkages, If the forward linkages are larger than backward linkages, it implies that the country is positioned upstream in the global value chain and provides raw material or intermediate goods to downstream countries. If forward linkage is less than backward linkage, this implies that the country is positioned downstream in the global value chain while using intermediate inputs from upstream countries

The study relies on the methodology of Hummels et al. (2001) to calculate vertical specialization index for determining the amount of international trade that is due to global production chains. Vertical specialisation is measured by, “ the foreign content of countries’ exports, i.e. the share of imported inputs in domestic production that is later exported to other countries, either as a final product or as a good-in-process”. (Hummels et al. , 2001)

1.4. Evolution of GVCs

According to UNCTAD-Eora Global Value Chain Database, “GVCs are coordinated by multinational enterprises (MNEs) investing in productive assets worldwide and trading inputs and outputs intra-firm, at arm’s length or through their network of non-equity mode (NEM) partners.” According to OECD(TIVA),”where the different stages of the international trade, production and investment process are increasingly organized and located across different countries, so-called global value chain.”Table 2 illustrates India’s performance of Global Value Chain for the period of 1990-2018. World Global Value Chain has increased US \$3662.15 million to US \$ 21269.31million and its percentage share has increased from 1.10% to 6.39% during 1990 to 2018. On the other side, India’s Global Value Chain has increased US \$ 22.43 million to US \$ 412.32 million while its percentage share increased from 0.48% to 8.75% during 1990 to 2018.

Table.1: India’s Performance in Global Value Chain (1990-2018)

Year	World GVC(US\$ Million)	%Share	India GVC(US\$Million)	%Share
1991	3662.15	1.10	22.43	0.48
1995	5344.72	1.61	38.46	0.82
2000	6446.61	1.94	59.47	1.26
2001	6370.91	1.92	59.82	1.27
2005	10712.49	3.22	125.77	2.67
2010	17593.75	5.29	282.51	5.99
2011	19477.23	5.85	317.29	6.73
2015	19276.86	5.79	333.20	7.07
2016	19701.42	5.92	363.87	7.72
2017	20503.36	6.16	385.94	8.19
2018	21269.31	6.39	412.32	8.75
Total 1991-2018	332678.00	4.11*	4712.85	4.63*

Source:UNCTAD-Eora Global Value Chain Database, 2019.

*Average

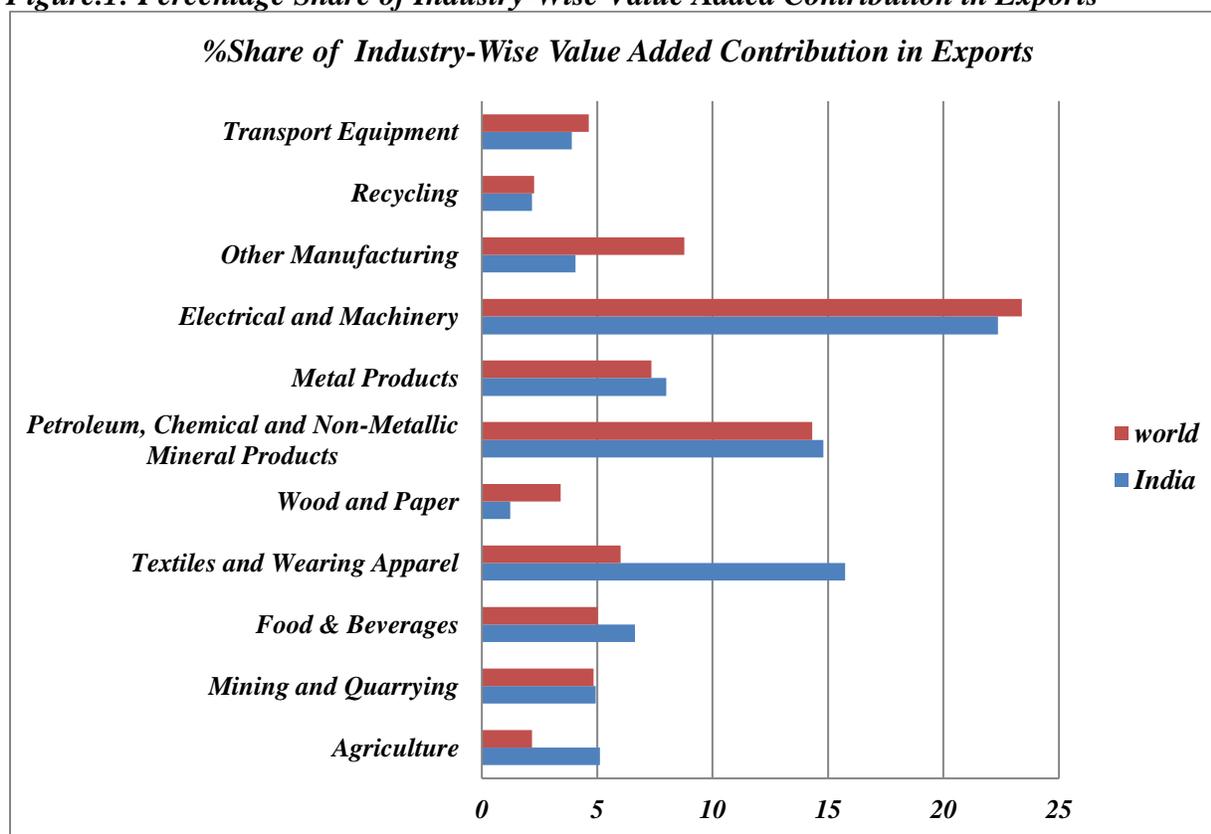
Table 3 shows for World and India's Top Lead total Export Industries in value addition during from the period 1990-2015. The industries include Agriculture, Mining and Quarrying, Food & Beverages, Textiles and Wearing Apparel, Wood and Paper, Petroleum, Chemical and Non-Metallic Mineral Products, Metal Products, Electrical and Machinery, Transport Equipment, Other Manufacturing, Recycling . In the Electrical and Machinery, World Export has the highest share in value added contribution in exports of India i.e. 23.40% and India has also the highest share i.e. 22.36% in the same industry during 1990 to 2015.

Table.3: Industry-Wise Value Added Contribution in Exports of India and world(1990-2015)

S.No	Industries	Total World (US\$Million)	%	Indian Value (US\$Million)	%
1.	Agriculture	7277.11	2.17	256.76	5.11
2.	Mining and Quarrying	16281.38	4.85	248.48	4.94
3.	Food & Beverages	16879.40	5.03	333.53	6.63
4.	Textiles and Wearing Apparel	20205.10	6.02	791.01	15.74
5.	Wood and Paper	11481.53	3.42	61.91	1.23
6.	Petroleum, Chemical and Non-Metallic Mineral Products	48062.05	14.32	1124.04	14.80
7.	Metal Products	24678.31	7.35	401.78	7.99
8.	Electrical and Machinery	78548.44	23.40	744.17	22.36
9.	Transport Equipment	29466.00	8.78	195.91	3.90
10.	Other Manufacturing	7584.44	2.26	203.60	4.05
11.	Recycling	1031.06	0.31	109.15	2.17
	Total Industries			5026.83	

Source: UNCTAD-Eora Global Value Chain Database, 2019.

Figure.1: Percentage Share of Industry-Wise Value Added Contribution in Exports



Source: Authors' Calculation from Eora database, 2019.

2. Measurement of Global Value Chain Indicators

The study focuses on macro-economic approach to analyze various global value chain indicators.

2.1. India's Decomposition of Gross Exports

The gross exports¹ of India at aggregate level is decomposed using Koopman et al., (2014) for the period 2000 to 2014 (as presented in Table 4). Tracing the value added suggests the following,

¹Gross Exports(E*),DVA is a DV in direct final goods exports DVA_FIN +DV in intermediates exports absorbed by direct importers DVA_INT +DV in intermediates exports absorbed by direct importers DVA_INTrex, RDV is DV in intermediates that returns via final imports RDV_G+ DV in intermediates that returns via intermediate imports RDV_G,PDC=Double counted intermediate exports produced at home, FDC=Double counted intermediate exports produced abroad,FVA is a FV in final goods exports+ FV in intermediate goods exports, FL=DV in intermediates re-exported.

first, though an overall increase in gross exports is observed, the study notices falling domestic value added (DVA) from 90 per cent in 2000 to 78 per cent in 2014 while foreign value added (FVA) increased from 10 per cent in 2000 to 21 per cent in 2014 (Figure 2). In other words, on an average over the period 2000 to 2014, Indian gross exports comprise of 80 per cent of domestic content and 21 per cent of foreign content. The remaining 0.42 per cent of gross exports is due to domestic intermediate exports that finally return home (4.82 per cent) and pure double counted intermediate exports produced at home (0.11 per cent).

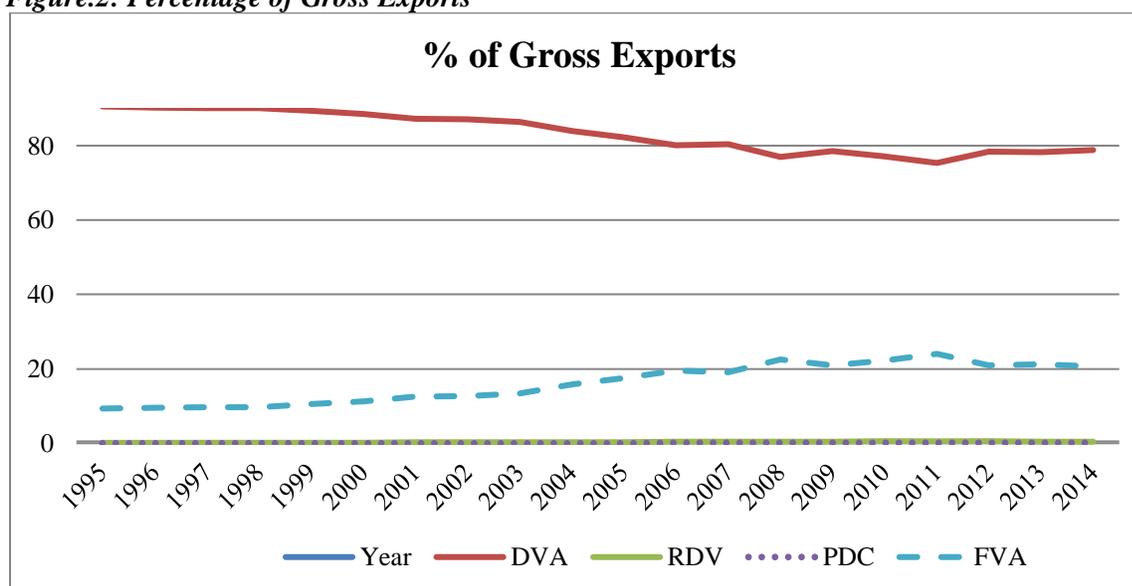
Table.4 : Decomposing India's Gross Exports (%) at aggregate level

Year	DVA	RDV	PDC	FDC	FVA	FL	GVC=FVA+FL
1995	90.54	0.11	0.01	1.31	9.33	6.29	15.62
1996	90.28	0.11	0.01	1.42	9.6	6.38	15.98
1997	90.13	0.14	0.01	1.5	9.71	6.74	16.45
1998	90.15	0.16	0.01	1.55	9.69	7.28	16.97
1999	89.34	0.18	0.02	1.81	10.47	7.66	18.13
2000	88.55	0.16	0.02	2.14	11.27	8.01	19.28
2001	87.29	0.2	0.02	2.43	12.49	7.95	20.44
2002	87.1	0.2	0.02	2.37	12.68	7.8	20.48
2003	86.43	0.22	0.03	2.58	13.33	7.96	21.29
2004	83.93	0.28	0.04	3.22	15.74	8.18	23.92
2005	82.18	0.33	0.05	3.57	17.45	7.91	25.36
2006	80.1	0.35	0.06	4.2	19.49	7.8	27.29
2007	80.45	0.4	0.07	4.25	19.08	7.99	27.07
2008	76.99	0.4	0.08	4.98	22.53	7.47	30.0
2009	78.58	0.43	0.08	4.13	20.91	6.99	27.9
2010	77.16	0.49	0.1	4.71	22.24	7.26	29.5
2011	75.35	0.52	0.1	5.29	24.03	7.3	31.33
2012	78.42	0.51	0.11	5.11	20.95	6.77	27.72
2013	78.26	0.45	0.12	5.34	21.17	6.9	28.07
2014	78.87	0.42	0.11	4.82	20.61	6.75	27.36
Average	83.51	0.30	0.05	3.34	16.14	7.37	23.51

Source: Authors' calculation using TIVA and WIOD database.

Note: DVA is the domestic value added; FVA is the foreign value added or backward linkage in global value chains (GVCs); RDV is the domestic value of intermediate exports that finally return home. PDC is the pure double counted intermediate exports produced at home. FL is the forward linkage in GVCs. All the values are as a percentage of gross exports.

Figure.2: Percentage of Gross Exports



Source: Authors' calculation using TIVA and WIOD database.

The table 5 represents global value chain participation index²of India using the forward and backward linkages extracted from gross exports. The linkages (both forward and backward) and GVC participation as a share of gross exports are presented in Table 5 . The trends indicate the increased GVC participation of India over the period 1995 to 2014 , with minor increasing forward linkages from 6.29per cent to 6.75per cent and sufficient increasing backward linkage from 9.33 per cent to 20.6 per cent (Figure 3). The backward linkages are greater than the forward indicate that India is on the downstream part of the value chain or a supplier of intermediate inputs. The indicators also suggest that on an average about 27.36 per cent of gross exports are sustained due to participation in GVCs of which 6.75 per cent is due to forward linkage and 20.61 per cent is due to backward linkages.

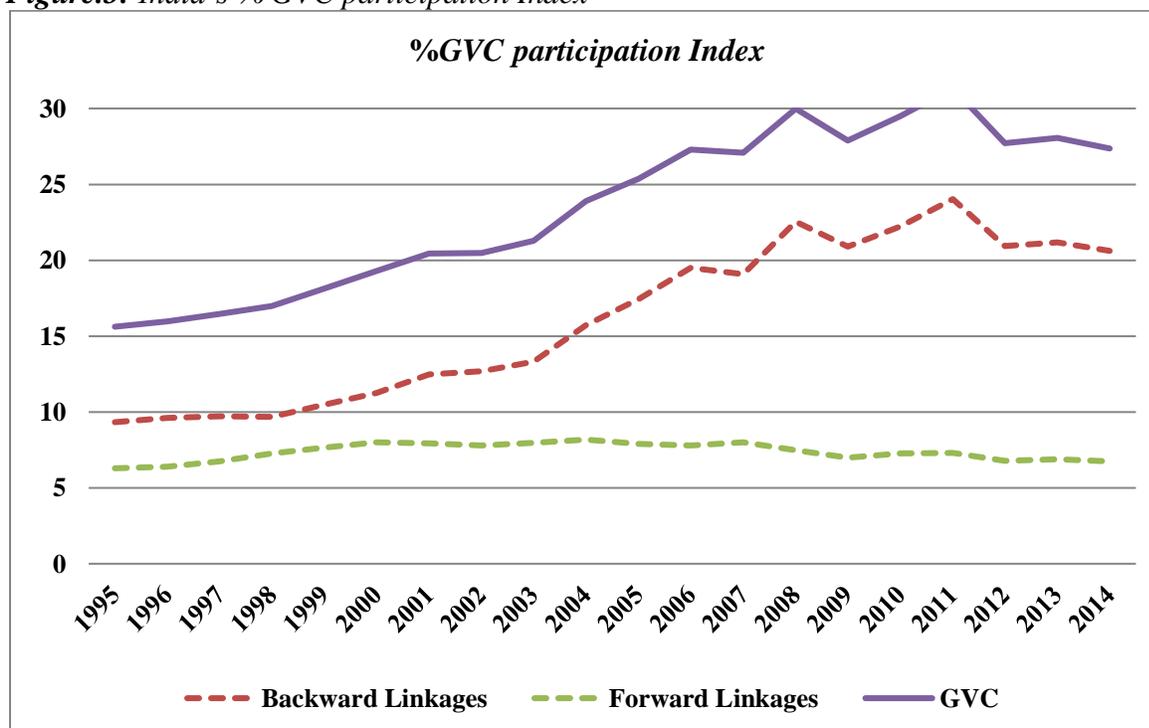
²**Forward participation index** shows the share of exported goods and services used as imported inputs in producing the importing country's exports. **Backward participation index** measures the value of imported inputs in the overall exports of a country for the particular industry.

Table.5: India's Backward and Forward Linkages (1995 to 2014)

Year	Backward Linkages	Forward Linkages	GVC
1995	9.33	6.29	15.62
2000	11.27	8.01	19.28
2001	12.49	7.95	20.44
2005	17.45	7.91	25.36
2006	19.49	7.8	27.29
2010	22.24	7.26	29.5
2011	24.03	7.3	31.33
2012	20.95	6.77	27.72
2013	21.17	6.9	28.07
2014	20.61	6.75	27.36

Source: TIVA and WIOD database

Figure.3: India's % GVC participation Index



Source: TIVA and WIOD database

The study mainly analysis on the bialetral decomposition of India's gross exports with Asian countries. Table 6 represents decomposing of India's gross exports with selected emerging Asian economies (%) i.e. China, Indonesia, and South Korea, during the period of 1995 to 2014. With the help of relevant variables namely domestic value added (DVA), foreign value added (FVA), double counted intermediate exports produced at home (DDC), double-counted intermediate exports originally produced abroad (FDC), the study tries to find out the performance of India with these economies.

The domestic value added share in gross exports of India with China has declined from 90.72% to 84.36% during 1995-2014. However, India's double counted intermediate exports share with China produced at home increased marginally. Alternatively, its foreign value added percentage share grew up from 5.83% to 12.51% and also double-counted intermediate exports originally produced abroad declined marginally from 3.41 % to 3.07% for the same period. On the other hand, India with Indonesia domestic value added i.e. 11 percent declined in the 1995 to 2014, but foreign value added has grown. India's domestic value added's percentage share in gross exports with Korea has declined from 87.96 percent to 67.24 percent for the same period. However, double counted intermediate exports' share has increased. On the other hand, its foreign value added percentage grew up from 9.1 percent to 17.49 percent and also double-counted intermediate exports originally produced abroad increased from 2.92 percent to 14.43 percent for the same period.

Table 6: Bilateral Decomposing of India's Gross Exports With Asian Economies (%)

		China	Indonesia	Korea
YEAR	Indicators	%	%	%
1995	DVA	90.72	89.26	87.96
	DDC	0.04	0.01	0.02
	FVA	5.83	9.48	9.1
	FDC	3.41	1.25	2.92
2000	DVA	90.48	84.5	85.63
	DDC	0.03	0.02	0.02
	FVA	5.98	11.51	10.33
	FDC	3.52	3.99	4.03
2005	DVA	86.95	83.37	74.32
	DDC	0.12	0.05	0.06
	FVA	7.46	13.7	16.82
	FDC	5.48	2.93	8.8
2010	DVA	84.12	78.2	67.62
	DDC	0.18	0.08	0.17
	FVA	10.21	19.36	18.46
	FDC	5.48	2.43	13.74
2014	DVA	84.36	78.2	67.94
	DDC	0.05	0.08	0.14
	FVA	12.51	19.36	17.49
	FDC	3.07	2.43	14.43

Source: Author compiled from WIOD and TIVA, 2019

Note: DVA is the domestic value added; FVA is the foreign value added, DDC is double counted intermediate exports produced at home. FDC is double-counted intermediate exports originally produced abroad. All the values are in percentage of gross exports.

The study looks at the decomposition of gross exports of India's Electrical and Machinery Industry Bilateral Sectoral Decomposition with selected countries China, Indonesia, and South Korea using Wang-Wei-Zhu decomposition (2018). The decomposition of the gross exports of this particular sector is provided for the various years: 1995, 2000, 2005, 2010 and 2014.

The Wang-Wei-Zhu decomposition method splits gross exports at bilateral level of a particular sector into four main categories i.e. "domestic value added which is finally absorbed by foreign countries (DVA) including both the direct importing country and other foreign countries, foreign value added used in the production of exports (FVA), return value added (RDV) is the portion of domestic value added which is initially exported but at the end returns home embedded in the imports from abroad and consumed domestically, and purely double counted terms (PDC) is the

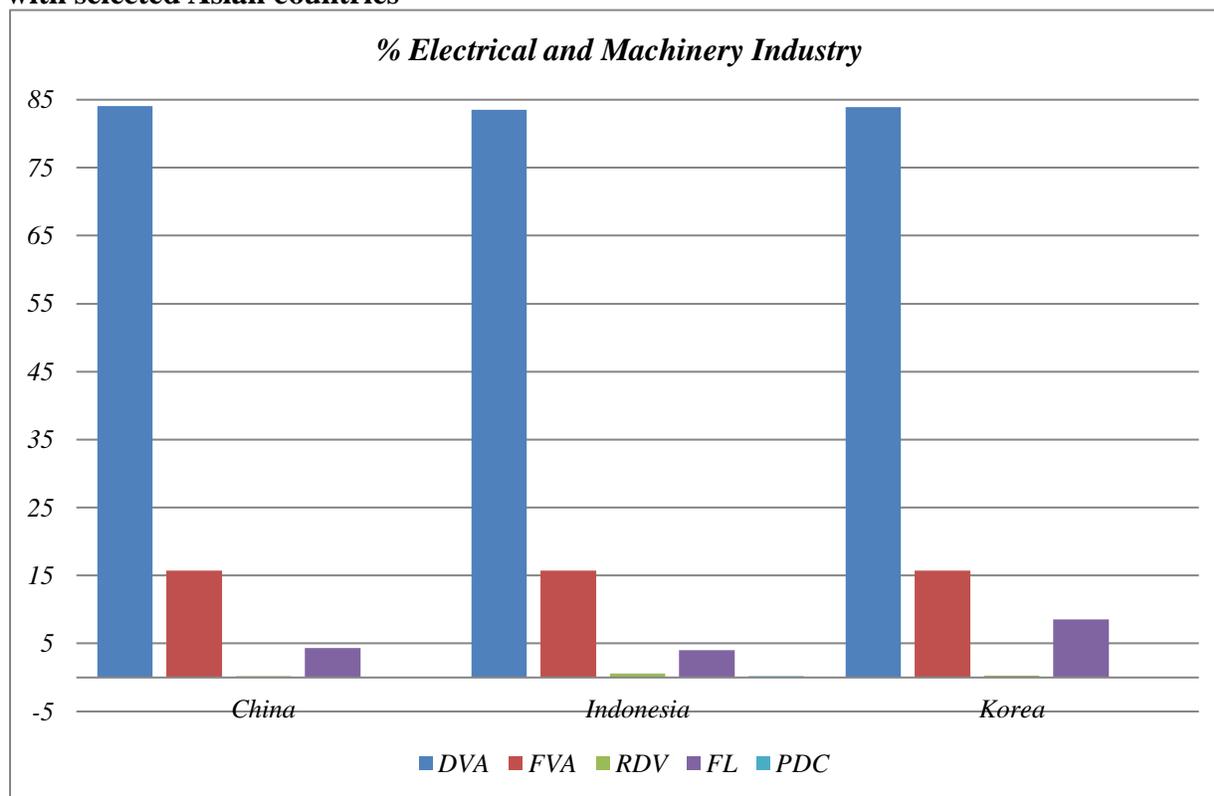
term that accounts for the back and forth intermediate goods trade”. (Wang-Wei-Zhu, 2018). These different components of gross exports provide valuable information regarding the cross-country production sharing processes. Table 7 represents the India’s Bilateral Decomposition with Asian Countries in Specific Electrical and Machinery Industry. India’s domestic value added (DVA) with China has the highest content i.e. 84.09 per cent followed by Korea (83.91 percent) and Indonesia (83.5 percent). But foreign value added (FVA) has a share of 16 per cent in all countries. Similar, Return Value Added (RDV) has a higher share in Indonesia (0.62%) Korea (0.29%) and China (0.17%) .On the other side, percentage in purely double counted (PDC) has a share of 0.17%, 0.06% and 0.03% in Indonesia, Korea and China respectively. Both domestic value added and foreign value-added components of gross exports follow the same direction. But Forward Linkages (FL)of India with Korea found the highest i.e 8.54 percent, while China and Indonesia has nearly 4 percent share in forward linkages. This may possibly be the result of Indian government’s National Electronic policy (2012) aiming for boosting domestic manufacturing and improving India’s global market share.

Table7: Indian Electrical and Machinery Industry’s Bilateral Sectoral Decomposition with selected Asian countries (average of 1995-2014)

Indicators	China	Indonesia	Korea
DVA	84.09	83.5	83.91
FVA	15.72	15.74	15.73
RDV	0.17	0.62	0.29
PDC	0.03	0.17	0.06
FL	4.31	4.02	8.54

Source: Author compiled from WIOD,2019

Figure.4: Indian Electrical and Machinery Industry’s Bilateral Sectoral Decomposition with selected Asian countries



Source: Author compiled from WIOD,2019

3. Vertical Specialization of Electrical and Machinery Industry

Vertical Specialisation(VS) is a summary statistic to measure international production sharing widely used in the literature (e.g., Hummels et al (2001) and Antras (2013)). However, as shown by the figure (below) of gross export decomposition, there are different components within VS³, and each has a distinct economic meaning and describes various types of cross-country production sharing arrangement. For instance, a high share of foreign value added in India’s final goods exports (FVA_FIN) may mean that India mainly involves in final assembling actions based on imported parts and participates in cross-country production distributing on the low end of a global value chain. While a growing foreign value added share in India’s intermediate exports (FVA_INT) might imply that India is improving its industry to start manufacturing intermediate goods for other countries, primarily when considerable of these goods are shipped to third

³Vertical Specialization (VS) Index proposed by Hummels, Ishii, and Yi (2001) provides a method of measuring vertical specialization. “It refers to imported goods that are used as inputs to produce a country’s export goods”.

countries for final goods production. The latter is an indication that the country is no longer at the bottom of the GVCs(Gereffi, 2013).Pure double counting terms in a country's exports (PDC) can only occur when there is back and forth trade of intermediate products. An increasing weight of PDC share in VS indicates the deepening of cross-country production sharing. Intermediate goods have to cross national borders multiple times before they are applied in final goods production. Hence, understanding the relative significance of these parts and their dynamic course over time in a country's total VS can help us to assess the extent and pattern of cross-country production sharing and discover the significant drivers of the general increase of VS in a country's gross exports during the last two decades(Wang,et.al. 2014). As shown in Table 8, the gross exports of India's Electrical and Machinery Equipments (TIVA sector 27) has increased from US \$ 71628.52 million to US \$ 1435380 million from 1995 to 2014.Vertical specialization percentage share in gross exports has increased from 21 percent in 1995 to 46 percent in 2010. But after that it has tremendously decreased and reached at 20 percent in 2014. This is due to decrease in share of all the components i.e. Foreign value added contained in final exports(FVA_FIN), Foreign value added contained in intermediates exports(FVA_INT), Pure double counting from foreign sources (PDC)

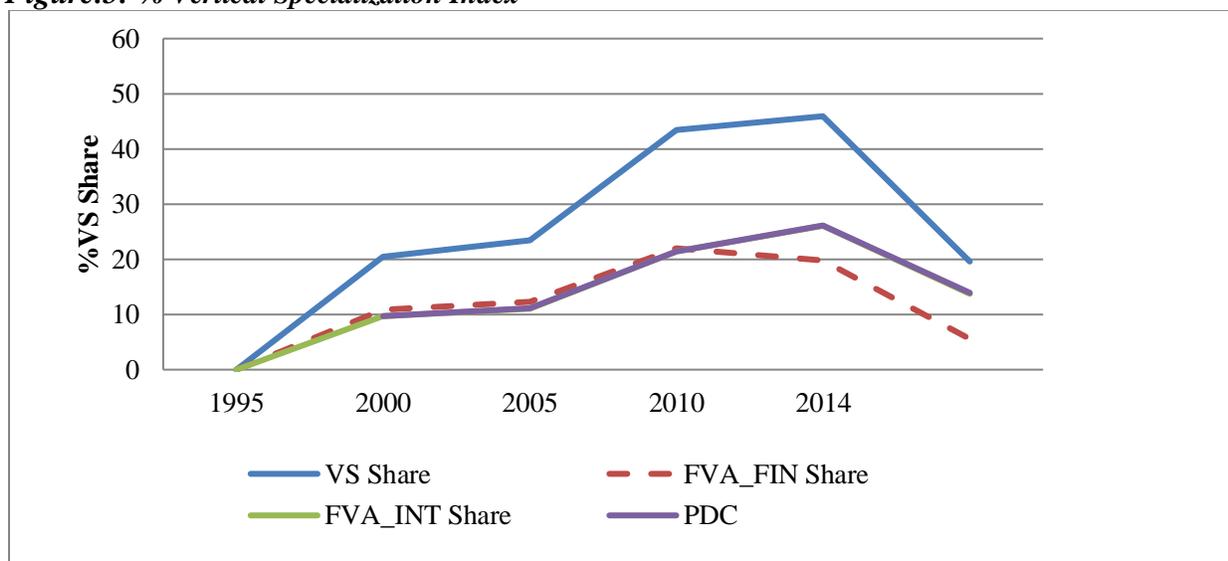
Table 8: Decomposition of India's Electrical and Machinery Industry Vertical Specialization Index

Year	Gross Exports (US\$Million)	VS Share (in gross exports)	FVA_FIN Share (% of VS)	FVA_INT Share (% of VS)	PDC
1995	71628.52	20.51	10.81	9.69	9.7
2000	124549.9	23.41	12.31	11.09	11.1
2005	382338.3	43.45	21.99	21.43	21.45
2010	683415.1	45.93	19.79	26.09	26.13
2014	1435380	19.58	5.59	13.78	13.94

Source: TIVA Database

Note: Foreign value added contained in final exports (FVA_FIN), Foreign value added contained in intermediates exports (FVA_INT), Pure double counting from foreign sources (PDC)

Figure.5: % Vertical Specialization Index



Source: TIVA Database

4. Conclusions

The performance of global value chain of India shows that India's Global Value Chain participation has increased US \$ 22.43 million to US \$ 412.32 million while its percentage share increased from 0.48% to 8.75% during 1990 to 2018. Domestic Value Added (DVA) in the gross exports of India is high in 2000 and shows a decrease in 2005 and 2010. However, it showed an increase in 2014. This may be due to the National Policy on Electronics (2012). But, India is still in the downstream segment of GVC participation .

In Electrical and Machinery, India has the highest share of value addition in exports with the 22.36% during the study period. India's Electrical and Machinery Industry Bilateral Sectoral Decomposition with China, Indonesia and South Korea has shown the growth of domestic value added (DVA) and foreign value added (FVA) in exports. But forward linkages (FL) of India with Korea has highly increased as compared to China and Indonesia. The paper found that the VS structure information is very attractive in India's electrical and machinery industry. Based on the above analysis, this paper found that India has the potential to become an overall global value chain and also in the particular industry. The policy which promotes domestic electronics and components production should be formulated to increase India's participation in GVC's by increasing forward linkages in the domestic value chain. Poor trade infrastructure has reduced India's GVC participation in this sector. Thus, there is a necessity to introduce a policy package for attracting investment in order to improve the infrastructure of the nation (Veeramani, & Dhir, 2017).

This study suggests that MSMEs can play an important role in exploring new market opportunities and therefore, their participation should be considered as the most important in global value chain and special packages must be announced for increasing their contribution in GVC.

The Indian Government, since 2014, has been initiating several policy measures aimed at promoting domestic electronics manufacturing as part of its "Make in India" initiative. The Union Cabinet in February 2019 gave its approval to the National Policy on Electronics 2019 (NPE 2019), proposed by the Ministry of Electronics and Information Technology (MeitY). This will definitely make the India's Sector as a globally hub and will promote R&D.

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