# India's Textiles and Clothing Industry in Global Value Chains and its Linkages with other Asian Countries



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#### Abstract

Initial development of global value chains (GVCs) concentrated more on textiles and clothing (T&C) industry. This paper aims to assess the extent of integration of Indian T&C industry in GVCs as well as examine its trade relation with other South Asian, East Asian and South-East Asian countries. The study period is 1988-2012. Trade data is obtained from World Integrated Trade Solution (WITS) software as well as from India's Input-Output tables (Government of India). The export shares of Indian T&C industry in total Indian exports to the world are much higher than its import shares. However, this industry is linked at lower ends in GVCs. That is, India is importing fewer inputs used in production of textiles and clothing products, but exports inputs in huge amounts to large number of countries, especially dyes and cotton. There are rising exports of inputs relating to the segments of man-made filament yarn, staple fibres and knitted or crocheted fabrics. These inputs are being largely exported to the GVCs of US, UK, Germany, Belgium, South Africa, and many Asian countries like Bangladesh, Sri Lanka, UAE, Indonesia, Malaysia and Hong Kong. However, Indian T&C industry has very low IIT. In case of textiles, high IIT is found in case of silk, wool, vegetable textile fibres, wadding, felt and nonwovens, special woven fabrics, and knitted or crocheted fabrics. IIT in textiles is much higher than that of clothing. Vertical intra-industry trade is also found to be very low for this industry. Secondly, this industry is using high 'domestic content in exports'. Thus, India needs to bring more inputs of this industry on global platform. It accordingly must develop strong trade linkages with South-East, East and South Asian countries (and also to Western Asia) which hold high potential for enhancing the growth of Indian T&C industry.

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#### Neha Gupta<sup>3</sup>

#### 1. Introduction

The textiles and clothing (T&C) industry has the credit of being a significant contributor to the early successes of most of the Asian countries as well as to the development of their distinct value chains. Many late-comer countries acquired prominent positions in the global value chains (GVCs) owing to this industry, such as, Vietnam, Cambodia, etc. In fact, several studies like Gereffi (1999), Gereffi, Spencer and Bair (2002), etc. have extensively worked upon various aspects of development of the textile and apparel value chains in different parts of the world. Moreover, this industry has a very long chain starting from yarn to fibre manufacturing to production of fabrics to ready-made garments.

Further, there is an evidence of growing use of intra-industry trade (IIT) for the T&C industry in South Asian countries and there exists strong future potentials for developing regional supply chains therein (Commonwealth Secretariat, 2010; ADB & UNCTAD, 2008). India is the most developed nation among South Asian countries with a large T&C industry, which has been in existence since early centuries. India produces and exports across the entire value chains. It specializes in both the textiles as well as the clothing segments of the industry. Its trade relations with other Asian partners like ASEAN, China, Bangladesh, Pakistan, etc. are improving over the years. However, there is not much literature that deals with issues related to presence and/or development of supply chains in Indian T&C industry, although there are some studies which have worked upon the trade and competitiveness issues of this industry (for instance, Verma, 2002; Tewari, 2005; etc.). Therefore, there is a need to conduct an indepth study in order to estimate and assess the extent of integration of the Indian T&C industry in GVCs. The aim is also to understand its trade relations with other Asian partners, i.e., South-East Asian (SEA), East Asian (EA) and other South Asian (SA) countries<sup>4</sup>.

The Indian T&C industry is presently contributing about 14% to industrial production, 4% to GDP, 11% to country's export earnings and provides employment to 45 million people. It accounts for 12% in India's total exports basket. In the global exports of textiles and clothing, as per WTO data of 2012, India is ranked as the third largest exporter (after China and EU) and ninth largest exporter (where China, EU and Hong Kong occupy the first three positions), respectively. Moreover, India is the major producer of raw jute and jute products as well as second largest producer of silk in the world. Handloom weaving is one of the largest segments contributing about 11% to total cloth's production and India provides 95% of world's hand woven fabric. However, this is facing tough competition from powerlooms and mills as well as from cheap imported fabrics that are readily available (Ministry of Textiles, Government of India, 2013-2014). Further, India is also the second largest producer, consumer and exporter of cotton in the world, along with the largest producer of organic

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<sup>&</sup>lt;sup>4</sup> In this paper, South-East Asia includes Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, East Timor and Vietnam; East Asia includes China, Hong Kong, Macao (Macau), Japan, Mongolia and Korea; and other South Asian countries include Afghanistan, Bangladesh, Bhutan, Islamic Republic of Iran, Maldives, Nepal, Pakistan and Sri Lanka (based on latest classification of countries given on UNDESA website: http://esa.un.org/wpp/Excel-Data/country-classification.pdf)

cotton, as well as second largest producer of man-made fibres in the world (Ministry of Textiles, Government of India, 2010).

Following the conceptualization close to the one provided by Verma (2002), in the present paper, the textiles mean fibres, yarn and fabric; while the clothing means ready-made garments (RMGs) (clothing/apparels/garments are used interchangeably). Harmonised System of product classification (HS classification) is used in this paper for T&C industry as: HS Chapters 50-63; wherein HS 50-60 is taken to account for textiles and HS 61-63 is taken for clothing and made-ups (hereinafter, referred to as 'clothing' only).

Accordingly, the next section discusses trade scenario of Indian T&C industry. The study period is 1988-2012. The paper uses trade data from World Integrated Trade Solution (WITS) software<sup>5</sup> as well as data from India's Input-Output tables. The third section discusses the input-output structure; the fourth section measures the IIT; and the last section concludes the paper.

#### 2. Trade Scenario and Vertical Specialisation

This section assesses the global trade shares of Indian T&C industry for years 1988, 1997, 2006 and 2012, and with respect to SEA, EA and SA. Import content of exports is calculated.

#### 2.1 Trade Shares of Indian T&C Industry

The export share of Indian T&C industry in total Indian exports to the world was highly significant till 1997 (Table 1). HS 52 and HS 62 had highest shares, followed by HS 57, HS 61 and HS 63. However, India's export shares in this industry registered a fall of 41.5% in 2006. In 2012, they further declined mainly due to the effects of recession of 2008-09.

Despite decline in export shares of almost all the products, cotton still has the highest export share, followed by articles of apparel and clothing accessories (HS 61 and HS 62). There are also significant export shares in case of other made-up textiles articles, man-made filaments and man-made staple fibres. On the other hand, import shares have been just around 1-2%. Thus, imports of Indian T&C industry have been very low as compared to its exports. This also indicates low usage of imported inputs in exports.

Year	With Trade Flows→	198	88	19	97	200	)6	201	12
Code	Description	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.
50	Silk	0.86	0.25	0.50	0.18	0.32	0.20	0.06	0.07
51	Wool, fine/coarse animal hair; horsehair yarn and woven fabric	0.14	0.73	0.32	0.46	0.07	0.15	0.06	0.08

Table 1: Shares of Indian T&C Industry in Total Exports to and Total Imports from World

<sup>&</sup>lt;sup>5</sup> WITS software has been used in many research works on international economics and covers very large database on international trade, tariff and non-tariff measures, such as COMTRADE, TRAINS, etc. This has been developed by World Bank along with various international organizations, i.e., UN Conference on Trade & Development (UNCTAD), International Trade Centre (ITC), UN Statistical Division (UNSD) and World Trade Organization (WTO). It is data consultation and extraction software with simulation capabilities. This database provides values of exports and imports in US\$ thousand terms.

52	Cotton	4.63	0.46	7.55	0.16	2.90	0.26	2.96	0.16
53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn	0.82	0.05	0.42	0.06	0.13	0.07	0.11	0.05
54	Man-made filaments	0.59	0.46	1.08	0.21	0.82	0.26	0.78	0.15
55	Man-made staple fibres	0.37	0.16	1.09	0.40	0.80	0.11	0.69	0.10
56	Wadding, felt and non-wovens; special yarns; twine, cordage, ropes and cables & articles thereof	0.02	0.04	0.09	0.07	0.08	0.05	0.11	0.03
57	Carpets and other textiles floor coverings	2.92	-	1.75	0.01	1.01	0.03	0.47	0.01
58	Special woven fabrics; tufted textiles fabrics; lace; tapestries; trimmings; embroidery	0.08	0.02	0.36	0.05	0.14	0.05	0.09	0.03
59	Impregnated, coated, covered/ laminated textile fabrics; textile articles of a kind suitable for industrial use	0.08	0.06	0.12	0.29	0.06	0.21	0.06	0.15
60	Knitted or crocheted fabrics	0.13	0.05	0.12	0.02	0.06	0.06	0.07	0.07
61	Articles of apparel and clothing accessories, knitted or crocheted	2.57	0.00	2.94	0.01	2.95	0.01	1.89	0.02
62	Articles of apparel and clothing accessories, not knitted or crocheted	7.82	0.00	8.21	0.01	4.49	0.03	2.57	0.04
63	Other made up textile articles; sets; worn clothing and worn textile articles	1.67	0.16	2.42	0.11	1.93	0.06	1.37	0.08

HS 50-63	Total	22.70	2.44	26.97	2.02	15.76	1.54	11.29	1.05
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*Source:* Own calculations, WITS Software [**Exp.** – **Export Shares; Imp.** – **Import Shares; both in percentage (%) terms**]

## 2.2 India's Trade Shares with Asian Partners<sup>6</sup>

The trade shares of India, for its T&C industry, are examined with respect to EA, SEA and other SA countries over the period 1988-2012 (Table 2).

In 1988, India's export shares were highest with Bangladesh, Vietnam, Macao, Cambodia, Sri Lanka and Singapore. In 1997, export shares increased tremendously with many EA counties, particularly, Macao, Mongolia and Korea. In 2012, India's bilateral export shares with Afghanistan and Pakistan increased rapidly; while these shares continued to be high with Bangladesh, Macao and Cambodia. However, the shares declined with many SEA countries particularly Singapore. China became important destination for India's exports. In 2012, India is exporting almost all of its products as compared to 1988. HS 52 is the main product, followed by HS 55 and HS 62.

In contrast, in 1988, India's import shares were higher with many SA and EA countries, mainly with Pakistan, Bangladesh, Nepal, Hong Kong and China. In 2012, these shares are high with Bangladesh, Pakistan and Sri Lanka; but India has very low import shares with many EA and particularly SEA countries. Main products for India's imports are HS 52 and HS 53, as well as apparels.

<sup>&</sup>lt;sup>6</sup> It is important to note that the India's bilateral total trade shares may be very high with many countries, but the high or significant shares might be present only for few commodities within HS 50-63. For example, in 1988, India's exports shares with Bangladesh were high at 41%, but the large share of 32% was in case of HS 52 only and 6% in case of HS 60; however, there were hardly any share present in case of other commodities (see Table 2). Thus, total export and import shares conceptually should not be taken as main criterion for judging India's bilateral trade relations. However, this table has listed India's trading partners and their total trade shares.

			Shares o	of Indiar	n T&C I	ndustry	in Tota	l Export	ts (in per	rcentage	terms)					
Voor	Product Codes	50	51	52	53	54	55	56	57	58	59	60	61	62	63	Total
Tear	Countries/Trade Flows	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.	Exp.
	Afghanistan	0.01		0.20	0.04	0.09		0.05	0.00	0.02	0.02		0.49	0.27		1.18
	Bangladesh	0.02	0.00	32.28		1.12	0.13	0.02	0.00	0.15	0.33	6.19	0.04	0.15	0.25	<b>40.69</b>
	Iran				1.08	0.01	0.00				0.10			0.06		1.25
	Nepal			5.41	0.00	0.80	0.71	0.07	0.11	0.01	0.01	0.03	0.03	0.08	0.21	7.47
	Pakistan			0.13	0.09											0.22
	Sri Lanka	0.08	0.00	14.34	0.02	0.81	0.71	0.25	0.01	0.24	0.05	0.33	0.07	0.05	0.23	<b>17.20</b>
	China	0.27	1.85	0.19			0.81									3.13
	Hong Kong	0.17		2.43	0.00	0.69	0.66	0.01	0.17	0.01	0.02	0.00	0.10	0.62	0.16	5.04
	Macao								25.11							<b>25.11</b>
	Japan	0.32	0.18	3.36	0.53	0.06	0.05	0.04	0.26	0.02		0.00	0.28	2.66	0.58	8.34
1988	Mongolia			2.36										8.93		11.29
	Korea	1.31	0.48	9.31	0.58	0.22	0.41		0.26				0.21	0.16	0.08	<b>13.02</b>
	Brunei	0.08							0.13				0.06	0.73	0.22	1.23
	Cambodia					2.42								18.20		20.62
	Indonesia			4.21	0.73	1.25	0.13	0.30	0.01		0.20			0.24	0.03	7.10
	Malaysia	1.82	0.00	<mark>7.95</mark>	0.34	1.84	0.14	0.01	0.07	0.03	0.03		0.10	0.36	0.58	<b>13.28</b>
	Myanmar													0.08		0.08
	Philippines	0.62		8.22	0.14	0.48	0.60		0.18			0.02	0.03	0.19	0.33	10.80
	Singapore	1.30		<mark>7.94</mark>	0.97	1.18	0.24	0.04	0.35	0.10	0.02	0.04	0.89	3.53	0.51	<b>17.11</b>
	Thailand	0.01	0.01	3.36	0.06	0.44	0.07		0.02	0.03	0.09	0.00		0.00	0.01	4.12
	Vietnam		3.83	24.00									0.02	0.01		27.86
	Afghanistan	0.25	0.23	5.31		1.67	0.01	0.03	0.05	0.01	0.01		7.61	2.19	0.26	17.63
	Bangladesh	0.13	0.07	35.01	0.00	0.57	1.62	0.01	0.01	0.04	0.03	1.55	0.02	0.11	0.09	<mark>39.26</mark>
	Bhutan			0.09					0.25				0.05	0.11	0.06	0.57
	Iran	0.00	0.32	0.09	0.26	0.95	0.48	0.02	0.02	0.26	0.06		0.01	1.52	0.01	3.99
	Maldives	1.68		<mark>11.39</mark>		0.89	0.15	0.38	0.17	0.15		2.14	0.84	4.33	0.72	<mark>22.85</mark>
	Nepal	0.01	0.04	1.69	1.18	0.45	3.92	0.02	0.04	0.08	0.02	1.01	0.12	0.07	0.07	8.71
1997	Pakistan	0.00	0.01	0.19	0.16	0.05	0.97	0.02	0.01	0.03	0.17	0.00		0.04	0.01	1.63
	Sri Lanka	0.07	0.10	12.60	0.06	1.10	0.63	0.28	0.05	0.59	0.16	0.23	0.15	1.10	0.65	<b>17.77</b>
	China	0.17	0.15	<mark>9.30</mark>	0.03	0.03	0.10	0.00	0.03	0.00	0.00	0.02	0.02	0.10	0.28	10.25

**Table 2:** Shares of Indian T&C Industry in Total Exports to and in Total Imports from SA, EA and SEA Countries

	Hong Kong	0.52	0.30	15.15	0.01	0.12	0.22	0.01	0.03	0.08	0.01	0.02	0.13	0.86	0.19	<b>17.66</b>
	Macao	0.53		76.21		1.19			0.73					3.56		<b>82.21</b>
	Japan	0.10	0.82	5.79	0.34	0.12	0.09	0.22	1.20	0.07	0.00	0.00	0.77	3.36	2.03	<b>14.92</b>
	Mongolia			<mark>37.68</mark>	5.98						7.09		1.54	1.69	3.37	<b>57.35</b>
	Korea	0.27	0.27	25.10	0.18	0.14	0.56	0.01	0.33	0.19	0.03		0.15	0.75	0.58	<b>28.57</b>
	Brunei	0.09		12.91		0.83			5.75	0.04			1.04	2.99	0.37	<b>24.02</b>
	Cambodia				0.76							0.15		0.10		1.01
	Indonesia	0.07	0.05	12.29	0.13	0.65	0.12	0.04	0.01	0.03	0.02		0.01	0.15	0.09	13.66
	Lao PDR			11.40				0.50								<b>11.90</b>
	Malaysia	0.30	0.01	7.04	0.07	0.88	0.37	0.03	0.06	0.15	0.06	0.02	0.20	1.53	0.20	<b>10.90</b>
	Myanmar	0.01		0.63		0.02	0.01			0.01	0.62	0.19	0.32	0.15	0.07	2.04
	Philippines	0.09	0.00	5.01	0.07	0.06	0.33	0.00	0.05	0.02	0.02	0.03	0.04	0.35	0.09	6.14
	Singapore	0.92	0.09	4.13	0.11	1.14	0.82	0.10	0.21	0.11	0.05	0.01	0.32	2.73	0.22	<b>10.98</b>
	Thailand	0.82	0.11	6.42	0.02	0.19	0.34	0.04	0.72	0.08	0.14	0.00	0.14	0.34	0.10	9.47
	Vietnam	0.05		4.72		0.03	0.03	0.03	0.02	0.08			0.00	0.06	0.19	5.21
	Afghanistan	0.15		2.70		11.57	3.68	0.00	0.01	0.15	0.22		0.54	12.28	0.83	32.13
	Bangladesh	0.00	0.06	17.43	0.00	1.03	2.97	0.04	0.00	0.11	0.02	0.05	0.15	0.18	0.04	22.09
	Bhutan		0.02	0.33							0.06		0.00		0.15	0.56
	Iran	0.02	0.13	0.38	0.09	1.50	1.17	0.00	0.04	0.02	0.08		0.01	0.23	0.08	3.76
	Maldives	0.02	0.00	0.36	0.07	0.28	0.17	0.26	0.20	0.00	0.01	0.09	0.75	1.00	1.15	4.36
	Nepal	0.00	0.04	1.92	0.12	0.20	0.07	0.07	0.03	0.05	0.01	0.08	0.07	0.12	0.15	2.93
	Pakistan	0.00	0.05	8.68	0.00	0.05	0.19	0.01	0.01	0.01	0.05		0.07	0.00	0.35	9.48
	Sri Lanka	0.03	0.07	4.89	0.04	1.51	1.09	0.13	0.02	0.22	0.09	1.01	0.23	1.28	0.10	<b>10.71</b>
	China	0.07	0.03	9.00	0.04	0.07	0.22	0.00	0.01	0.01	0.01	0.00	0.01	0.03	0.01	9.50
	Hong Kong	0.36	0.01	2.54	0.00	0.06	0.05	0.01	0.07	0.03	0.01	0.01	0.13	0.31	0.03	3.61
	Macao	2.55		5.82		0.14			0.29	4.91			0.00	1.42	0.04	15.17
	Japan	0.10	0.07	2.91	0.13	0.26	0.11	0.14	0.74	0.03	0.25	0.01	0.52	4.08	1.12	10.48
	Mongolia			0.89		0.01							3.86	0.76		5.52
	Korea	0.15	0.38	9.70	0.13	0.03	0.09	0.02	0.17	0.02	0.03	0.04	0.13	0.24	0.11	11.25
	Brunei	0.01		0.13	0.00	0.28	0.00		2.18	0.01			0.02	0.63	0.22	3.50
2006	Cambodia			13.03		0.23	4.72		0.02	0.04	0.15		0.00	0.01	0.12	18.32
2006	Indonesia	0.05	0.08	3.33	0.08	0.49	1.41	0.17	0.01	0.02	0.11	0.00	0.11	0.09	0.09	6.04
	Lao PDR			2.22			0.56						0.02		0.25	3.05
	Malaysia	0.16	0.09	2.20	0.06	2.08	0.17	0.04	1.35	0.08	0.06	0.00	0.34	2.31	0.67	9.63
	Myanmar	0.00		0.54		0.00	0.16	0.01		0.00	0.09		0.19	0.00	0.00	1.00
	Philippines	0.04	0.01	3.26	0.02	0.10	1.00	0.00	0.03	0.04	0.03	0.03	0.05	0.30	0.97	5.89

	Singapore	0.12	0.00	0.18	0.00	0.22	0.10	0.06	0.14	0.02	0.02	0.00	0.24	0.59	0.04	1.73
	Thailand	0.44	0.02	3.76	0.01	0.48	0.25	0.02	0.13	0.06	0.10	0.00	0.03	0.22	0.10	5.61
	East Timor														20.22	20.22
	Vietnam	0.13	0.22	5.38	0.01	0.15	0.94	0.01	0.02	0.02	0.00	0.02	0.00	0.02	0.01	6.94
	Afghanistan	0.23	0.01	0.14	0.01	18.80	5.80	0.00	0.01	0.17	0.02	0.00	7.57	8.59	0.85	<b>42.22</b>
	Bangladesh	0.00	0.02	28.14	0.05	0.82	2.56	0.05	0.01	0.13	0.12	0.90	0.07	0.51	0.08	<b>33.46</b>
	Bhutan			0.00	0.00	0.04			0.02	0.04		0.01	0.00	0.00	0.06	0.18
	Iran	0.00	0.02	0.22	0.01	1.41	2.26	0.02	0.05	0.03	0.06	0.00	0.12	0.52	0.19	4.92
	Maldives	0.01		0.31	0.05	0.27	0.10	0.41	0.11	0.02	0.01	0.05	1.06	1.05	1.58	5.05
	Nepal	0.00	0.03	0.85	0.41	0.12	0.68	0.06	0.01	0.02	0.02	0.05	0.13	0.06	0.06	2.51
	Pakistan	0.00	0.03	14.99	0.00	6.37	3.42	0.13		0.10	0.04	0.00	0.00	0.09	0.11	<b>25.31</b>
	Sri Lanka	0.01	0.04	5.69	0.07	1.46	1.09	0.14	0.01	0.19	0.14	2.14	0.36	0.99	0.34	<b>12.66</b>
	China	0.06	0.05	24.53	0.38	0.04	0.37	0.02	0.05	0.01	0.06	0.00	0.12	0.25	0.09	<b>26.03</b>
	Hong Kong	0.04	0.01	1.65	0.01	0.05	0.04	0.00	0.01	0.07	0.00	0.00	0.18	0.32	0.06	2.43
	Macao			23.30					1.20	<mark>8.89</mark>			0.05	0.61	0.83	<b>34.89</b>
	Japan	0.04	0.16	0.87	0.09	0.07	0.12	0.07	0.40	0.02	0.06	0.00	0.32	3.14	0.87	6.21
	Mongolia	0.02		0.00	0.97	0.02	0.14		0.03				0.01	0.04	0.42	1.68
	Korea	0.01	0.30	5.05	0.28	0.27	0.04	0.03	0.09	0.01	0.02	0.03	0.37	0.35	0.13	6.98
	Brunei			0.05	0.04	1.91	0.56	0.00	0.41	0.01	0.01		0.11	0.58	1.76	5.45
	Cambodia	0.00	0.34	21.30	0.00	0.76	9.79	0.14	0.02	0.14	0.00	1.72	0.00	0.36	0.99	<b>35.56</b>
	Indonesia	0.00	0.03	1.59	0.13	0.41	0.92	0.37	0.02	0.03	0.02	0.01	0.01	0.08	0.04	3.67
	Lao PDR						0.28	0.01		0.10			0.00	0.05		0.44
	Malaysia	0.13	0.05	2.01	0.03	1.75	0.15	0.06	0.12	0.04	0.02	0.02	0.23	1.79	0.35	6.75
	Myanmar	0.00	0.27	2.71		0.02	0.08	0.05	0.00	0.00	0.01		0.88	0.03	0.10	4.15
	Philippines	0.01	0.01	2.14	0.12	0.75	0.65	0.01	0.09	0.00	0.07	0.00	0.14	0.09	0.26	4.35
	Singapore	0.03	0.00	0.04	0.00	0.18	0.06	0.13	0.06	0.01	0.01	0.00	0.08	0.28	0.05	0.94
2012	Thailand	0.06	0.03	1.78	0.01	0.89	0.35	0.05	0.15	0.02	0.07	0.06	0.19	0.12	1.89	5.66
	Vietnam	0.04	0.18	4.28	0.01	0.58	0.82	0.03	0.01	0.29	0.02	0.07	0.01	0.01	0.04	6.39
			Shares of	of Indiar	n T&C I	ndustrv	in Tota	l Impor	ts (in per	rcentage	terms)					
								T.		0	,					
Veen	Product Codes	50	51	52	53	54	55	56	57	58	59	60	61	62	63	Total
rear	Countries/Trade Flows	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.	Imp.
	Bangladesh	_	_	_	31.33	-	-	_	-	-	_	_	_	-	_	31.33
1000	Nepal		0.01		19.13			2.44							0.00	21.58
1988	Pakistan			<mark>59.99</mark>		1.64		0.08							0.11	61.82
	Sri Lanka			3.41			0.01						Ì			3.42

	China	14.01	0.16	0.45		0.23	0.24			0.06						15.15
	Hong Kong	3.67	0.10	10.08		0.93	0.85	0.46		0.56	0.27	3.73	0.00	0.00	0.15	<b>20.81</b>
	Japan	0.15	0.20	0.02		2.61	0.60	0.06		0.01	0.17	0.00	0.00	0.00	0.07	3.88
	Mongolia		100													100
	Korea	0.46	5.15	0.42	0.01	2.10	2.19	0.45		0.03	0.24		0.01		0.02	11.07
	Indonesia			0.19		0.03	0.06			0.01						0.29
	Malaysia			0.02			0.01									0.02
	Philippines				10.20	0.39					0.29		0.11		1.98	12.97
	Singapore	0.38	0.02	0.05		0.12	0.07	0.28		0.02	0.01	0.00	0.00		0.04	0.98
	Thailand			0.03		0.06	0.04	0.09		0.03	0.00	0.00			0.01	0.26
	Vietnam	7.95														7.95
	Afghanistan		0.18	0.36												0.53
	Bangladesh			15.47	<mark>26.76</mark>	0.00			0.01	0.01			0.01			42.26
	Iran		0.42				0.00		0.00	0.00						0.42
	Nepal	0.03	0.02	0.07	4.24	3.79	11.78	5.55	0.03	0.07	0.02		0.01	0.01	1.15	<b>26.75</b>
	Pakistan		2.76	0.07		0.40	0.61		0.01	0.01					0.03	3.91
	Sri Lanka			0.07		5.21		0.15		0.17	0.03			0.01		5.64
	China	5.40	0.05	0.87	0.10	0.98	0.63	0.14	0.00	0.24	0.29	0.13	0.01	0.04	0.26	9.13
	Hong Kong	1.37	0.13	3.86	0.12	0.51	0.36	0.22		2.21	0.12	0.05	0.05	0.12	0.02	9.14
1007	Japan	0.00	0.00	0.10	0.01	0.38	1.25	0.13	0.00	0.02	0.15	0.02	0.00	0.00	0.02	2.07
1997	Mongolia		<mark>88.33</mark>													<b>88.33</b>
	Korea	0.09	0.10	0.14	0.01	1.76	1.41	0.41	0.00	0.14	2.10	0.09	0.01	0.03	0.06	6.33
	Indonesia		0.04	0.24		0.94	2.80	0.14	0.01	0.02	1.96	0.08	0.01	0.02	0.04	6.31
	Malaysia			0.01		0.01	0.14	0.01	0.01	0.00	0.01		0.00	0.00	0.01	0.21
	Myanmar								0.01							0.01
	Philippines				0.31	0.34	0.14	0.07		0.06	0.72		2.77	0.51	0.74	5.67
	Singapore	0.10	0.01	0.01	0.00	0.40	0.12	0.17	0.00	0.02	0.19	0.00	0.01	0.00	0.02	1.04
	Thailand	0.03	0.25	0.13		1.45	10.45	0.85	0.01	0.29	9.16	0.19	0.07	0.16	0.02	23.06
	Vietnam	1.91				0.44	0.27						0.06			2.68
	Afghanistan			0.07				0.01	0.02				0.01	0.02		0.12
	Bangladesh	0.01		1.06	21.26	0.24	0.06	1.17	0.09	0.01	0.04	0.25	0.08	0.45	7.70	32.43
	Bhutan				0.10	4.45										4.55
	Iran		0.02	0.01		0.00	0.00	0.01	0.00		0.00		0.00	0.00	0.00	0.05
	Nepal	0.18	0.00	0.00	2.19	3.45	6.17	1.77	0.13	0.21		2.06	0.31	2.98	0.41	<b>19.85</b>

	Pakistan	0.00	1.18	15.18	0.00	0.13	1.64	0.02	0.03	0.05	0.00	0.19	0.07	0.01	0.19	<b>18.70</b>
	Sri Lanka			1.25	0.15	0.14	0.07	0.21	0.03	0.48	0.01	0.55	0.07	0.17	0.01	3.12
	China	2.17	0.21	0.92	0.27	1.02	0.27	0.14	0.02	0.17	1.36	0.30	0.05	0.07	0.18	7.15
2000	Hong Kong	0.04	0.02	1.25	0.17	0.16	0.16	0.26	0.00	1.47	0.12	0.47	0.09	0.18	0.02	4.42
2006	Macao			0.28						7.11						7.39
	Japan	0.00	0.04	0.18	0.00	0.56	0.26	0.06	0.01	0.05	0.07	0.03	0.00	0.00	0.05	1.31
	Mongolia		0.04													0.04
	Korea	0.07	0.02	0.11	0.00	0.79	0.22	0.11	0.00	0.06	0.17	0.10	0.00	0.01	0.22	1.88
	Brunei												0.001			0.001
	Cambodia												0.70	2.76		3.47
	Indonesia	0.00	0.00	0.20		1.04	0.22	0.01	0.02	0.01	0.24	0.04	0.01	0.01	0.01	1.81
	Lao PDR														0.08	0.08
	Malaysia	0.00	0.00	0.05	0.00	0.78	0.16	0.05	0.03	0.01	0.01	0.00	0.01	0.00	0.05	1.16
	Myanmar														0.00	0.00
	Philippines		0.00	0.04	0.13	0.03	0.00	0.02		0.04	0.02	0.06	0.04	0.01	0.09	0.49
	Singapore	0.00	0.00	0.01	0.00	0.16	0.01	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.27
	Thailand	0.01	0.02	0.35	0.00	1.14	1.07	0.41	0.49	0.13	2.12	0.10	0.07	0.12	0.03	6.06
	East Timor			0.01						0.06						0.07
	Vietnam	0.68		0.43		2.25	0.35	0.08	0.00	0.38	0.03	0.07	0.14	0.34	0.27	5.02
	Afghanistan	0.03	0.27					0.00	0.07			0.00			0.00	0.37
	Bangladesh		0.00	2.29	21.74	0.15	0.11	0.73	0.01	0.01	0.02	0.37	1.91	7.54	13.95	<mark>48.85</mark>
	Bhutan					0.07										0.07
	Iran		0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00				0.00	0.02
	Nepal				0.45	0.24	6.88	0.28	0.02		0.00	0.24	0.08	0.26	0.90	9.35
	Pakistan	0.03	1.68	16.46	0.00	0.09	0.03	0.05	0.01	0.03	0.01	0.11	0.45	0.14	1.41	<b>20.49</b>
2012	Sri Lanka	0.02	0.02	0.36	0.06	0.73	0.34	0.12	0.01	1.95	0.08	2.35	1.04	3.06	0.19	<b>10.33</b>
2012	China	0.56	0.08	0.36	0.20	0.58	0.31	0.10	0.04	0.11	0.80	0.51	0.09	0.09	0.18	4.00
	Hong Kong	0.01	0.00	0.18	0.02	0.03	0.04	0.06	0.01	0.37	0.08	0.23	0.05	0.07	0.02	1.15
	Macao			0.02										0.00	0.03	0.05
	Japan	0.01	0.03	0.02	0.00	0.58	0.15	0.05	0.00	0.01	0.07	0.01	0.01	0.01	0.02	0.99
	Mongolia		5.78													5.78
	Korea	0.02	0.01	0.08	0.00	0.46	0.12	0.08	0.00	0.03	0.24	0.08	0.01	0.01	0.08	1.23
	Brunei									0.01						0.01
	Cambodia									0.06			16.76	17.47	0.10	<mark>34.39</mark>
	Indonesia	0.01	0.00	0.02	0.00	0.19	0.28	0.01	0.02	0.02	0.07	0.02	0.01	0.02	0.00	0.65

Lao PDR												0.00	0.00		0.01
Malaysia	0.01	0.01	0.05	0.01	0.23	0.04	0.10	0.00	0.01	0.03	0.01	0.01	0.01	0.04	0.55
Myanmar	0.00	0.01	0.02		0.01		0.00	0.00	0.00	0.01		0.00	0.00	0.00	0.06
Philippines	0.03	0.10	0.06	0.04	0.10	0.08	0.00	0.00	0.20	0.00	0.05	0.07	0.03	0.18	0.95
Singapore	0.01	0.01	0.03	0.01	0.14	0.01	0.01	0.02	0.01	0.03	0.01	0.01	0.02	0.01	0.33
Thailand	0.02	0.03	0.05	0.00	0.30	0.71	0.13	0.19	0.06	0.72	0.05	0.07	0.04	0.02	2.38
Vietnam	0.25	0.01	0.07	0.00	1.48	0.22	0.03	0.00	0.26	0.18	0.05	0.08	0.09	0.32	3.05

Source: Own calculations [Exp. – Export Shares; Imp. – Import Shares]

#### 2.3 Vertical Specialisation Index for Indian T&C Industry

In GVCs, several intermediate inputs are used in the production of final goods that are later exported. This cannot be assessed using trade data. Accordingly, the *import content of exports* for India's prominent export-oriented T&C industry is calculated. Hummels et al. (2001) (as cited in Backer and Yamano, 2012) provides main indicator of vertical specialisation  $(VS1_i)^7$  to capture both direct and indirect imported inputs that are embodied in country i's exports.

# $VS1_i = u * Am_i * [I-Ad_i]^{(-1)} * X_i / \sum X_i$

India's Input-Output Tables (IOT) of 1993-94, 1998-99, 2003-04 and 2007-08 (as obtained from Ministry of Statistics and Programme Implementation, Government of India) are used for calculation of  $VSI_{T\&C}$  (VSI for Indian T&C Industry).  $VSI_{T\&C}$  is found to be 17% in 2007-08 which is quite low. But, this has increased from much lower levels. The domestic value addition continues to be very large, above 80% (Table 3).

Fable 3: Calculatio	n of VSI <sub>T&amp;C</sub>	from India'	s Input-Output	Tables
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Years	VSI (Import Content of Exports)	1-VSI (Domestic Content of Exports)
1993-94	7%	93%
1998-99	9%	91%
2003-04	13%	87%
2007-08	17%	83%

Source: Own Calculations

As per IO tables of 1993-94 and 1998-99, the T&C industry covered IOT sector codes  $41-49^8$  and in later years, this industry covers IOT sectors  $46-54^9$ . Table 4 calculates VSI separately

<sup>&</sup>lt;sup>7</sup> In the formula,  $Am_i$  and  $Ad_i$  are the input-output coefficients of country *i* for imported and domestic transactions respectively; u is 1 x n vector whose each component is unity; matrix X<sub>i</sub> is nx1 vector of exports of country *i* and  $\sum X_i$  is country *i*'s total exports (Backer and Yamano, 2012) and here, *i* would not only refer to India as a country, but also to industry.

<sup>&</sup>lt;sup>8</sup> Description of each IOT sector No.: 41 – Khadi, Cotton Textiles in Handlooms; 42 – Cotton Textiles; 43 – Woolen Textiles; 44 – Silk Textiles; 45 – Art Silk, Synthetic Fibre Textiles; 46 – Jute, Hemp, Mesta Textiles; 47 – Carpet Weaving; 48 – Readymade Garments and Made up Textile goods; and 49 – Miscellaneous Textile Products (for details, see link: <u>http://mospi.nic.in/Mospi\_New/upload/nad\_iott\_1998\_99/appendix%203.pdf</u>). Indian textiles industry (HS 50-60) corresponds to IOT sector No.41-47 and HS 61-63 (clothing) corresponds to IOT sector No.48. However, the IOT sector No. 49 is excluded which is "miscellaneous textile products" as this includes both textiles as well as clothing products.

<sup>&</sup>lt;sup>9</sup> Description of each IOT sector No.: 46 – Khadi, Cotton Textiles in Handlooms; 47 – Cotton Textiles; 48 – Woolen Textiles; 49 – Silk Textiles; 50 – Art Silk, Synthetic Fibre Textiles; 51 – Jute, Hemp, Mesta Textiles; 52 – Carpet Weaving; 53 – Readymade Garments and Made up Textile goods; and 54 – Miscellaneous Textile Products (for details, see the link: <u>http://mospi.nic.in/Mospi\_New/upload/iott\_2007-08/Appendix%203.pdf</u>). HS Chapters 50-60 matches IOT sector No. 46-52 and HS 61-63 matches IOT sector No.53 (here again, the IOT sector No. 54 which is "miscellaneous textile products" is excluded).

for both textiles and clothing, and their results are similar to those calculated for entire industry. However, VSI of textiles is always marginally higher than that of clothing.

	199	3-94	199	8-99	200	3-04	200'	7-08
Types	VSI	1-VSI	VSI	1-VSI	VSI	1-VSI	VSI	1-VSI
Textiles	7.2%	92.7%	9.4%	90.5%	13.3%	86.7%	17.5%	82.5%
Clothing and Made-								
Ups	6.9%	93.1%	9.0%	90.9%	13.2%	86.8%	16.5%	83.5%

**Table 4:** Calculation of VSI<sub>TEXTILES</sub> and VSI<sub>CLOTHING</sub> from India's Input-Output Tables

Source: Own Calculations

All this shows that Indian T&C industry's linkages with that of other countries are very low. Majority of the inputs are domestically produced for use in exports. However, the next section lists out those inputs of the industry that are currently being exported to and imported from various countries of the world.

## 3. Input-Output Structure

Identification of inputs and outputs of textiles and clothing industry is undertaken using a database constructed by UNCTAD-India Project (Project on Strategies and Preparedness for Trade and Globalization in India). This database identifies the inputs used (at disaggregated level) in all disaggregated outputs of T&C industry. From this database, total of 45 inputs at 2, 4 and 6 digit product levels (as per HS classification) have been selected which Indian T&C industry has been using in the production of its final products<sup>10</sup>. The trade data for these inputs is collected for the year 2012 (latest year of study).

This database identifies complete supply chain in Indian textiles and clothing, that is, from production of raw materials/chemicals to the production of fibres and yarn, and then production of fabrics, which are further processed to produce ready-made garments (RMGs). It is important to note that the inputs that are identified are not only from the T&C industry, but also from other industries such as chemicals, metals, stones, plastic, glass, etc. In the Stage I, apart from using yarn, fibres and fabrics from the T&C industry, other major inputs used for production of inputs are acid dyes, acrylic dyes, and other kinds of dyes, furnace oil, bleaching powder, bronze powder, beads, sequins, hydrogen peroxide, lining material, lubricating agents, and so on. In the Stage II, the inputs used from other industries include caustic soda, activated carbon, aluminium, coke, hydrated lime, furnace oil, ethyl acetate, Dimethyl formamide, linseed alkyd resin, methanol, polyester films, soda ash, phenol, petroleum hydro carbon solvent, solvent dyes, sodium chloride, pigment (AAA yellow 12), etc. This validates the extensive use of chemicals as inputs in Indian T&C industry.

<sup>&</sup>lt;sup>10</sup> The process involved in getting these inputs is as follows: using the available database of T&C and chemical industries given in the software, inputs have been extracted at all digit levels (2-8 digit levels) that are used in the production of outputs at 6 digit and 8 digit levels. These are called as Stage I inputs. The logic involved in the database is that each output has certain number of inputs and each input is output for other industry, which again has some inputs/ raw materials by using which it is produced. Accordingly, from the inputs identified in the Stage I, Stage II outputs are identified along with their inputs. From both the stages, 45 inputs (up to 6 digit level only) have been selected.

For identified 45 inputs from two stages, it is checked whether there are any exports or imports of these inputs by India to the and from the World as well as various countries of the world. The total numbers of 15 inputs are obtained at 6-digit level; 26 inputs at 4-digit level; and 4 inputs at 2-digit level. At each digit level, inputs are ranked in descending order as per number of countries to whom they have been exported to (Table 5). Higher the exports of more number of inputs by India to other countries, higher will be the participation in GVCs of the Indian T&C industry. Although this list of 45 inputs is not exhaustive one, this can be a good indicator of the extent of integration of this industry.

In 2012, exports and/or imports of selected 4 inputs at 2-digit level are present only for 184 countries (out of total 275 countries in WITS), of this India exports to 180 countries and imports from 131 countries. Similarly, trade is present for 190 countries in case of 26 inputs at 4-digit level (India exports inputs to 187 countries, while imports them from 135 countries); while at 6-digit level trade is present for 15 inputs for 159 countries (exports are to 153 countries and imports are from 103 countries). India therefore exports inputs to majority of the countries, but these are imported from comparatively less number of countries.

Input Code	Description	Ranking of Inputs as per number of countries to whom they have been exported					
2-digit level - Out of 184 Countries							
32	Tanning/Dyeing Extract, Dyes, Pigments, etc.	2 (Exported to 166 countries; imported from 113 countries)					
52	Cotton	1 (Exported to 171 countries; imported from 92)					
55	Man-made Staple Fibres	3(Exported to 154 countries; imported from 69)					
60	Knitted or Crocheted Fabrics	4(Exported to 100 countries; imported from 71)					
	4-digit level - Out of 190	0 Countries					
3204	Synthetic Organic Coloring Matter (pigments, reactive dyes)	3 (Exported to 150 countries; imported from 76 countries)					
3212	Pigment [AAA yellow 12]	8(Exported to 88 countries; imported from 50 countries)					
3213	Tinting Agent	9(Exported to 80 countries; imported from 16 countries)					
3926	Other Plastic Articles like Buckles	1(Exported to 177 countries; imported from 121)					
5003	Silk Waste	26 (Exported to 12 countries; imported from 7)					
5004	Silk Yarn (other than yarn spun from silk waste) [Dupion Silk Yarn]	21, 22*(Exported to 20 countries; imported from 11 countries)					
5005	Yarn spun from Silk Waste, not put up for retail sale (Spun Silk Yarn)	24(Exported to 14 countries; imported from 9 countries)					
5006	Silk Yarn/Yarn spun from Silk Waste, put up for retail sale (Tussar)	19(Exported to 26 countries; imported from 12 countries)					
5007	Woven Fabrics of Silk	5 (Exported to 118 countries; imported from 42)					
5101	Wool, not carded or combed (Raw Wool)	25 (Exported to 13 countries; imported from 66)					
5103	Waste of Wool or of Fine/Coarse Animal Hair	21, 22*(Exported to 20 countries; imported from 20					

Table 5: Selected Inputs of Indian T&C Industry

		countries)
	Yarn of Combed Wool (not	15(Exported to 44 countries:
5107	exceeding 32 BWS)	imported from 28 countries)
		17(Exported to 30 countries:
5109	Yarn of Wool or Fine Animal Hair	imported from 7 countries)
		4 (Exported to 125 countries:
5205	Cotton Yarn	imported from 34)
		2 (Exported to 158 countries:
5208	Woven Fabrics of Cotton	imported from 61)
	Flax, Raw or Processed but not spun	23 (Exported to 15 countries:
5301	(Flax Fibre)	imported from 12 countries)
	(	18(Exported to 28 countries:
5306	Flax Yarn	imported from 26 countries)
<b>5</b> 40 <b>2</b>	Synthetic Filament Yarn (Acrylic	6 (Exported to 115 countries:
5402	Yarn, Nylon Yarn, etc.)	imported from 72)
<b>5</b> 40 <b>2</b>	Artificial Filament Yarn (Viscose	12(Exported to 66 countries:
5403	Filament Yarn)	imported from 41 countries)
5406	Man-made Filament Yarn (Polyester	20(Exported to 23 countries;
5406	Viscose Blended Yarn)	imported from 11 countries)
5500	Yarn of Synthetic Staple Fibres	7(Exported to 114 countries;
5509	(100% Polyester Grey/Dyed Yarn)	imported from 49 countries)
	Woven Fabrics of Synthetic Staple	
5514	Fibres [65% Polyester/ 35% Cotton	imported from 24 countries;
	Blended fabric (Dyed/Printed)]	imported from 24 countries)
5011	Opiltad Eabria	16(Exported to 36 countries;
3611	Quined Fabric	imported from 19 countries)
6001	Relevant Processed Man-made	14(Exported to 53 countries;
0001	Fabrics/ Pile Fabrics	imported from 36 countries)
(00)	Knitted Fabrics of Relevant	10(Exported to 74 countries;
0000	Polyester/Cotton Blend (Grey)	imported from 59 countries)
	Used or New Rags, Scraps, Twine,	
6210	Cordages, Cables, etc./ Pulled or	13(Exported to 54 countries;
0310	GarnettedFibres made out of	imported from 47 countries)
	Woollen/ Synthetic Rags, etc.	
	6-digit level - Out of 15	9 countries
201511	Sodium Hudrovida (Coustia Soda)	8 (Exported to 75 countries;
281511	Sodium Hydroxide (Caustic Soda)	imported from 31 countries)
220411	Diamanga Duag	6 (Exported to 86 countries;
520411	Disperse Dyes	imported from 37 countries)
320412	Acid Dyes, whether or not	2 (Exported to 113 countries;
320412	premetallised	imported from 37 countries)
320415	Vat Dvas	9 (Exported to 65 countries;
520415	V at Dyes	imported from 28 countries)
320416	Reactive Dyes	4 (Exported to 97 countries;
520410	Reactive Dyes	imported from 38)
320417	Pigment Dyes	3 (Exported to 112 countries;
520417	Tignient Dyes	imported from 57)
320419	Other Dyes [Sulphur Dyes]	1 (Exported to 126 countries;
320417		imported from 42)
320710	Organic/Inorganic Pigments	10 (Exported to 57 countries;
320710	organie, morganie i rgments	imported from 48 countries)
350510	Dextrins& Modified Starches	7 (Exported to 84 countries;
550510	(Pregelatinised or Esterified)	imported from 46 countries)
500400	Silk Yarn (Other than yarn spun	15 (Exported to 20 countries;
500+00	from silk waste): Dupion Silk Yarn	imported from 11)
520100	Raw Cotton	12(Exported to 38 countries;
220100		imported from 56 countries)
520511	Cotton Yarn	5 (Exported to 92 countries;
520511		imported from 20)

540220	Synthetic Filament Yarn (high tenacity yarn of Polyesters)	13 (Exported to 37 countries; imported from 31 countries)
550510	Waste of Synthetic Fibres	14 (Exported to 28 countries; imported from 42)
560500	Metallised Yarn	11(Exported to 53 countries; imported from 18 countries)

*Source:* WITS Software (\* Both HS 5004 and HS 5103 have same number of countries, so they have been given same ranks)

It is found that at 2-digit level, inputs of this industry have been exported to several countries; particularly cotton which is supplied in large quantities. Dyes and pigments are traded in significant amount with many countries. At 4-digit level, inputs of the industry which have been exported to many countries include reactive dyes, plastic articles like buckles, woven fabrics of cotton as well as of silk, and cotton yarn; followed by synthetic filament yarn and yarn of synthetic staple fibres. Average exports are high in majority of these inputs, except plastic articles where imports are greater. At 6-digit level, many inputs of this industry are related to HS 32 and HS 52, that is, sulphur dyes, acid dyes, pigment dyes, reactive dyes (i.e., chemicals) and cotton yarn. This result matches with 2-digit level. These inputs are also exported to several countries. Raw cotton is traded in comparatively very high amounts. However, there is less number of countries from which these 15 inputs at 6-digit level are imported. Thus, Indian T&C industry is linked at lower ends in GVCs. That is, lesser number of countries exports these inputs to India and accordingly, India's role in adding value to imported inputs seems to be narrow.

Notably, exports of selected inputs of the industry are largely related to chemicals mainly in case of 6-digit inputs; but at 2-digit and 4-digit levels, there are many inputs from within the textiles segments as well. Moreover, inputs at these two levels are exported by India to larger number of countries as compared to those at 6-digit level. Also, 4-digit level shows greater range of products highlighting entire value chains, inclusive of clothing products. Thus, for further analysing where India is integrating, only 4-digit level 26 inputs are selected.

At 4-digit level, among top 6 inputs as per highest ranks in terms of number of countries to whom they have been exported, two of them belong to other industries, i.e., reactive dyes (HS 32) and plastic articles (HS 39); while rest of them belong to textiles. For remaining 4 inputs, India's export shares with various countries are measured for years: 1988, 1999, 2006 and 2012. This bilateral share is derived as: [India's export of the particular input (say HS 5208) to a particular country (say United Kingdom {UK})/ India's export of this particular input (HS 5208) to the world]\*100. Accordingly, India's bilateral export shares of 3% and above for identified textiles inputs are given in Table 6 (high shares of 9% and above are in bold).

500	7	5205		5208		5402		
Countries	ExpSh	Countries	ExpSh	Countries	ExpSh	Countries	ExpSh	
	1988							
German	20.15	Japan	20.91	United States (US)	16.21	UK	21.75	
UK	16.30	Bangladesh	16.27	Soviet Union	13.55	Italy	20.96	
US	13.94	Italy	11.35	UK	11.31	Hong Kong	12.63	

 Table 6:
 India's Bilateral Export Shares for Selected T&C Inputs (%)

UAE	6.76	Korea	5.90	German	6.21	Belgium- Luxembourg	8.29			
Italy	5.01	Czechoslovakia	5.86	UAE	5.81	Nepal	4.69			
Australia	3.64	UK	4.72	Bangladesh	5.26	Tunisia	3.15			
Spain	3.59	Singapore	4.71	France	4.19	Singapore	3.08			
Japan	3.05	German	3.86	Italy	4.08					
		Vietnam	3.11	Sri Lanka	3.17					
			199	99		·				
US	34.97	Korea	14.00	US	12.88	Turkey	15.17			
UK	9.40	Hong Kong	11.88	UK	7.83	Ireland	9.48			
Hong Kong	7.85	Bangladesh	9.05	UAE	5.09	Belgium	6.76			
Germany	6.84	Mauritius	7.25	Bangladesh	5.09	Italy	6.37			
Italy	6.03	Russia	4.68	Italy	4.94	Spain	5.82			
France	4.30	Italy	3.95	Belgium	4.70	UK	4.29			
Spain	3.34	Japan	3.77	Sri Lanka	3.88	Syrian Arab Republic	3.92			
UAE	3.09	China	3.46	Germany	3.38	Iran	3.87			
		Other Asia, nes	3.45	Nigeria	3.13	Portugal	3.35			
		Canada	3.26			UAE	3.29			
	2006									
US	28.28	Korea	13.70	UAE	8.10	Brazil	15.51			
UK	10.36	Bangladesh	12.65	Sri Lanka	6.74	Egypt	9.32			
Honduras	7.28	Italy	7.33	Italy	5.86	Syrian Arab Republic	8.69			
Italy	6.37	Egypt	5.90	US	5.59	Turkey	7.47			
Spain	5.83	China	5.49	Saudi Arabia	4.70	US	6.05			
Germany	5.59	Japan	5.06	Togo	3.95	Iran	5.64			
UAE	5.03	Mauritius	3.53	Senegal	3.82	Italy	4.62			
Hong Kong	4.09	Portugal	3.26	Benin	3.77	UAE	4.45			
		Hong Kong	3.18	Israel	3.24	Bangladesh	3.31			
		Other Asia, nes	3.00	Portugal	3.11	Morocco	3.30			
						Mexico	3.13			
			201	12						
US	21.12	China	30.62	Bangladesh	11.21	Turkey	21.82			
UK	15.89	Bangladesh	15.76	Sri Lanka	10.28	Brazil	20.64			
UAE	11.15	Korea	5.97	UAE	7.82	Egypt	10.82			
Germany	7.5	Egypt	4.7	Togo	7.75	Mexico	4.03			
France	4.1	Hong Kong	3.79	Senegal	5.46	Syrian Arab Republic	3.89			
Italy	4.06	Peru	3.26	Italy	4.1	Peru	3.14			
Canada	3.16	Colombia	3.17							
Singapore	3.09	Portugal	3.1							

Hong Kong	3.01						
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Source: Own Calculations, WITS Software [ExpSh refers to export shares]

Over these years, India exported woven fabrics of silk (HS 5007) mainly to US, UK and Germany. India's export shares with UAE improved much in 2012. It is also exporting to some European and other Asian countries as well.

Secondly, in case of HS 5205 (cotton yarn), India's high export shares were mainly with EA and SA countries, particularly Japan, Korea, Hong Kong, Bangladesh, and China which has become very important export destination for India in 2012. However, this input has not been significantly exported by India to US, UK and many European countries; however, it is getting directed to Peru, Colombia, Egypt and Mauritius with quite good shares. In contrast, woven fabrics of cotton (HS 5208) in initial years were majorly exported to US, Soviet Union, UK and even UAE. India's exports shares have been impressive for this input in 2012 with SA countries like Bangladesh and Sri Lanka. Presently, Asian countries have become main partners for India.

For synthetic filament yarn (HS 5402), in 1988, India had high export shares with UK, Italy and Hong Kong, but their shares fell down. In recent decade of 2000, Brazil, Turkey, Egypt, etc. became chief locations for India's exports. Thus, India has higher shares with only few countries such as US, UK, SA, EA and Western Asian (WA)<sup>11</sup> countries for these textiles inputs. Some African countries have also become favourable destinations for India's exports of these inputs.

For 4-digit level inputs, for year 2012, the countries are ranked firstly, both as per number of inputs that are exported by India to them and as per number of inputs that are imported by India from them, and then they are ranked in descending order as per actual trade values (given in US \$ thousand terms). Top 30 countries are selected in 2012 so as to identify the GVCs into which India is integrating (Table 7).

		Imports			
Countries	No. of Inputs	Values (in US\$ thousand)	Countries	No. of Inputs	Values (in US\$ thousand)
China	20	1087,703	China	26	1127,117
Bangladesh	20	745,603	Australia	16	180,105
Turkey	19	473,349	Korea	24	142,384
Brazil	12	438,836	Japan	22	138,851
US	26	437,665	Germany	24	134,364
Egypt	16	343,629	US	24	98,578
Germany	24	286,687	Nepal	5	57,629
Italy	24	260,578	Thailand	21	49,935

Table 7: Top 30 Countries at 4-Digit Level for year 2012 (SA, SEA and SA are highlighted)

<sup>&</sup>lt;sup>11</sup> Western Asia comprises of United Arab Emirates (UAE), Turkey, Yemen, Syrian Arab Republic, Saudi Arabia, Qatar, Oman, Lebanon, Kuwait, Jordan, Israel, Iraq, Bahrain, etc. (based on latest classification of countries given on UNDESA website: http://esa.un.org/wpp/Excel-Data/country-classification.pdf)

Korea	14	260,371	Indonesia	14	48,785
Sri Lanka	21	256,849	Hong Kong	17	42,790
UAE	23	198,236	Italy	25	40,441
Peru	9	158,851	Vietnam	14	39,751
Colombia	11	158,461	UK	24	39,539
UK	25	152,299	Malaysia	19	38,852
Hong Kong, China	18	143,085	France	20	35,978
Portugal	12	139,360	South Africa	10	34,687
Japan	22	119,117	Singapore	16	32,011
Spain	19	108,444	Sri Lanka	14	27,658
Indonesia	16	100,513	Switzerland	15	27,551
Belgium	21	99,676	Belgium	17	24,408
Pakistan	13	96,376	New Zealand	9	21,771
Mexico	13	91,618	Pakistan	12	21,581
Thailand	18	85,289	Bangladesh	10	20,504
Netherlands	15	82,383	UAE	19	19,502
Morocco	13	79,900	Netherlands	17	17,640
Argentina	12	72,110	Spain	18	14,137
Togo	5	70,598	Uruguay	2	12,594
Vietnam	14	69,499	Canada	14	9,178
Malaysia	21	66,926	Turkey	16	9,170
South Africa	18	62,074	Saudi Arabia	11	8,598

*Source:* WITS Software

India is integrated in GVCs if it exports more number of inputs to other countries as compared to imports. India exports all the 26 inputs to US, and imports all these from China. It exports comparatively greater number of inputs to Bangladesh, South Africa, Sri Lanka, UAE, Belgium, US, Indonesia, Malaysia, UK and Hong Kong. However, number of inputs that have been exported and imported are similar in case of Germany, Japan and Vietnam. Thus, India has good linkages with these countries in GVCs. Further, India is integrating high in value chains of those countries where it simultaneously exports and imports higher numbers of inputs, i.e., 15 inputs or more out of total 26 inputs. These countries are China, Turkey, Italy, Germany, US, UAE, UK, Hong Kong, Japan Spain, Belgium, Thailand, Netherlands and Malaysia. That is, India is integrating high, both in terms of number of inputs and export values, with many SEA and EA countries, followed by SA and WA. There are many countries from Europe as well as US.

On the imports front, among Asian partners, EA has highest trade values, such as, China, Korea, Japan and Hong Kong (both in terms of value and number of inputs that are imported), followed by Thailand, Indonesia, Malaysia, Singapore, etc.

It is thus not misleading to say that certain products of India's T&C industry have significant presence in GVCs, but there is great need to improve trade shares of all potential inputs.

## 4. Intra-Industry Trade (IIT) Based on Trade Data

The extent of integration of India's T&C industry into GVCs is measured by how much IIT is taking place, particularly vertical IIT. Two tools of 'Grubel-Lloyd Index (GLI)' and 'Decomposition Type Threshold Method' are used. For an individual product group or industry i, GL Index is calculated as:  $GLI_i = [(X_i + M_i) - |X_i - M_i|].100/(X_i + M_i)$ , where  $X_i$ = exports of industry *i*; and  $M_i$ = imports of industry *i* (here *i* is India's T&C industry). Formula  $GLI_j = \{[(\sum (X_i + M_i) - \sum |X_i - M_i|)].100 / \sum (X_i + M_i)\}$  is used to obtain the average level of IIT for a country *j*, where *i* is the *i*th of n industries (GLI<sub>India</sub>).

#### 4.1 Calculation of IIT (2-digit level)

GLI based on trade data is not only calculated for entire T&C industry, but also separately for textiles and clothing segments (Table 8). The selected years captures some important policy changes in this industry. These include quota-restrictions placed on the exports of T&C products from developing countries like India to US and Europe before the phasing out of Multi-fibre arrangement (MFA) quotas from 1st January 2005 under the mandate of WTO Agreement on Textiles and Clothing (ATC); launching of many Government of India's flagship schemes in late 1990s and early 2000s, such as, Technology Upgradation Fund Scheme (TUFS) 1999, National Textiles Policy 2000, etc; and further, after 2005, initiatives have been taken for further promotion of exports of textiles and apparels like establishment of more export promotion councils, approval of Scheme for Integrated Textile Parks in mid-2005, introduction of EPCG (export promotion capital goods) scheme at zero duty for apparels and textiles in Foreign Trade Policy of 2009-14, draft of National Fibre Policy 2010, and need to bring out new National Textiles Policy, etc.

↓ Product Code/ Years →	1988	1997	2001	2006	2012
50	58	61	71	96	67
51	23	74	52	49	64
52	24	5	34	23	16
53	17	28	37	89	90
54	96	38	63	63	49
55	75	61	33	34	39
56	63	96	86	97	70
57	0	1	4	7	10
58	44	27	22	70	71
59	92	51	47	33	40
60	70	39	88	83	73
61	0	0	0	1	4
62	0	0	0	2	5
63	24	10	24	9	18
<b>GLI</b> India	19	13	31	20	21
GLI (Textiles)	32	23	39	40	33

**Table 8:** Values of GLI<sub>i</sub> for HS 50-63 (India's IIT with world)

GI	Л					
(Cloth	ing)	4	2	3	3	8
		1 1 1				

Source: Own Calculations, WITS Software

The results show that IIT is quite low for Indian T&C industry at 21% in 2012. It has risen by 12 percentage points from 1988 to 2001 (could be due to launching of various government schemes). But, it has increased by just 2 percentage points from 1988 to 2012, thereby not showing much change in integration level of this industry into GVCs. This could be mainly attributed to India's self-sufficiency in the production of majority of textiles and clothing products which are used for meeting both domestic as well as export demands. Also, their imports are limited as inferred from previous section. So, there does not seem to be simultaneous exports and imports in many T&C commodities.

It is found that the IIT in products namely wool, fine/coarse animal hair; other vegetable textile fibres and paper yarn; and special woven fabrics, laces, etc. has increased from comparatively lower levels in 1988 to much higher levels in 2012. In contrast, IIT has majorly declined for man-made filaments, man-made staple fibres, and impregnated/coated textile fabrics and articles for industrial use. Thus, these GLI results show that despite its overall low participation in GVCs, there are certain segments of Indian T&C industry which are better linked (i.e., rising IIT since 2006 mainly due to removal of MFA quotas), such as, silk, wool, apparel products, carpets/ textiles floor coverings, as well as special woven fabrics and knitted or crocheted fabrics.

Moreover, textiles have much higher IIT than the average IIT calculated for this industry. Its IIT is also very high as compared to IIT in clothing. But, GLI for textiles has increased only by 1 percentage point from 1988 to 2012. It increased rapidly till 2006, thereafter declined. The fall may be attributed to the global economic recession that broke out in 2008-09, thereby affecting many developed countries like US and EU (major trading partners of India). However, Indian textiles are better integrated into GVCs than Indian clothing, based on the analysis of IIT. This sub-section also uses 4-digit level products, like previous section, for calculation of GLI at disaggregated level.

# IIT in Indian Textiles

The table 9 lists the top five Indian textiles products based on highest GLI values in each of the selected year during 1988-2012. Till 2001, there were products from the categories of man-made staple fibres and wadding, felt and nonwovens, as well as knitted or crocheted fabrics. However, in subsequent years, IIT has been highest in those products which relate to the segments of laminated textile fabric, wool, cotton and special woven fabrics. Very few products, such as, HS 5605, HS 5601 and HS 5602 have high GLI in many of these years.

	1988		1997	2001			
HS Code	Description	HS Code	Description	HS Code	Description		
5514	Woven fabrics of synthetic staple fibres, containing less than 85% by weight	6001	Pile fabrics	5005	Yarn spun from silk waste, not for retail sale		
5503	Synthetic staple fibres	<mark>5601</mark>	Wadding of textile materials	5606	Gimped yarn		
5512	Woven fabrics of synthetic staple fibres, containing 85%	<mark>5605</mark>	Metallised yarn	6002	Knitted or crocheted fabrics		

 Table 9: Top Five 4-digit Textiles Products

	or more of such fibres				of a width not exceeding 30 cm	
<mark>5601</mark>	Wadding of textile materials	5309	Woven fabrics of flax 5602		Felt	
<mark>5605</mark>	Metallised yarn	5901	Textile fabrics coated with gum used for outer covers	5306	Flax Yarn	
	GLI Range: 89-93		GLI Rai	nge: 91-99		
	2006		2	012		
HS Code	e Description	]	HS Code	Description		
5910	Transmission/conveyor belts of textile material		5909	Texti	le hosepiping	
5906	Rubberised textile fabrics		6004	Knitted or cr width ex	cocheted fabrics of a xceeding 30 cm	
<mark>5605</mark>	Metallised yarn		5108	Yarn of	fine animal hair	
5401	Sewing thread of man- made filaments	5808		Braids/ orn in	amental trimmings the piece	
5210	Woven fabrics of cotton		5602 Felt			
		GLI Rang	e: 94-100			

Source: Own Calculations, WITS Software

Further, in 2012, India has significant<sup>12</sup> exports and imports with many countries of SEA, EA and SA regions for top products, that is:

- (1) HS 5909: India has significant exports of above 100 US\$ thousand to Singapore, Thailand and Malaysia; while significant level of imports are from Malaysia and the imports above values of 1000 US\$ thousand are with China.
- (2) HS 6004: India's exports are of much higher values of above 3000 US\$ thousand with Bangladesh and Sri Lanka; and such highly significant imports are from China. India's imports are above 100 US\$ with Hong Kong, Sri Lanka, Japan, Korea and Thailand.
- (3) HS 5108: India is trading below stipulated value of 100 US\$ thousand.
- (4) HS 5808: Exports are significant with Bangladesh, Japan, Sri Lanka and Malaysia. Imports are above 3000 US\$ thousand with Hong Kong and China, but between 100 and 1000 US\$ thousand with Japan, Korea, Thailand and Singapore.
- (5) HS 5602: Significant exports of India are with Korea, Thailand, Bangladesh and Indonesia. Imports above 1000 US\$ thousand are from China, and above 100 US\$ thousand from Korea, Sri Lanka and Japan.

Secondly, over the entire period 1988-2012, IIT has increased for many textiles products. Table 10 mentions top ten such products.

**Table 10:** Top Ten 4-digit Textiles Products with Highest Percentage Rise in GLI (1988-2012)

<sup>&</sup>lt;sup>12</sup> Values of exports and imports of at least 100 US\$ thousand (and till 999 US\$ thousand) are considered as 'significant' trade values and the values of 1000 US\$ and above are considered as 'highly significant'.

Code	Description	GLI 1988	GLI 2012
5007	Woven fabrics of silk/silk waste	1	66
5308	Yarn of other vegetable textile fibres/ paper	1	47
5307	Yarn of jute/ other textile bastfibres	3	88
5505	Waste of man-made fibres	3	80
5208	Woven fabrics of cotton, containing 85% or more by weight of cotton, weighing not more than 200 g/m2	2	31
5408	Woven fabrics of artificial filament yarn	5	59
5111	Woven fabrics of carded wool, carded fine animal hair	4	39
5210	Woven fabrics of cotton, containing less than 85% by weight of cotton	9	74
5602	Felt	13	94
5911	Textile products, articles for technical uses	6	43

Source: Own Calculations, WITS Software

That is, IIT has risen tremendously across the entire textile value chain particularly for yarn of silk and jute, and woven fabrics of cotton, wool, and artificial filament yarn, etc.

However, IIT has declined immensely from 1988 to 2012 for several Indian textiles products (see Table 11). This includes mainly the products from segments of wool and animal hair, and man-made staple fibres. However, in last few years especially since 2006, India's IIT declined in many low value-added items of traditional segments of silk, cotton, etc.

Code	Description	GLI 1988	GLI 2012
5104	Garnetted stock of wool or animal hair	82	0
5502	Artificial filament tow	32	0
5405	Artificial monofilament of 67 decitex or more	7	0
5507	Artificial staple fibres, carded or combed	53	1
5101	Wool, not carded or combed	14	0
5102	Fine or coarse animal hair, not carded or combed	49	6
5204	Cotton sewing thread, whether or not put up for sale	38	5
5514	Woven fabrics of synthetic staple fibres	93	12
5515	Other woven fabrics of synthetic staple fibres	54	8
5109	Yarn of wool or of fine animal hair, put up for retail sale	52	13

**Table 11:** 4-digit Textile Products with Highest Percentage Fall in GLI (1988-2012)

Source: Own Calculations, WITS Software

Further, the top five Indian clothing products are given in Table 12. Their GLI is much lower than that of textiles, except in 2012. Many of these top products have been the same especially since 1997, such as HS 6309, HS 6215, HS 6116, HS 6217, etc. (as highlighted in the table).

## Table 12: Top Five 4-digit Clothing Products

1988					19	97			
HS Co	ode	Description			HS Code		Description		
<mark>630</mark>	1	Blankets, tra	avelling ru	g rugs 6116			Gloves, mittens		
611'	7	Other made up cl	othing acc	essories	<mark>6309</mark>		Worn Clothing		
6303	3	Curtains and	interior blinds 6215			Ties, bow ties and cravats			
6300	6	Tarpaulins, tents;	sails for b	oats; etc.	<mark>6212</mark>		Brassieres, girdles, etc.		
630	6307Other made up articles6217		Other made up clothing accessor						
	GLI Range: 2-16				GLI Range: 19-56				
		2001	2006		2012				
HS Code		Description	HS Code	Desc	ription	HS Code	Description		
6308	em	broidered table cloths	<mark>6215</mark>	Ties,	cravats	<mark>6215</mark>	Ties		
6113	kni	Garments made up of cnitted/crocheted fabrics 6217 Other made up cloth accessories		6217 Other made up clothing accessories		6217 Other made up clothing accessories		<mark>6309</mark>	Worn Clothing
<mark>6305</mark>	Sa	cks and bags used for packing of goods	6305 Sacks and bags used for packing of goods		<mark>6116</mark>	Gloves, mittens and mitts			
<mark>6309</mark>		Worn Clothing	<mark>6116</mark>	Gloves, mittens		<mark>6113</mark>	Garments		
<mark>6215</mark>		Ties	<mark>6212</mark>	Brassieres, girdles, etc.		Brassieres, girdles, etc.		<mark>6301</mark>	Blankets, rugs
GLI Range: 45-57		GLI Range: 19-53		GLI Range: 56-90					

Source: Own Calculations, WITS Software

Summary of India's significant and highly significant trade values with countries of EA, SEA and other SA for top clothing products in 2012 is as follows:

- (1) HS 6215: India's exports are below stipulated significant value of 100 US\$ thousand, but imports are significant with China and Hong Kong.
- (2) HS 6309: Exports are above 1000 US\$ thousand with many countries (mainly African), but with few of selected countries like Pakistan, Hong Kong and Malaysia. Exports are significant with Cambodia, Philippines, Japan and Korea. Imports are above 9000 US\$ thousand with Korea, but more than 1000 US\$ thousand with Japan and Malaysia (above 100 US\$ thousand with China and Pakistan).
- (3) HS 6116: India's exports of more than 100 US\$ thousand are to Japan, Nepal, Singapore and Thailand; and imports are much higher than 1000 US\$ thousand with China and Pakistan, followed by Bangladesh (imports above 100 US\$ are with Sri Lanka, Korea and Indonesia).
- (4) HS 6113: Only significant imports with China.
- (5) HS 6301: Exports are highly significant with China, and above 100 US\$ thousand with Japan, Nepal, Malaysia, Iran, Myanmar and Hong Kong. But imports are very high of about 46000 US\$ thousand from China and above 100 US\$ thousand with Korea and Thailand.

Over the period 1988-2012, IIT has not declined for any of the clothing product (HS 61-63). Table 13 accordingly lists out those top products where IIT has increased tremendously over these years (mainly in case of made-ups).

Code	Description	GLI 1988	GLI 2012
6309	Worn clothing	2	75
6305	Sacks and bags	1	28
6217	Other made up clothing accessories	1	25
6306	Tarpaulins, sunblinds; tents; etc.	2	47
6310	Used or new rags; scrap twine, rope and cables	2	39
6307	Other made up articles, including dress patterns	2	11
6301	Blankets and travelling rugs	16	56
6117	Other made up clothing accessories	11	35
6303	Curtains and interior blinds	4	7

**Table 13:** Top 4-digit Clothing Products with Highest Percentage Rise in GLI (1988-2012)

Source: Own Calculations, WITS Software

Since abolition of MFA quotas, that is, from 2006 to 2012, there has been rise in IIT for almost all the clothing products except HS 6217 (Other made up clothing accessories). IIT has been just 1% in these years for bed linen, track suits, swimwear, shawls and mufflers (i.e., HS 6302, HS 6211 and HS 6214). To summarize, during 1988-2012, highest rise in IIT has been for many products belonging to HS 63. However, IIT in worn clothing and hosiery items has also increased from 2006 to 2012.

## 4.3 Calculation of IIT: Input-Output Tables

In this sub-section, IIT is also calculated by using GLI formula based on the data obtained from India's Input-Output (IO) Tables of 1993-94, 1998-99, 2003-04 and 2007-08.

As per IO tables as well, the IIT is quite low for India's T&C industry with 20% in 1993-94 and increased by 8 percentage points in 2003-04 and 2007-08. Here also, IIT in textiles is much higher than the average IIT calculated for entire industry (Table 14), similar to the results based on trade data. It had increased tremendously from 1998-99 with 30% to 51% in 2003-04. But this has been lower at 23% in 1997 and 39% in 2001, when measured on the basis of trade data. Second, IIT in clothing rose by 7 percentage points from 1993-94 to 1998-99; thereafter it declined by 10 percentage points in 2007-08. But, as per trade data, it was just 2% in 1997 as against 13% in 1998-99 (estimated on the basis of IO tables), and rather increased by 1 percentage points in 2001 and 2006. However, the results of 2007-08 (44% and 3% in case of textiles and clothing) largely match qualitatively with those calculated through trade data for 2006 (where respective values are 40% and 3%).

Table 14: Values of GI	LI from India's	s Input-Output Tables (%
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IOT Sec No.(1993- 94, 1998- 99)	IOT Sec No.(2003- 04, 2007- 08)	Product label	1993- 94	1998- 99	2003- 04	2007- 08
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Textiles Clothing and made-ups			29 6	30 13	51 1	44
Total			20	24	28	28
49	49 54 Miscellaneous textile products		53	57	73	94
48	53	Readymade garments	6	13	1	3
47	52	Carpet weaving	0	5	7	11
46	51	Jute, hemp, mesta textiles	40	44	67	89
45	50	Art silk, synthetic fiber textiles	60	38	60	66
44	49	Silk textiles	87	81	98	78
43	48	Woolen textiles	43	69	53	82
42	47	Cotton textiles	6	18	45	19
41	46	Khadi, cotton textiles(handlooms)	2	19	41	65

*Source:* Own Calculations

Further, IIT has risen considerably from 1993-94 to 2007-08 for most of the products, except silk textiles and RMGs. Highest change in IIT has been for khadi and handlooms, woollen textiles, jute and mesta textiles, carpet weaving and miscellaneous textile products. However, in the recent years, i.e. from 2003-04 to 2007-08, IIT declined only for cotton and silk textiles. But woolen textile and jute have highest IIT above 80%, which was lower in previous years. In contrast, from 1997 to 2006, GLI as measured by trade data increased for silk from 61% to 96%, but declined for wool from 74% to 49%.

#### 4.4 Vertical IIT

The 'Decomposition Type Threshold Method' decomposes the total trade into one-way trade, horizontal IIT (HIIT) and vertical IIT (VIIT), which is yet another main objective of this paper (calculated as per the methodology adopted by Ando, 2006<sup>13</sup>). Types of trade are calculated separately for Indian textiles and Indian clothing, but at more disaggregated level of product classification, i.e., for HS six-digit level products, for selected years during 1988-2012 period (Table 15 and Table 16).

<sup>&</sup>lt;sup>13</sup> Steps and formulas involved in this method (refer to Ando, 2006) are as follows:

<sup>-</sup> To find out whether trade in commodity q is one-way or IIT, the degree of trade overlap is: Min  $(X_{kq}M_{kq})/Max$   $(X_{kq}M_{kq}) \leq 0.1$ . If this equation holds, trade is one-way and if it does not hold, then IIT  $[X_{kq}$  represents country k's exports of q to the world;  $M_{kq}$  represents country k's imports of q from the world] (Also, f.o.b.-c.i.f. adjustment is to be made: export values on an f.o.b. basis are multiplied by 1.05, a proxy, to adjust import values on a c.i.f. basis). Here, k is India and q is T&C product.

<sup>-</sup>To identify whether IIT of commodity q is horizontal or vertical by using certain range of relative unit prices of exported and imported goods:  $1/1.25 \le P_{kq}^{x}/P_{kq}^{m} \le 1.25$  [where,  $P_{kq}^{x}$  – unit value of q exported to the world by k; and  $P_{kq}^{m}$  – unit value of q imported from the world by k; and threshold percentage of distinguishing types of IIT taken as 25%]. If equation holds, then trade is horizontal IIT. Vertical IIT if  $P_{kq}^{x}/P_{kq}^{m} < 1/1.25$  or  $1.25 < P_{kq}^{x}/P_{kq}^{m}$ . Unit values are calculated by dividing the trade values by the corresponding quantities.

<sup>-</sup> The share of the *n*-type trade pattern, that is, the threshold-based index  $(\mathbf{S}_{z}^{n})$ , for the aggregated commodity category *z* is calculated as:  $\mathbf{S}_{z}^{n} = \sum_{q} (\mathbf{X}_{kq}^{n} + \mathbf{M}_{kq}^{n}) / \sum_{q} (\mathbf{X}_{kq} + \mathbf{M}_{kq})$ , where n= a (one-way), b (horizontal IIT) and c (vertical IIT).

Textiles		Type of	fTrade		
(50-60)	One-Way Intra-Industry Trade (IIT)				
Voors	Trade	Horizontal IIT	Vertical IIT	Not Classified	
Tears		(1111)	(/111)	111	
1988	86%	9%	5%	0%	
1997	89%	5%	7%	0%	
2001	85%	4%	11%	0%	
2012	82%	11%	7%	0%	

#### **Table 15:** Decomposition Type Threshold Index (Indian Textiles)

Source: Own Calculations, WITS Software

#### Table 16: Decomposition Type Threshold Index (Indian Clothing)

Clothing	Type of Trade				
(61-63)	One-Way Trade	Intra-Industry Trade (IIT)			
Voors		Horizontal IIT	Vertical IIT	Not Classified	
rears		(##11)	(VIII)	111	
1988	98%	1%	1%	0%	
<b>1997</b>	100%	0%	0%	0%	
2001	98%	0%	1%	0%	
2012	96%	2%	2%	0%	

Source: Own Calculations, WITS Software

The trade in Indian textiles is largely one-way of around 80%. This implies lower IIT of 20% or below. The reason could be that many Indian textile products are exported more as compared to their imports. In 1997 and 2001, the VIIT surpassed the HIIT by 2 percentage points and 7 percentage points, respectively. But in 1988 and 2012, HIIT is greater than VIIT by 4 percentage points.

The results of decomposition method are very striking for Indian clothing. Almost the entire trade is one-way trade. There is negligible IIT of around 1-2% till 2001; while in 2012, it became 4% (much lower than textiles). However, VIIT is just equal to HIIT. In majority of the clothing products, the actual trade values of exports are much larger than that of imports. Thus, the decomposition method also shows very low integration of Indian T&C industry into GVCs, and the VIIT is very low.

## 5. Conclusion

The Indian T&C industry occupy its distinct niche on the world level especially in the exports market, but still its imports from the world are very low. Its export shares are larger in case of cotton, apparel and made-ups, as well as man-made filaments and man-made staple fibres. India is trading its textiles and clothing products with many South Asian (SA) countries such as Bangladesh, Afghanistan, Pakistan and Sri Lanka, as well as with several prominent East Asian (EA) and South-East Asian (SEA) countries like China, Macao, Cambodia, etc. But, at the same time, it is found that the integration of India's T&C industry is not very high in GVCs.

At 2-digit, 4-digit and 6-digit level, 45 inputs are identified which India uses in the production of final output. These have been exported to large number of countries, especially HS 32 (dyes and pigments) and HS 52 (cotton). There are rising exports of inputs relating to the segments of man-made filament yarn, staple fibres and knitted or crocheted fabrics. However, India is importing fewer inputs used in the production of textiles and clothing products. All this indicates that Indian T&C industry is linked at lower ends in GVCs.

It is further assessed that India is highly integrated into GVCs of countries such as Bangladesh, South Africa, Sri Lanka, UAE, Belgium, US, Indonesia, Malaysia, UK and Hong Kong. Asian economies have thus become important trade partners of India in this industry. It is also found that over the last two decades, India has significant shares in exports of yarn and woven fabrics of cotton and of silk as well as synthetic filament yarn with many countries; but its high bilateral export shares for these inputs exists only with few countries of European and American continents such as US, UK, Germany, Belgium, Italy, etc., SA, EA and Western Asian (WA) countries.

Secondly, through the GLI method, Indian T&C industry has very low IIT. There is high one-way trade for textiles and mainly for clothing segments, along with minuscule vertical IIT. Nevertheless, commendable IIT is mostly in case of textile products, especially silk, wool, vegetable textile fibres, wadding, felt and nonwovens, special woven fabrics, knitted or crocheted fabrics, etc. IIT in textiles is much higher than that of clothing. Further, as per input-output tables, imported transactions of obtaining inputs, meant to be used in production of final output of Indian T&C industry, are much lower than that of domestic transactions, i.e., vertical specialisation index (VSI) is comparatively lower. Thus, efforts should be made to bring more and more inputs/raw materials of this industry on the global platform so as to increase its level of integration into GVCs. The trading relation with SEA, EA, SA and WA holds high potential for enhancing the growth of Indian T&C industry, which needs to be strengthened more by devising appropriate policies and strategies. As many EA and SEA countries have moved up the ladder into the more capital-intensive products, they have largely vacated their shares in their T&C industries which India can very efficiently target.

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