India's Export Trade with China in 2018 – Aspects

Preface

The object of this study is to demonstrate the utility of trade indicators in analysing merchandise export and import data which may be used for the purpose of formulation of policy. The indicators provide a glimpse of the trade patterns of the world, country-wise and commodity-wise, the performance of India in comparison to them. They have been used in case of India's exports to China, to indicate the possible directions policy may take. This study focuses on China because not only is it India's neighbouring country but, also, it is the second largest importer of merchandise goods in the world since 2009. Moreover, from a preliminary scanning of indicators, the information was gathered that India's trade with China is below the level warranted by world trade patterns.

The data used in this study has been sourced from the United Nations Comtrade Database. Computations are based on data at the ITC-HS six-digit level as the ITC-HS codes are uniform across countries only upto this level. The latest finalised data available on the UN Comtrade Database is of 2018. In some cases, trends from 2014 to 2018 have been shown.

The lay-out of the study is as follows:

Section 1: Introduction which provides a broad overview of China's imports.

Section 2: Deals with India's Export Intensity with respect to China.

Section 3: Explores the trade complementarities between India and China.

Section 4: Discusses the Revealed Comparative Advantage of Indian export items and the Revealed Comparative Import Inclinations of China, and using these indicators, attempts to identify items which may have a further export potential – from India to China. The lists of items are in Appendices A and B.

Section 5: Examines Concentration of Exports from India to China

Section 6: Intra-Industry Trade of India and China

Section 7: Export Similarity between India and China

Appendix A: List of items deserving product-specific export promotion policies

Appendix B: List of items deserving market-specific export promotion policies

Appendix C: The formulae of the trade indicators used.

Section 1: Introduction

1.1   China, officially the People's Republic of China, has emerged as fastest-growing trillion-dollar economy of the world after experiencing exponential growth over the past few decades. It is the second largest economy in the world as per 2018 United Nations Statistics Division data in terms of current GDP in US dollars, exceeding $13.6 trillion, and trailing only the USA, by $6.97 trillion. However, it is the largest economy in terms of current GDP PPP in US dollars, with a value of $25.3 trillion. In 2018, compared to the world average of 0.46, the openness index of China was 0.34, with merchandise exports reaching $2.49 trillion and merchandise imports being $2.13 trillion. (Henceforth, by 'exports' and 'imports' we will mean 'merchandise exports' and 'merchandise imports', unless specified otherwise). In terms of exports, China ranks first in the world, and in terms of imports, it ranks second trailing only USA. Since 2018, series of tariffs and counter-retaliatory tariffs, among other restrictions, resulted in a trade war been China and the USA, the two biggest economies, resulting in economic damage and deterioration of international relations. To avoid further escalation, both countries entered a trade deal in early 2020 which involves partial rollback of past tariffs and pause in additional tariff hikes in the first phase. The Chinese economy is a large and lucrative market, and any exporting nation would strive to obtain a sizable share in the nation often referred to as the world's factory. While on the other hand, countries bent on import-substitution would like see what items imported from China may be produced at home.

A glimpse of China's imports from the top twenty source countries and from India is given in Table 1.A below.

Table 1.A: China's Imports of Merchandise in billion US dollars

	2014	**2015**	**2016**	**2017**	**2018**
World	1959.23	1679.56	1587.92	1843.79	2134.98
Rep. of Korea	190.11	174.51	158.97	177.55	204.57
Japan	162.92	142.9	145.67	165.79	180.4
USA	160.06	148.69	135.12	154.44	156
China[1]	144.88	143.37	§	132.37	146.38
Germany	105.01	87.62	86.11	96.94	106.26
Australia	97.63	73.51	70.9	95.01	105.08
Brazil	51.65	44.09	45.86	58.86	77.14
Malaysia	55.65	53.28	49.27	54.43	63.32
Russian Federation	41.59	33.26	32.26	41.39	58.89
Vietnam	19.91	29.83	37.17	50.37	64.09
Thailand	38.33	37.17	38.53	41.6	44.92
Switzerland	40.54	41.2	39.95	33.02	38.71

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1   China made products are re-imported and are included in the figures for total imports.
§   Index values not available, owing to non-reporting.

	2014	**2015**	**2016**	**2017**	**2018**
Saudi Arabia	48.51	30.02	23.63	31.76	45.9
Singapore	30.83	27.58	26.01	34.25	33.64
South Africa	44.57	30.15	22.23	24.39	27.24
France	27.07	24.63	22.51	26.81	32.33
Indonesia	24.49	19.89	21.41	28.57	34.15
Canada	25.18	26.21	18.34	20.42	28.35
United Kingdom	23.73	18.93	18.68	22.33	23.89
Angola	31.11	16	13.97	20.7	25.65
Chile	20.99	18.44	18.6	21.18	27
India	**16.36**	**13.37**	**11.76**	**16.35**	**18.85**

Source: UN Comtrade Database

Table 1.B below shows the percentage shares of imports of merchandise, again of the top 20 source countries, and of India, which has been included for comparison.

Table 1.B: Shares of countries in China's Imports of Merchandise

Countries	**2014**	**2015**	**2016**	**2017**	**2018**
Rep. of Korea	9.70%	10.39%	10.01%	9.63%	9.58%
Japan	8.32%	8.51%	9.17%	8.99%	8.45%
USA	8.17%	8.85%	8.51%	8.38%	7.31%
China	7.39%	8.54%	§	7.18%	6.86%
Germany	5.36%	5.22%	5.42%	5.26%	4.98%
Australia	4.98%	4.38%	4.46%	5.15%	4.92%
Brazil	2.64%	2.63%	2.89%	3.19%	3.61%
Malaysia	2.84%	3.17%	3.10%	2.95%	2.97%
Russian Federation	2.12%	1.98%	2.03%	2.24%	2.76%
Vietnam	1.02%	1.78%	2.34%	2.73%	3.00%
Thailand	1.96%	2.21%	2.43%	2.26%	2.10%
Switzerland	2.07%	2.45%	2.52%	1.79%	1.81%
Saudi Arabia	2.48%	1.79%	1.49%	1.72%	2.15%
Singapore	1.57%	1.64%	1.64%	1.86%	1.58%
South Africa	2.27%	1.80%	1.40%	1.32%	1.28%
France	1.38%	1.47%	1.42%	1.45%	1.51%

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§   Index values not available, owing to non-reporting.

Countries	2014	2015	2016	2017	2018
Indonesia	1.25%	1.18%	1.35%	1.55%	1.60%
Canada	1.29%	1.56%	1.15%	1.11%	1.33%
United Kingdom	1.21%	1.13%	1.18%	1.21%	1.12%
Angola	1.59%	0.95%	0.88%	1.12%	1.20%
Chile	1.07%	1.10%	1.17%	1.15%	1.26%
India	**0.83%**	**0.80%**	**0.74%**	**0.89%**	**0.88%**

Source: Computed from UN Comtrade Database

1.2   The two tables above show that China imports most of its merchandise from South Korea and Japan, two major economies situated in close geographical proximity, and also from the USA. China shares strong trade relations with South Korea and Japan and the three countries are negotiating on a multilateral Free Trade Agreement, with a bilateral Free Trade Agreement between China and South Korea already in force. These three countries together make up to 23.51% of the world GDP. On the other hand, India and China are members of the Asia-Pacific Trade Agreement, one of the oldest Preferential Trade Agreements, and further trade agreements are under consideration. As of 2018, India's share in China's imports is only 0.88 per cent, while her share in world merchandise exports is around 1.66 per cent.

Section 2: Export Intensity Index

2.1   In 2018, India's Export Intensity Index with respect to China is approximately 0.6. Export Intensity Index of a country with respect to an importing country is the share of the exporting country's merchandise going to that particular importing country divided by the share of world exports going to that importing country. In other words, it is the importance of that importing country as a destination for the exporting country's merchandise outflow, as compared to the importance that importing country enjoys as a destination of world exports. But algebraically, it is equal to the exporting country's share in the importer's market as compared to the same country's market share in the world market.[2] Hence, in this case, China enjoys more than half the importance as a destination of India's exports compared to what she does as a destination world exports. Table 2.A below shows the indices of the countries China imports her merchandise mainly from. India's index is shown for comparison.

Table 2.A: Export Intensity Indices of Countries w.r.t China

Countries	2014	2015	2016	2017	2018
Rep. of Korea	2.6824	2.7232	2.5910	2.4427	§
Japan	1.9365	1.8297	1.8207	1.8754	2.3235
USA	0.7573	0.7578	0.7645	0.7727	0.8117
Germany	0.7004	0.6255	0.6567	0.6647	0.8420

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2   See Appendix C for the formula of Export Intensity Index.

Countries	2014	2015	2016	2017	2018
Australia	3.3629	3.1443	2.9969	2.9170	4.1322
Brazil	1.9086	1.9492	1.9566	2.1503	3.1868
Malaysia	1.2750	§	1.2937	1.3297	1.6567
Russian Federation	0.7949	0.8620	1.0139	1.0301	1.4773
Vietnam	1.0512	1.0699	§	§	§
Thailand	1.1651	1.1565	1.1384	§	1.4226
Switzerland	0.6258	0.7272	0.9254	0.8068	1.1603
Saudi Arabia	0.2268	0.2897	0.2057	§	0.3938
Singapore	1.3294	1.4400	1.3388	1.4274	1.4573
South Africa	1.0132	0.8719	0.9482	0.9680	1.0870
France	0.4008	0.4217	0.3736	0.4011	0.5156
Indonesia	1.0579	1.0469	1.1984	1.3462	1.7923
Canada	0.3906	0.3840	0.3993	0.4079	0.5396
United Kingdom	0.5365	0.6198	0.4557	0.4768	0.6713
Angola	4.9626	4.5195	§	§	7.0250
Chile	2.5985	2.7529	2.9402	2.7188	3.9888
India	**0.4475**	**0.3790**	**0.3533**	**0.4185**	**0.6046**

Source: Computed from UN Comtrade Database

Table 2.A shows that among the main exporters to China, countries like Angola, Australia, South Korea, Chile, Japan, Malaysia, Singapore, Thailand, and Indonesia have Export Intensity Indices way above 1, i.e. they give much more importance to China as a destination of their exports than the whole world does. It is not surprising as most of these countries have trade agreements with China. Countries in Europe (except for the Russian Federation and Switzerland), and even the USA, have index values less than 1. Despite the geographical proximity, India's index is lower than that of the USA and is similar to countries such as Canada, France and the United Kingdom. All these bring home the point that there is room for improvement and India, being the 3rd largest economy in Asia after China and Japan, needs to increase its Export Intensity Index with respect to China, at least to 0.7-0.8 level, if not to 1.

2.2 For drawing up a plan to increase the export intensity with respect to China, a look at the export intensities for commodity groups is important – in order to identify those groups which have very low indices, and which have thus brought the overall index down to 0.6. An ITC-HS two-digit code level study will be of help in finding out the industries which need to be targeted. Table 2.B, which refers to 2018 figures, shows the ITC-HS two-digit level commodity group-wise export intensity figures for India with respect to China.

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§   Index values not available, owing to non-reporting.

Table 2.B: ITC-HS Chapter-wise Export Intensity Indices for India w.r.t China in 2018

Chapter	Index Value	Chapter	Index Value	Chapter	Index Value	Chapter	Index Value
1	0.0000	26	1.3431	51	0.2180	76	0.0785
2	0.0000	27	0.8780	52	1.4975	78	0.7856
3	0.9432	28	0.6056	53	1.0330	79	1.2102
4	0.0001	29	1.5866	54	0.1565	80	0.0000
5	0.5433	30	0.0716	55	0.4218	81	0.3811
6	0.3903	31	0.1682	56	0.2812	82	0.3211
7	0.2116	32	1.1377	57	1.2139	83	0.1953
8	0.0498	33	0.7836	58	0.1138	84	0.4978
9	2.5223	34	0.3380	59	1.4442	85	0.3225
10	0.0005	35	0.1327	60	0.1885	86	0.2462
11	0.0682	36	0.0000	61	0.4292	87	0.0803
12	0.0368	37	0.0236	62	0.3837	88	0.0789
13	1.5732	38	0.3962	63	0.7883	89	0.0011
14	1.5028	39	1.4052	64	0.7061	90	0.3948
15	4.2400	40	0.2784	65	0.4984	91	0.0514
16	0.3149	41	0.6434	66	4.5306	92	2.8647
17	0.1999	42	0.2617	67	30.0287	93	0.1325
18	0.1474	43	0.3047	68	0.1980	94	0.5520
19	0.0078	44	0.8845	69	0.4646	95	0.5640
20	1.0757	45	0.4105	70	0.2417	96	0.3044
21	0.1368	46	0.9859	71	0.0622	97	0.8164
22	0.0368	47	0.1772	72	0.6207	99	0.2100
23	0.0165	48	1.7399	73	0.2746		
24	0.0623	49	0.0846	74	1.5737		
25	2.5509	50	3.7561	75	0.3712		

Source: Computed from UN Comtrade Database

It is clear from Table 2.B that many of the agricultural and related product groups, from Chapters 1 to 24 of ITC-HS, have indices less than 1, sometimes much less. Even for minerals and ores, Chapters 25 to 27, we have an index value of less than 1. But none of these, except 12, 26 and 27, i.e. oil seeds and oleaginous fruits, etc; ores, slag and ash; and mineral fuels, oils, distillation products, etc. are in the top twenty of China's's imports. Let us take a benchmark of 0.5% for identifying ITC-HS Chapters with not-so-insignificant shares in Chinese imports. Among the ITC-HS Chapters for which index value < 1, the imports of the following have a share of 0.5% or more in

China's total imports and these are the ITC-HS chapters responsible for India's low Export Intensity Index with respect to China:

02 – Meat and edible meat offal
03 – Fish, crustaceans, molluscs, aquatic invertebrates nes
12 – Oil seed, oleagic fruits, grain, seed, fruit, etc, nes
27 – Mineral fuels, oils, distillation products, etc

Moving on from the primary products, among manufactures, going again by the 0.5% rule, and an export intensity index figure of less than 1, the following may be short-listed as the ITC-HS chapters responsible for driving the Export Intensity Index of India with respect to China low:

28 – Inorganic chemicals, precious metal compound, isotopes
30 – Pharmaceutical products
33 – Essential oils, perfumes, cosmetics, toileteries
38 – Chemical products n.e.c.
40 – Rubber and articles thereof
44 – Wood and articles of wood
47 – Pulp of wood or other fibrous cellulosic material
71 – Pearls, precious stones, metals, coins, etc
72 – Iron and steel
73 – Iron or steel articles
84 – Nuclear reactors, boilers, machinery, etc
85 – Electrical, electronic equipment
87 – Vehicles other than railway, tramway
88 – Aircraft, spacecraft and parts thereof
90 – Optical, photo, technical, medical, etc apparatus

Section 3: Trade Complementarity Index

3.1 The ITC-HS chapters identified in Section 2 above is only a short-list, for it narrates half the story. Trade takes place when there is a complementarity of demand and supply, in the present case, between the demand of China and the supply of India. The Trade Complementarity Index (TCI) is a measure of this match, and the value of the index between Indian exports and Chinese imports in 2018 stood at 0.2, which is not very high, given that the index between Indian exports and world imports was over 0.38. Hence, the Relative Trade Complementarity Index is 0.52 (i.e. < 1), meaning that India's exports have less complementarity with Chinese imports than with world imports.[3]

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3   See RTCI in Appendix C.

Table 3.A: Trade Complementarity Index (including Relative) between India and China

	2014	**2015**	**2016**	**2017**	**2018**
TCI[4]	0.1935	0.2196	0.2170	0.2080	0.2006
TCIW[5]	0.3893	0.4125	0.3790	0.3980	0.3826
RTCI[6]	0.4971	0.5322	0.5730	0.5220	0.5244

Source: Computed from UN Comtrade Database

TCI is computed by taking the shares of each commodity (here, at the ITC-HS 6-digit level) in the export basket of India, and then the corresponding shares of these commodities in the import basket of China, calculating the absolute value of the difference between the two for each 6-digit level commodity, summing the differences up, dividing the sum by 2, and subtracting what we get from 1. So, the differences in the shares are the major determinants. In case of India and China, the value of the index may not be high, but it is a composite value depending on all the differences taken together. The differences at the individual product group level may be examined. The differences at the individual ITC-HS 2-digit level are examined to find out where lie the complementarities.

The ITC-HS 2-digit code-wise composition of Indian exports and Chinese imports is given in Table 3.B below.

Table 3.B: Composition of India's Exports and China's Imports (ITC-HS chapter-wise)

ITCHS Chapter	India		China	
	Exports (bn $)	**Shares of Chapters (%)**	**Imports (bn $)**	**Shares of Chapters (%)**
1	0.03	0.0100	0.41	0.0193
2	3.74	1.1587	11.02	0.5161
3	6.38	1.9796	11.61	0.5436
4	0.48	0.1493	5.6	0.2624
5	0.13	0.0416	0.73	0.0342
6	0.08	0.0250	0.29	0.0137
7	1.23	0.3806	2.04	0.0955
8	1.53	0.4756	8.68	0.4066
9	3.12	0.9682	0.63	0.0296
10	7.72	2.3939	5.79	0.2713
11	0.31	0.0970	1.18	0.0553
12	1.62	0.5024	43.37	2.0315

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4   TCI – Trade Complementarity Index between India and China.
5   TCIW – Trade Complementarity Index between India and the World.
6   RTCI = (TCI/RTCI).

ITCHS Chapter	India		China	
	Exports (bn $)	Shares of Chapters (%)	Imports (bn $)	Shares of Chapters (%)
13	1.06	0.3294	0.31	0.0147
14	0.05	0.0148	0.14	0.0067
15	1.12	0.3469	8.61	0.4033
16	0.43	0.1330	0.39	0.0184
17	1.17	0.3642	1.42	0.0666
18	0.19	0.0602	0.79	0.0368
19	0.52	0.1616	6.67	0.3122
20	0.59	0.1843	1.4	0.0655
21	0.76	0.2357	3.25	0.1525
22	0.33	0.1024	6.43	0.3014
23	1.68	0.5198	3.81	0.1782
24	0.98	0.3051	1.76	0.0824
25	2.25	0.6968	8.02	0.3754
26	1.66	0.5134	135.91	6.3661
27	48.59	15.0682	347.78	16.2896
28	2.03	0.6297	10.83	0.5072
29	17.78	5.5128	67.39	3.1565
30	14.3	4.4343	27.9	1.3068
31	0.14	0.0422	2.73	0.1280
32	3.23	1.0028	5.03	0.2355
33	1.94	0.6003	12.37	0.5796
34	0.6	0.1855	4.91	0.2301
35	0.25	0.0776	3.6	0.1686
36	0.12	0.0373	0.14	0.0066
37	0.01	0.0036	2.62	0.1227
38	4.42	1.3713	18.07	0.8465
39	7.87	2.4389	74.87	3.5067
40	3.16	0.9799	16.91	0.7920
41	0.78	0.2423	4.78	0.2238
42	2.49	0.7736	3.32	0.1555
43	0.01	0.0000	1.04	0.0486
44	0.43	0.1348	24.91	1.1670
45	0	0.0012	0.06	0.0026

ITCHS Chapter	India		China	
	Exports (bn $)	Shares of Chapters (%)	Imports (bn $)	Shares of Chapters (%)
46	0.03	0.0102	0.02	0.0007
47	0	0.0011	24.01	1.1246
48	1.82	0.5655	6.2	0.2905
49	0.38	0.1179	2.08	0.0973
50	0.08	0.0257	0.05	0.0025
51	0.19	0.0583	4.2	0.1966
52	8.09	2.5099	9.89	0.4633
53	0.42	0.1297	0.92	0.0429
54	2.27	0.7037	3.16	0.1478
55	1.91	0.5923	2.48	0.1160
56	0.42	0.1299	1.33	0.0621
57	1.75	0.5435	0.14	0.0064
58	0.37	0.1146	0.51	0.0240
59	0.25	0.0771	1.81	0.0848
60	0.42	0.1303	1.64	0.0767
61	7.56	2.3457	3.39	0.1587
62	8.07	2.5011	4.17	0.1955
63	5.23	1.6217	0.48	0.0227
64	2.84	0.8817	4.66	0.2183
65	0.04	0.0136	0.1	0.0047
66	0	0.0008	0.03	0.0016
67	0.22	0.0670	0.23	0.0108
68	1.51	0.4668	1.84	0.0860
69	1.52	0.4705	1.23	0.0575
70	0.89	0.2771	7.79	0.3647
71	39.23	12.1657	61.95	2.9019
72	9.95	3.0851	22.38	1.0481
73	7.09	2.1979	10.76	0.5041
74	1.6	0.4975	47.65	2.2317
75	0.06	0.0186	5.5	0.2576
76	5.16	1.5999	6.64	0.3111
78	0.44	0.1349	0.4	0.0188
79	0.74	0.2284	2.58	0.1208

ITCHS Chapter	India		China	
	Exports (bn $)	Shares of Chapters (%)	Imports (bn $)	Shares of Chapters (%)
80	0.01	0.0033	0.18	0.0084
81	0.06	0.0197	4.82	0.2260
82	0.88	0.2727	3.85	0.1803
83	0.62	0.1909	1.94	0.0909
84	20.43	6.3338	202.32	9.4763
85	11.84	3.6728	521.54	24.4283
86	0.51	0.1579	0.79	0.0372
87	18.24	5.6558	81.49	3.8170
88	2.04	0.6318	30.68	1.4372
89	3.55	1.1001	2.06	0.0963
90	3.21	0.9945	102.53	4.8022
91	0.09	0.0293	3.82	0.1790
92	0.02	0.0059	0.49	0.0229
93	0.12	0.0365	0.01	0.0004
94	1.66	0.5140	3.97	0.1860
95	0.39	0.1218	2.11	0.0989
96	0.6	0.1871	2.59	0.1214
97	0.14	0.0435	0.19	0.0091
99	0.18	0.0553	29.85	1.3984
Total	322.49	100	2134.98	100

Source: Computed from UN Comtrade Database

3.2 Complementarity in respect of a particular commodity group (here, ITC-HS two-digit level code) implies that India's exports of the commodity (to the world) is substantial, and so is the Chinese imports of the commodity (from the world). Already, the criterion of 0.5% of Chinese imports has been imposed. For the sake of examining complementarity, it may be checked that those commodity groups already short-listed enjoy at least a 0.5% share in India's exports. This ensures a match between India's supplies and China's demand. If India does not export a particular commodity in substantial amounts, owing maybe to domestic production structure, it will not be worthwhile to examine them even if China has a high demand for it.

Applying this criterion Chapters 44 and 47 may be dropped from the list. The remaining may be considered to be the chapters owing to which India's Export Intensity Index with respect to China is low, without there being a credible reason based on demand and supply conditions. Exactly which ITC-HS 4-digit, 6-digit or 8-digit level codes are responsible only a detailed analysis at the specific commodity level may identify. This study above is illustrative as to the use of the export intensities

and trade complementarities in finding out areas which need a closer look. For the time being, the identification of ITC-HS chapters, which broadly indicate industries, has been aimed at. It may also be mentioned that some 4, 6 or 8-digit level commodities in the 2-digit codes not included in the list may deserve export promotion measures – these may also be identified through a similar analysis at the appropriate level of granularity.

3.3 As it is required to identify the sectors (ITC-HS 2-digit chapters) which have contributed most to the low level of complementarity, the absolute difference in shares – between the share in Indian exports and the share in Chinese imports – for each 2-digit code may be computed. Table 3.C below shows the twenty 2-digit codes which have seen the highest differences. This will be of inter-est to framers of policy if a need to align India's exports to Chinese imports is recognized.

Table 3.C: Top Twenty Chapters with highest absolute difference in shares (in Indian exports and Chinese imports)

Codes	Descriptions	Difference in Shares (%)	Higher Share in
85	Electrical, electronic equipment	20.76	Chinese imports
71	Pearls, precious stones, metals, coins, etc	9.26	Indian exports
26	Ores, slag and ash	5.85	Chinese imports
90	Optical, photo, technical, medical, etc apparatus	3.81	Chinese imports
84	Nuclear reactors, boilers, machinery, etc	3.14	Chinese imports
30	Pharmaceutical products	3.13	Indian exports
29	Organic chemicals	2.36	Indian exports
62	Articles of apparel, accessories, not knit or crochet	2.31	Indian exports
61	Articles of apparel, accessories, knit or crochet	2.19	Indian exports
10	Cereals	2.12	Indian exports
52	Cotton	2.05	Indian exports
72	Iron and steel	2.04	Indian exports
87	Vehicles other than railway, tramway	1.84	Indian exports
74	Copper and articles thereof	1.73	Chinese imports
73	Iron or steel articles	1.69	Indian exports
63	Other made textile articles, sets, worn clothing etc	1.6	Indian exports
12	Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	1.53	Chinese imports
3	Fish, crustaceans, molluscs, aquatic invertebrates nes	1.44	Indian exports
76	Aluminium and articles thereof	1.29	Indian exports
27	Mineral fuels, oils, distillation products, etc	1.22	Chinese imports

Source: Computed from UN Comtrade Database

It is evident from Table 3.C that in case of major high-technology manufactures like 'Electrical, electronic equipment', 'Optical, photo, technical, medical, etc apparatus', and 'Nuclear reactors, boilers, machinery, etc,', with the exception of 'Vehicles other than railway, tramway', the shares in Chinese imports substantially outweigh those in Indian exports. This is also true in case of some natural resources products like 'Ores, slag and ash', and 'Mineral fuels, oils, distillation products, etc'. The commodity groups in case of which shares in Indian exports outstrip those in Chinese imports include many items which do not involve sophisticated manufacturing – 'Cotton', 'Cereals', 'Fish, crustaceans, molluscs, aquatic invertebrates nes', 'Other made textile articles, sets, worn clothing etc', 'Articles of apparel, accessories, not knit or crochet', and 'Articles of apparel, accessories, knit or crochet'. There are also more sophisticated, but not high-end manufacturing products like 'Pearls, precious stones, metals, coins, etc', 'Iron and steel' and 'Iron or steel articles', 'Aluminium and articles thereof', 'Organic chemicals', and 'Pharmaceutical products' that enjoy a higher share in India's exports than in Chinese imports. Hence, this indicates that an increased accent on production and exports of high-end manufactures in India could have had a positive impact on India's exports to China, as the complementarities would improve.

Section 4: RCA and RCII

4.1   The earlier approach was one way of looking at things. Another way involves the use of information regarding sectors which have a relative importance, in terms of value, in India's exports (relative to the importance in world exports), and which enjoy a similar relative importance in China's imports. The first is known as Revealed Comparative Advantage (RCA) and the second Revealed Comparative Import Inclination (RCII). RCA index for a commodity (or commodity group) exported from India is higher than 1 if its importance is more in India's exports than in world exports, and vice versa. Similarly, RCII index for Chinese imports for a commodity (or commodity group) imported to China is higher than 1 if its importance is more in China's imports than in world imports, and vice versa.

Hence, those sectors – we analyse at the ITC-HS two-digit code level – which have both RCA for India and RCII for China higher than 1 are the sectors which India exports and Chinese imports to an extent more than overall world trends warrant. Hence these are the sectors which are expected to see substantial Indian exports to China. Table 4.A and 4.B shows values of RCA for Indian exports and of RCII for Chinese imports for 2018. Those chapters for which both values are above 1 are in red, for values marginally below 1 and which may be included, blue is used.

Table 4.A: RCA of Indian exports in 2018 – ITC-HS chapter-wise

Chapter	RCA	Chapter	RCA	Chapter	RCA	Chapter	RCA
1	0.0780	26	0.4811	51	0.6544	76	1.6029
2	1.8334	27	1.3536	52	9.6487	78	3.4741
3	3.3652	28	1.0201	53	5.4851	79	2.4413

Chapter	RCA	Chapter	RCA	Chapter	RCA	Chapter	RCA
4	0.3030	29	2.5271	54	2.6674	80	0.1144
5	0.6995	30	1.1891	55	3.0157	81	0.1899
6	0.1980	31	0.1447	56	0.8968	82	0.7198
7	1.0824	32	2.1741	57	6.9246	83	0.4760
8	0.9047	33	0.6981	58	1.6649	84	0.4935
9	4.4859	34	0.5635	59	0.5579	85	0.2700
10	4.6424	35	0.4585	60	0.7112	86	0.6847
11	0.8892	36	1.4975	61	2.1996	87	0.6725
12	1.1684	37	0.0502	62	2.1931	88	0.4005
13	7.0856	38	1.2568	63	4.6670	89	1.6557
14	3.1921	39	0.7732	64	1.2546	90	0.3086
15	0.6946	40	0.9854	65	0.2675	91	0.0959
16	0.4990	41	1.8574	66	0.0423	92	0.1642
17	1.6805	42	1.5578	67	1.3666	93	0.5311
18	0.2473	43	0.0695	68	1.5072	94	0.3629
19	0.3657	44	0.1750	69	1.3672	95	0.1930
20	0.5376	45	0.0814	70	0.6789	96	0.6519
21	0.5863	46	0.8309	71	3.4326	97	0.2811
22	0.1288	47	0.0040	72	1.4701	99	0.0190
23	1.3588	48	0.5885	73	1.2720		
24	1.1901	49	0.5510	74	0.6218		
25	2.9487	50	2.0714	75	0.1428		

Source: Computed from UN Comtrade Database

Table 4.B: RCII of Chinese imports in 2018 – ITC-HS chapter-wise

Chapter	RCII	Chapter	RCII	Chapter	RCII	Chapter	RCII
1	0.1719	26	4.6800	51	2.4464	76	0.2935
2	0.8808	27	1.1010	52	2.3342	78	0.3974
3	0.7577	28	0.6951	53	1.7493	79	1.1156
4	0.6486	29	1.2188	54	0.7169	80	0.1534
5	0.5838	30	0.3844	55	0.6916	81	1.3657
6	0.1271	31	0.3646	56	0.4953	82	0.4853
7	0.2755	32	0.5336	57	0.0774	83	0.2386

8	0.5460	33	0.7671	58	0.5551	84	0.8196
9	0.1019	34	0.7214	59	0.7581	85	1.7572
10	0.5310	35	1.0849	60	0.7552	86	0.2402
11	0.5746	36	0.2396	61	0.1316	87	0.4788
12	3.3787	37	1.5290	62	0.1627	88	0.9687
13	0.3220	38	0.7522	63	0.0733	89	0.3294
14	0.9374	39	1.0368	64	0.2855	90	1.5319
15	0.7889	40	0.7155	65	0.0926	91	0.7067
16	0.0673	41	1.6942	66	0.1443	92	0.5435
17	0.3330	42	0.3620	67	0.3257	93	0.0064
18	0.1299	43	1.7094	68	0.3136	94	0.1387
19	0.8401	44	1.3886	69	0.2342	95	0.1695
20	0.1804	45	0.2303	70	0.8571	96	0.4904
21	0.3910	46	0.0614	71	0.8248	97	0.0697
22	0.4684	47	3.1993	72	0.4744	99	0.9180
23	0.4118	48	0.3312	73	0.3094		
24	0.4013	49	0.4905	74	2.5501		
25	1.2691	50	0.2560	75	1.4500		

Source: Computed from UN Comtrade Database

Hence, from Table 4.A and 4.B above, the chapters which should see high exports from India to China are 2, 12, 14, 25, 27, 29, 41, 52, 53, 71, 79. Let this set be called set A[7].

4.2 But are India's exports of these product groups to China really sufficiently high? If the RCA of India to China (not to the world, as was being discussed earlier) for the elements in set A > 1, it may be said that the exports are sufficiently high. This is true because China's RCII (for the world) for the product is also > 1. Otherwise, the condition would not be applicable. The reason is not far to seek. Let the share of imports of product P in world imports be r%. (That will theoretically be the percentage share of P in world exports, too). If China's RCII for P > 1, the share of P in her imports, y > r. If all the countries of the world had the same RCA (in that case all, including India would have RCA = 1), the share of P exports of all countries, including India, would be x. Share in imports in different countries would vary according to their RCII for P. So, the share of P in India's exports to China should be y, and not less than y (if other factors do not come into play to spoil the whole thing), to another country it might be z, its RCII (which might be < or > 1). So, even if India's RCA for P = 1, its RCA for P in case of exports to China would be > 1 (= y). Now, commodities which have RCA for India > 1 have been chosen. Let share of P in India's exports be q (q > r, as

7   The Chapters indicated in blue in Table 4.A and 4.B, values of which are marginally less than 1, are clubbed with the values indicated in red and are included in set A. In the analysis that follows, these figures are not treated differently and set A retains the dominant property that the RCAs and RCIIs of these Chapters, in India's exports and in China's imports respectively, are greater than 1.

RCA for India for P > 1). Thus, RCA for P in case of exports from India to China should be > 1 (actually it should equal y*q, both y, q > 1, but we may go with the weaker condition). Hence, the necessity of both y and q to be > 1.

If the RCA of P in India's exports to China < 1, it needs closer examination. For some reason, Indian exporters do not exports sufficient amounts of P (in value terms) while they export their wares to China. The policy measures in this case must be directed towards making Indian exporters increase the share of P in their export basket to China.

Let the chapters which have an RCA in exports from India to China > 1 constitute set B. So, B = {3, 5, 13, 14, 15, 25, 26, 27, 29, 32, 39, 41, 44, 47, 48, 50, 51, 52, 53, 59, 67, 74, 79, 92}.

The set A ∩ B = {14, 25, 27, 29, 41, 52, 53, 79}.

These are the 8 sectors, for which RCA in Indian exports to China is (expectedly) > 1, as both their RCAs in India's exports and their RCIIs in China's imports are > 1. But the set A – B = {2, 12, 71}, gives us the sectors for which RCA in Indian exports to China is < 1, though both their RCAs in India's exports and their RCIIs in China's imports are > 1. For the set A – B, product-specific export-promotion measures for the Chinese market may be adopted by India.

Table 4.C: RCA of Indian exports to China in 2018 – ITC-HS chapter-wise

Chapter	RCA	Chapter	RCA	Chapter	RCA	Chapter	RCA
1	0.0000	26	13.4438	51	1.1804	76	0.0421
2	0.0000	27	1.2653	52	3.5659	78	0.6030
3	1.7909	28	0.7048	53	4.6256	79	2.5967
4	0.0001	29	3.4073	54	0.1701	80	0.0000
5	1.3187	30	0.0643	55	0.5614	81	0.4330
6	0.1324	31	0.1540	56	0.2974	82	0.3313
7	0.1093	32	1.3621	57	0.2132	83	0.1536
8	0.0707	33	0.9258	58	0.0869	84	0.7976
9	0.5804	34	0.4991	59	1.7875	85	0.8934
10	0.0005	35	0.2147	60	0.1435	86	0.1516
11	0.0622	36	0.0000	61	0.1025	87	0.1123
12	0.2710	37	0.0663	62	0.1378	88	0.1716
13	1.5532	38	0.5823	63	0.1038	89	0.0001
14	3.1881	39	2.6569	64	0.2905	90	0.9307
15	7.1552	40	0.4116	65	0.0803	91	0.0667
16	0.0554	41	2.3922	66	0.3631	92	4.6988
17	0.1695	42	0.1909	67	12.6093	93	0.0036
18	0.0544	43	0.6210	68	0.1537	94	0.2084
19	0.0151	44	2.1075	69	0.1968	95	0.2575

Chapter	RCA	Chapter	RCA	Chapter	RCA	Chapter	RCA
20	0.4100	45	0.3071	70	0.4179	96	0.2833
21	0.1091	46	0.0970	71	0.1201	97	0.2341
22	0.0382	47	1.3292	72	0.5939	99	0.1870
23	0.0139	48	1.1145	73	0.1715		
24	0.0287	49	0.0450	74	7.6779		
25	6.1324	50	3.2943	75	0.7802		

Source: Computed from UN Comtrade Database

4.3 By a similar logic as given above, it can be established that if, for a particular commodity, RCA for India and RCII for China are both > 1, it can be expected that RCII for that commodity in Chinese imports from India will be > 1. If this is not the case, the reasons thereof need to be investigated, and appropriate policy measures taken. Actually it implies that the importers of China are not importing the particular commodity in sufficient amount (in value terms) while importing from India. It is not necessarily that they are averse to buying from India in general, they may very well purchase other commodities from India, but – for some reason – not this particular product. Policies designed to make these products from India attractive to Chinese importers need to be adopted.

Table 4.D: RCII of Chinese imports to India in 2018 – ITC-HS chapter-wise

Chapter	RCII	Chapter	RCII	Chapter	RCII	Chapter	RCII
1	§	26	12.4283	51	0.8052	76	0.0596
2	§	27	0.6094	52	5.5798	78	3.1250
3	1.1532	28	0.7276	53	3.2837	79	4.3278
4	0.0000	29	2.2072	54	0.1349	80	0.0313
5	0.2796	30	0.0402	55	0.5861	81	0.7776
6	0.0440	31	0.0749	56	0.1374	82	0.3496
7	0.8389	32	1.2771	57	0.1560	83	0.1240
8	0.0456	33	0.6992	58	0.1019	84	0.5882
9	0.3778	34	0.8915	59	1.3160	85	0.7319
10	0.0002	35	0.2839	60	0.0447	86	0.0893
11	0.0337	36	§	61	0.1032	87	0.1246
12	0.3074	37	0.0148	62	0.1591	88	0.0382
13	0.2441	38	0.7044	63	0.0901	89	0.0992
14	2.3886	39	2.3249	64	0.2456	90	0.7401
15	4.7947	40	0.3270	65	0.1315	91	2.2566

§   Index values not available, owing to non-reporting.

Chapter	RCII	Chapter	RCII	Chapter	RCII	Chapter	RCII
16	0.0556	41	4.0450	66	0.0866	92	0.0927
17	0.2800	42	0.2518	67	10.9338	93	0.0001
18	0.2054	43	0.5426	68	0.0836	94	0.1217
19	0.0194	44	2.6005	69	0.2484	95	0.2295
20	0.3323	45	0.2657	70	0.4046	96	0.2126
21	0.0616	46	0.0477	71	1.0757	97	0.2212
22	0.0449	47	11.0719	72	0.5059	99	0.1833
23	0.0148	48	1.3534	73	0.1164		
24	0.0320	49	0.0440	74	11.0010		
25	7.7825	50	2.1349	75	0.7370		

Source: Computed from UN Comtrade Database

4.4   From Table 4.D above, it is seen that the following chapters, comprising a third set C, record RCII values from China to India which are > 1: C = {3, 14, 15, 25, 26, 29, 32, 39, 41, 44, 47, 48, 50, 52, 53, 59, 67, 71, 74, 78, 79, 91}.

A ∩ C = {14, 25, 29, 41, 52, 53, 71, 79}.

These are the 8 sectors, for which RCII in Chinese imports from India is (expectedly) > 1, as both their RCAs in India's exports and their RCIIs in China's imports are > 1. But the set A – C = {2, 12, 27}, gives us the sectors for which RCII in Indian exports to China is < 1, though both their RCAs in India's exports their and RCIIs in China's imports are > 1. For the set A – C, product-specific measures to lure Chinese importers, and, maybe, to do away with roadblocks to Indian exports to China (if any such hurdles exist) may be contemplated.

A – B = {2, 12, 71}, and

A – C = {2, 12, 27}.

(A – B) and (A – C) are almost identical, except that 71 and 27 are only in A – B and A – C, respectively. So, the set D = {2, 12} includes all those chapters, i.e. sectors, which need special product-specific policy measures, directed both at Indian exporters and Chinese importers, to increase their shares in Indian exports to China.

4.5   This was a sector-wise analysis, and the policies to be adopted need to address the sector at large. There may be, in a particular chapter, 6-digit commodities which may satisfy the conditions satisfied by the chapter as a whole, and there may many which do not. There may even be occasions wherein no 6-digit commodity of a particular chapter individually satisfies the conditions but the chapter as a whole does. This may be because RCA and RCII of some commodities in India's exports to China < 1 (which brings down the RCA and RCII of the chapter as a whole), but their RCAs in case of India's exports (to the whole world) or their RCIIs in case of China's imports (from the whole world) may also be < 1. In case of other commodities of the same chapter, both may be >

1. On the other hand, a chapter as a whole may not satisfy the conditions, but some 6-digit commodities included in it may.

So, ITC-HS 6-digit code-wise analysis is more relevant, because the greater granularity permits better focussing of policy measures. The list of chapters may not be consistent with the list of ITC-HS six-digit commodities, because of the reasons mentioned above. The analytical framework elaborated above, with chapters as the basis, was mainly for the purpose of elucidation of the methodology adopted, but also for giving a sector-wise status. But for policy formulation, the analysis with the highest possible granularity is the best option. Hence, it will be most expeditious to consider the ITC-HS six-digit commodities which emerge, as the candidates for the policies mentioned above, when the methodology set out above is employed at the 6-digit level. This list is given in Appendix A.

4.6 So much for product-specific policies. Market (i.e. destination) specific policies need to be taken, too. If India has a market share in the world, for commodity P (say s), which is greater than India's overall market share (for all commodities) in the world (say t), there is no reason to expect that India's market share for P in China, say g < s. g can be < s only when, for some reason, China imports P, but not sufficiently from India. In such cases, market or destination-specific promotional policies will be needed. The same will be true when China's share in India's export of P falls below China's share in total world imports of P. When both coincide, there is an even stronger case for adoption of the market-specific promotional policies. Appendix B shows the list of such commodities in case of India's exports to China.

For commodities appearing in both the lists – in Appendix A and Appendix B, both product-oriented and market-oriented promotional policies are required to be adopted.

Section 5: Export Concentration

5.1 The standard measure of concentration of exports over a range of commodities is the Hirschman-Herfindahl Index (HHI), which is the sum of the squares of the shares of the commodities (in terms of value) in the export basket.[8] The index has been calculated over all ITC-HS six-digit commodities, the highest level of granularity allowed by comparable international data. The index is more meaningful the more granular the data.

5.2 In case of India's exports to China, Table 5.A shows a decrease of the index from 2014 to 2016, with a slow but ineffective recovery 2016 onwards. It may be noted that the index for India's exports to the world is lower than it is for India's exports to China, though there has also been some decline in the former between 2014 and 2018. A relatively higher level of concentration of exports means that India's export basket to China is less diverse than to the world and it may bring forth gains from specialization. However, a more concentrated export also indicates a broader production base and greater risks.

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8   See Export Concentration Index in Appendix C.

Table 5.A: Hirschman-Herfindahl Index for India to the World and for India to China

	India to China	India to the World
2014	0.2176	0.1716
2015	0.1807	0.1323
2016	0.1504	0.1342
2017	0.1766	0.1339
2018	0.1983	0.1489

Source: Computed from UN Comtrade Database

Section 6: Intra-Industry Trade

6.1 Intra-industry trade is a common world-wide phenomenon – export and import of the commodities produced by the same industry or sector. The degree to which this occurs is generally measured by the Grubel-Lloyd Index, which is the difference between the exports of the particular sector to a partner country and imports of the products of the same sector from the same partner, divided by the sum of these two, and whole thing obtained subtracted from 1.[9]

6.2 In the present case, the Grubel-Lloyd Index values (computed on exports from India to China and imports from China to India) in Table 6.A show that, in 2018, in case of agricultural products and processed farm products, intra-industry trade between India and China is generally not very high, except for a few sectors, such as, 'Edible fruit, nuts, peel of citrus fruit, melons' (chapter 8), 'Sugars and sugar confectionery' (chapter 17), 'Cereals' (chapter 10) and a few more. The combination of close geographical proximity of both the countries yet with different terrains and climatic conditions might be suitable for growing common crops and agricultural produce but with inherent differences.

Table 6.A: Grubel-Lloyd Index for India and China in 2018 – Agricultural and Related Products (Chapters 01-24)

ITC-HS chapter	Description	Grubel-Lloyd Index
1	Live animals	0.0000
2	Meat and edible meat offal	0.0000
3	Fish, crustaceans, molluscs, aquatic invertebrates nes	0.0043
4	Dairy products, eggs, honey, edible animal product nes	0.0000
5	Products of animal origin, nes	0.3688
6	Live trees, plants, bulbs, roots, cut flowers etc	0.2949
7	Edible vegetables and certain roots and tubers	0.2148
8	Edible fruit, nuts, peel of citrus fruit, melons	0.9638

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9   See Appendix C for the Index of Intra-Industry Trade.

ITC-HS chapter	Description	Grubel-Lloyd Index
9	Coffee, tea, mate and spices	0.2160
10	Cereals	0.8070
11	Milling products, malt, starches, inulin, wheat gluten	0.0975
12	Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	0.7969
13	Lac, gums, resins, vegetable saps and extracts nes	0.3341
14	Vegetable plaiting materials, vegetable products nes	0.4017
15	Animal, vegetable fats and oils, cleavage products, etc	0.0786
16	Meat, fish and seafood food preparations nes	0.6974
17	Sugars and sugar confectionery	0.9401
18	Cocoa and cocoa preparations	0.6065
19	Cereal, flour, starch, milk preparations and products	0.6769
20	Vegetable, fruit, nut, etc food preparations	0.6567
21	Miscellaneous edible preparations	0.4012
22	Beverages, spirits and vinegar	0.8064
23	Residues, wastes of food industry, animal fodder	0.0407
24	Tobacco and manufactured tobacco substitutes	0.8727

Source: Computed from UN Comtrade Database

6.3 The same is true for ores and minerals, as the two countries, even though sharing international borders, are differently endowed with these natural resources. Table 6.B, shows the average but low index values of the chapters 25, 26 and 27. In case of 'Mineral fuels, oils, distillation products, etc' (chapter 27), neither of these two countries are rich in the raw materials, and while both the countries import most of their petroleum products from the Middle East, some intra-industry trade also takes place between India and China.

Table 6.B: Grubel-Lloyd Index for India and China in 2018 – Mineral Products (Chapters 25-27)

ITC-HS chapter	Description	Grubel-Lloyd Index
25	Salt, sulphur, earth, stone, plaster, lime and cement	0.3586
26	Ores, slag and ash	0.0611
27	Mineral fuels, oils, distillation products, etc	0.5344

Source: Computed from UN Comtrade Database

6.4 The scenario changes as one moves on to chemicals and chemical-based industries shown in Table 6.C below. ('Rubber and articles thereof' may also be included in this group as nowadays,

artificial, and not natural, rubber is mostly used.). China is the leading exporter of sectors like 'Organic chemicals' (chapter 29), 'Plastics and articles thereof' (chapter 39) and 'Rubber and articles thereof' (chapter 40) among other sectors. On the other hand, more than 17% of India's exports are 'Organic chemicals' while about 8% is of 'Plastics and articles thereof', which is why it is not surprising to see index values of more than half in these sectors. Interestingly, 'Essential oils, perfumes, cosmetics, toileteries' (chapter 33), a sector where variety is of key importance, has naturally a high index value.

Table 6.C: Grubel-Lloyd Index for India and China in 2018 – Products of Chemical or Allied Industries (Chapters 28-40)

ITC-HS chapter	Description	Grubel-Lloyd Index
28	Inorganic chemicals, precious metal compound, isotopes	0.1275
29	Organic chemicals	0.5304
30	Pharmaceutical products	0.4921
31	Fertilizers	0.0013
32	Tanning, dyeing extracts, tannins, derivs,pigments etc	0.5969
33	Essential oils, perfumes, cosmetics, toileteries	0.7642
34	Soaps, lubricants, waxes, candles, modelling pastes	0.2529
35	Albuminoids, modified starches, glues, enzymes	0.0427
36	Explosives, pyrotechnics, matches, pyrophorics, etc	0.0000
37	Photographic or cinematographic goods	0.0035
38	Miscellaneous chemical products	0.1729
39	Plastics and articles thereof	0.5659
40	Rubber and articles thereof	0.3572

Source: Computed from UN Comtrade Database

6.5   Again, when it comes to chapters dealing with products of plant and animal parts, as included in the groups shown in Table 6.D below, the intra-industry trade index falls. Only 'Wood and articles of wood, wood charcoal' (chapter 44) has a moderately high index value.

Table 6.D: Grubel-Lloyd Index for India and China in 2018 – Leather, Wood and Paper (Chapters 41-49)

ITC-HS chapter	Description	Grubel-Lloyd Index
41	Raw hides and skins (other than furskins) and leather	0.4420
42	Articles of leather, animal gut, harness, travel goods	0.1182

ITC-HS chapter	Description	Grubel-Lloyd Index
43	Furskins and artificial fur, manufactures thereof	0.2558
44	Wood and articles of wood, wood charcoal	0.5328
45	Cork and articles of cork	0.1911
46	Manufactures of plaiting material, basketwork, etc.	0.1196
47	Pulp of wood, fibrous cellulosic material, waste etc	0.0212
48	Paper & paperboard, articles of pulp, paper and board	0.3433
49	Printed books, newspapers, pictures etc	0.0736

Source: Computed from UN Comtrade Database

6.6   The group comprising textiles and clothing, shown in Table 6.E, shows low index values, except for 'Vegetable textile fibres nes, paper yarn, woven fabric' (chapter 53), 'Carpets and other textile floor coverings' (chapter 57) and 'Articles of apparel, accessories, not knit or crochet' (chapter 62).

Table 6.E: Grubel-Lloyd Index for India and China in 2018 – Textiles, Textile Articles, Footwear and Headgear (Chapters 50-65)

ITC-HS chapter	Description	Grubel-Lloyd Index
50	Silk	0.1852
51	Wool, animal hair, horsehair yarn and fabric thereof	0.4499
52	Cotton	0.1552
53	Vegetable textile fibres nes, paper yarn, woven fabric	0.9416
54	Manmade filaments	0.0887
55	Manmade staple fibres	0.3044
56	Wadding, felt, nonwovens, yarns, twine, cordage, etc	0.1017
57	Carpets and other textile floor coverings	0.6692
58	Special woven or tufted fabric, lace, tapestry etc	0.0376
59	Impregnated, coated or laminated textile fabric	0.0791
60	Knitted or crocheted fabric	0.0141
61	Articles of apparel, accessories, knit or crochet	0.3193
62	Articles of apparel, accessories, not knit or crochet	0.6759
63	Other made textile articles, sets, worn clothing etc	0.2565
64	Footwear, gaiters and the like, parts thereof	0.1743
65	Headgear and parts thereof	0.0216

ITC-HS chapter	Description	Grubel-Lloyd Index

6.7 The assorted group in Table 6.F shows that in case stones, plaster, cement, asbestos, mica and articles, ceramic products, glass and glassware and pearls, precious stones, metals, coins, etc., intra-industry trade is high only for 'Pearls, precious stones, metals, coins, etc' (chapter 71)– both the countries exchange similar amounts in terms trade value.

Table 6.F: Grubel-Lloyd Index for India and China in 2018 – Assorted Group of Items (Chapters 66-71)

ITC-HS chapter	Description	Grubel-Lloyd Index
66	Umbrellas, walking-sticks, seat-sticks, whips, etc	0.0027
67	Bird skin, feathers, artificial flowers, human hair	0.2648
68	Stone, plaster, cement, asbestos, mica, etc articles	0.0423
69	Ceramic products	0.0837
70	Glass and glassware	0.0617
71	Pearls, precious stones, metals, coins, etc	0.7199

6.8 As regards metals and articles made thereof, there is moderately high intra-industry trade in copper and articles made of it. While China holds comes third in copper production worldwide (as of 2019), India ranks in the top 20 and is also one of its largest importers in line with countries like China, Japan, South Korea and Germany. In case of 'Iron and Steel' (chapter 72), despite both countries being rich in iron ore, Indian exports to China in this sector are relatively low compared to her imports from China, resulting in an index value of less than half. Table 6.G shows the index values for chapters 72 to 83.

Table 6.G: Grubel-Lloyd Index for India and China in 2018 – Base Metals and Articles of Base Metals (Chapters 72-83)

ITC-HS chapter	Description	Grubel-Lloyd Index
72	Iron and steel	0.3597
73	Articles of iron or steel	0.0690
74	Copper and articles thereof	0.5402
75	Nickel and articles thereof	0.1124
76	Aluminium and articles thereof	0.0198

ITC-HS chapter	Description	Grubel-Lloyd Index
78	Lead and articles thereof	0.1871
79	Zinc and articles thereof	0.2486
80	Tin and articles thereof	0.0000
81	Other base metals, cermets, articles thereof	0.0113
82	Tools, implements, cutlery, etc of base metal	0.0888
83	Miscellaneous articles of base metal	0.0229

Source: Computed from UN Comtrade Database

6.9 The last group, half of which are high-end manufactures, show varying values of the Grubel-Lloyd Index. The index values of 'Arms and ammunition, parts and accessories thereof' (chapter 93) and 'Aircraft, spacecraft, and parts thereof' (chapter 88) indicate indicate high intra-industry trade, especially in the former one. It is also high for a different set of skilled asset, 'Works of art, collectors pieces and antiques' (chapter 97). Table 6.H shows the index values for chapters 84 to 99.

Table 6.H: Grubel-Lloyd Index for India and China in 2018 – High-End Manufactured Products, Furniture, Sports Goods and Works of Art (Chapters 84-99)

ITC-HS chapter	Description	Grubel-Lloyd Index
84	Nuclear reactors, boilers, machinery, etc	0.1145
85	Electrical, electronic equipment	0.0452
86	Railway, tramway locomotives, rolling stock, equipment	0.0484
87	Vehicles other than railway, tramway	0.1242
88	Aircraft, spacecraft, and parts thereof	0.5805
89	Ships, boats and other floating structures	0.0001
90	Optical, photo, technical, medical, etc apparatus	0.1721
91	Clocks and watches and parts thereof	0.0104
92	Musical instruments, parts and accessories	0.2264
93	Arms and ammunition, parts and accessories thereof	0.9307
94	Furniture, lighting, signs, prefabricated buildings	0.0329
95	Toys, games, sports requisites	0.0207
96	Miscellaneous manufactured articles	0.0507
97	Works of art, collectors pieces and antiques	0.8129
99	Commodities not elsewhere specified	0.0059

Source: Computed from UN Comtrade Database

Section 7: Export Similarity

7.1 The similarity in the export baskets of two countries, i.e. similarities in the shares of different commodities in the total exports of two countries, is measured by the Export Similarity Index. It is calculated by taking the percentage shares of each commodity (here ITC-HS six digit level commodities have been taken) in both the countries, taking the minimum of the two, and then summing up these minima over all the commodities.[10] The index values vary from 0 to 100.

Table 7.A shows the values of this index for India and China, India and USA, India and UK, India and Germany, and India and Japan.

Table 7.A: Export Similarity Index – India and a few countries

	2014	**2015**	**2016**	**2017**	**2018**
India-China	**26.56**	**26.77**	**27.52**	**26.97**	**28.06**
India-USA	32.55	32.62	32.00	31.74	31.91
India-UK	30.08	30.99	31.94	31.44	31.00
India-Germany	28.14	29.86	29.61	29.88	30.61
India-Japan	21.43	23.03	23.54	23.87	23.62

Source: Computed from UN Comtrade Database

7.2 The Export Similarity Index between India and China is not very high, but it is not significantly lower than that between India and the USA, between India and the UK, or between India and Germany. It is actually higher than the index between India and Japan.

Table 7.B below shows that China's Export Similarity Index values with other developed countries like the USA, Germany and Japan are higher than those with India. However, in comparison to the index between India and UK, China's index with the UK is marginally lesser.

Table 7.B: Export Similarity Index – China and a few countries

	2014	**2015**	**2016**	**2017**	**2018**
China-USA	38.64	39.44	39.38	39.39	39.48
China-UK	29.05	28.66	30.29	29.93	29.61
China-Germany	35.66	35.57	36.35	37.09	37.91
China-Japan	32.35	32.33	32.67	32.78	33.12

Source: Computed from UN Comtrade Database

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10 See Appendix C for the Export Similarity Index.

Section 8: Summary

India's exports to China, though substantial, is below the level warranted by global trade patterns – this is evident from a lower-than-one Export Intensity Index value. The trade complementarity between India and China is lower than between India and the world. Following the exercise using the Revealed Comparative Advantage index of Indian exports and the Revealed Comparative Import Inclination index, product-specific and market-specific export promotion measures may be undertaken on a small list of ITC-HS six-digit codes, to improve India's export trade with China. Lists of these identified commodities are given in the Appendices. However, it is also important to note that China has Free Trade Agreements (FTA) with many countries and the bilateral trades between these nations are strong. Making reforms to boost exports of those products which China imports through FTAs may be inefficient, i.e., if the same effort was focused on other products or markets, it might result in better outcomes. Concentration of India's exports to China is high, when compared to concentration of India's exports to the world – therefore, India's export basket with respect to China needs to be more diversified to achieve lower risks. Indian and Chinese exports are not similar, and the level of development and the differences in the structure of the economy may, among other factors, explain it to some extent.

Appendix A

Commodities requiring product-specific export-promotion policies.

Code	Commodity Description
80610	GRAPES FRESH
81090	OTHER FRESH FRUITS
110290	OTHER CEREAL FLOUR
151620	VEGTBL FATS AND OILS AND THEIR FRACTNS
250840	OTHER CLAYS :
283090	OTHER SULPHIDES AND POLYSULPHIDES
284690	OTHR CMPNDS INORGNC/ORGNC OF RAREERTH MTLSOF YTTRIUM/OF SCADM/OF MIXTRS OF THSE MTLS
290517	SATRTD DDCAN-1-OL(LRYL-ALCHL)HXADECAN-1-OL(CETYL ALCHL)ANDOCTDECN-1-OL(STRYL ALCHL)
293430	CMPNDS CNTNG A PHENOTHIAZINE RING-SYSTEM (W/N HYDRGNTD) NT FRTHR FUSED
390319	OTHER POLYSTYRENE
400931	TUBES, PIPES AND HOSES OF VULCNSD RUBR REINFORCED/OTHRWSE CMBND ONLY WTH TEXTILE MATERIALS WTHOUT FITTINGS
411310	LEATHER FURTHER OF GOATS/KIDS
490700	UNUSD PSTGE REV OR SMLR STMPS OF CURNT/NEWISSU STMP IMPRSD PAPR CHEQ FORM BANK NOTE STOCK SHARE CERTIFCTS AND SMLR TITL DO
500710	WOVEN FABRICS OF NOIL SILK
510720	YARN OF CMBD WOOL CONTNG < 85% WOOL BY WT
520542	MLTPL(FLDED)/CBLD YRN OF CMBD FBRS MEASURNG PER SNGL YRN<714.29 BUT>=232.56 DCTX(>14 BUT <=43 MTRC NO PER SNGL Y

Code	Commodity Description
520612	SNGL YRN OF UNCMBD FBRS MEASURNG<714.29 BUT >=232.56 DCTX(>14 BUT <=43 MTRC NO)
520623	SNGL YRN OF CMBD FBRS MEASURNG <232.56 BUT >= 192.31 DCTX(>43 BUT <=52 MTRC NO)
550969	OTHR YRN OF ACRYLC/MODACRYLC STAPLE FIBRES
580410	TULLES AND OTHER NET FABRICS
702000	OTHER ARTICLES OF GLSS
711620	ARTICLES OF PRECIOUS OR SEMI PRECIOUS STONES(NATURAL SYNTHETIC/RECON-STRUCTED)
741521	WASHRS(INCL SPRING WASHRS),NOT THREADED
741529	OTHER ARTICLES,NOT THREADED
741910	CHAIN AND PARTS THEREOF
741999	OTHER ARTICLES OF HEADING 7419
760320	POWDERS OF LAMELLAR STRUCTURE-FLAKES
841382	LIQUID ELEVATORS
844512	COMBING MACHINES
846610	TOOL HOLDERS AND SELF-OPENING DIE-HEADS
853090	PARTS OF HDNG 8530
853225	OTHR FXD CAPACTRS DIELCTRC OF PAPR/PLSTCS
853610	FUSES OF VOLGATE NOT EXCEEDING 1000 VOLTS
870821	SAFETY SEAT BELTS

Appendix B

Commodities requiring market-specific export-promotion policies.

Code	Commodity Description
30319	OTHR PACIFIC SALMON EXCLDNG SOCKEYE SALMON FRZN EXCLDG FISH FILTS AND OTHER FISH MEAT
30369	OTHER FROZEN FISH OF THE FAMILIES BREGMACEROTIDAE, EUCLICHTHYIDAE, GADIDAE EXCLUDING LIVERS AND ROES
30617	OTHER SHRIMPS AND PRAWNS : FROZEN
30619	OTHER, INCLUDING FLOURS, MEALS AND PELLETS, OF CRUSTACEANS, FIT FOR HUMAN CONSUMPTION
40229	MLK AND CRM IN PWDR GTNLS/OTHR SOLID FORMS CONTNG ADDED SUGAR OR OTHR SWENG MATTER CONTNG FAT EXCEEDNG 1.5% BY WT
50100	HUMAN HAIR,UNWORKED; WASTE OF HUMAN HAIR
50690	OTHER : BONE MEAL :
50790	OTHER(EXCL IVORY AND ITS POWDER AND WASTE)
71331	BEANS OF THE SPP VIGNA MUNGO,HEPPER OR VIGNA RADIATA,WILCZEK DRIED AND

Code	Commodity Description
	SHLD
80610	GRAPES FRESH
81090	OTHER FRESH FRUITS
100640	BROKEN RICE
110290	OTHER CEREAL FLOUR
120730	CASTOR OIL SEEDS:
120740	SEASAMUM SEEDS W/N BROKEN
140490	OTHER VEGTBLE MATERIALS
151620	VEGTBL FATS AND OILS AND THEIR FRACTNS
170113	CANE SUGAR SPECIFIED IN SUBHEADING NOTE 2 TO THIS CHAPTER:
250840	OTHER CLAYS :
251200	SILICS FOSIL MEALS (KIESELGHUR TRIPOLITE DIATMTE) AND SMLR SILICS ERTHS W/N CALCND SPOF AN APPRNT SPCIFIC GRVTY OF 1 OR L
251512	MARBLE AND TRAVERTINE MERELY CUT BY SAWING/ OTHRWSE INTO RECTNGLR/SQ SHAPE BLKS/SLBS
251520	ECAUSSINE AND OTHER CALCAREOUS MONUMENTAL OR BUILDING STONE ALABASTER
251690	OTHER MONUMENTAL OR BUILDING STONE :
260600	ALUMINIUM ORES AND CONCENTRATES
280200	SULPHUR SUBLIMD/PRECPTATED COLLDL SULPHUR
282760	IODIDES AND IODIDE OXIDES
283090	OTHER SULPHIDES AND POLYSULPHIDES
284690	OTHR CMPNDS INORGNC/ORGNC OF RAREERTH MTLSOF YTTRIUM/OF SCADM/OF MIXTRS OF THSE MTLS
290124	UNSTRD BUTS-1 3-DIENE AND ISOPRENE
290243	P-XYLENE
290514	OTHER BUTANOLS :
290517	SATRTD DDCAN-1-OL(LRYL-ALCHL)HXADECAN-1-OL(CETYL ALCHL)ANDOCTDECN-1-OL(STRYL ALCHL)
290519	OTHR SATURTED MONOHYDYDRIC ALCHOL
290722	HYDROQUINONE (QUINOL) AND ITS SALTS
290819	OTHER
290930	ARMTC ETHRS AND THR HALGNTD SLPHNTD NITRATED OR NITROSATED DERIVATIVES
290944	OTHER MONOALKYLETHERS OF ETHYLENE GLYCOL OR OF DIETHYLENE GLYCOL
291221	BENZALDEHYDE
291422	CYCLOHEXANONE AND METHYL CYCLOHEXANONES
291423	IONONES AND METHYLIONONES
291560	BUTYRIC ACDS,VALERIC ACDS THR SLTS AND ESTRS

Code	Commodity Description
291590	OTHR SATRTD ACYLC,MNOCRBOXYLC ACDS AND THR ANHYDRDS,HALDS,PEROXDS,PEROXY ACIDS AND THR HALGNTD SLPHNTD NITRTD AND NITRSTD DRV
291736	TEREPHTHALIC ACID AND ITS SALTS
291739	OTHR ARMTC PLYCRBOXYLC ACIDS THR ANHYDRDS HALIDES PEROXIDES PEROXY-ACDS AND THR DRVTVS
292090	OTR ESTERS OF OTR INORGNC ACDS THRSLTS ETC
292149	OTHR ARMTC MONO AMNS AND THR DRVTVS AND SLTS
292211	MONOETHANOLAMINE AND ITS SALTS
292429	OTHR CYCLC AMIDES(INCL CYCLC CRBAMATES) AND THEIR DERIVATIVES AND SALTS THEREOF
292690	OTHR NITRILE-FUNCTION COMPOUNDS
293299	OTHER HETEROCYCLIC COMPNDS WITH OXYGEN HETERO - ATOM/S
293332	PIPERIDINE AND ITS SALTS
293399	OTHER HETERDCYCLIC CMPNDS WITH NITROGEN HETRO ATOM (S) ONLY
293430	CMPNDS CNTNG A PHENOTHIAZINE RING-SYSTEM (W/N HYDRGNTD) NT FRTHR FUSED
293629	OTHER VITAMINS AND THEIR DERIVATIVES :
293920	ALKALOID OF CINCHONA AND THEIR DERIVATIVES SALTS THEREOF :
320290	OTHR INORGANIC TANNING SUBSTANCES
320412	ACID DYS W/N PREMETALSD AND PRPTNS BASED THERON MORDNT DYS AND PRPTNS BASED THRON
330125	ESSENTIAL OILS OF OTHER MINTS
340213	NON-IONIC W/N FOR RTL SALE
380190	OTHER (GRAPHITE BASED PREPARATIONS)
381129	OTHER ADDITIVES FOR LUBRICATING OILS
381220	COMPOUND PLASTICISERS FOR RUBBER/PLASTICS
381511	SUPPRTD CATALYSTS WTH NICKEL/NICKEL CMPNDS
381590	OTHER REACTION INITIATORS ETC
382370	INDUSTRIAL FATTY ALCOHOL
390319	OTHER POLYSTYRENE
390940	PHENOLIC RESINS
391290	OTHER CELLULOSE AND ITS CHEMICAL DERIVATIVES
392062	PLTES SHTS ETC OF PLYETHYLN TEREPHTHALTE
392069	PLTES SHTS ETC OF OTHR POLYESTERS
400211	LATEX (SBR/XSBR)
400270	ETHYLENE-PRPYLENE-NON-CONJUGATED
400931	TUBES, PIPES AND HOSES OF VULCNSD RUBR REINFORCED/OTHRWSE CMBND ONLY WTH TEXTILE MATERIALS WTHOUT FITTINGS

Code	Commodity Description
401213	RETREADED TYRE USED ON AIRCRAFTS
401410	SHEATH CONTRACEPTIVES
411200	LEATHER FURTHER PREPARD AFTER TANING/CRUST LEATHER OF SHEEP/LAMB WITH-OUT WOOL W.O.N. SPLIT
411310	LEATHER FURTHER OF GOATS/KIDS
490700	UNUSD PSTGE REV OR SMLR STMPS OF CURNT/NEWISSU STMP IMPRSD PAPR CHEQ FORM BANK NOTE STOCK SHARE CERTIFCTS AND SMLR TITL DO
500710	WOVEN FABRICS OF NOIL SILK
510310	NOILS OF WOOL OR FINE ANIMAL HAIR
510720	YARN OF CMBD WOOL CONTNG < 85% WOOL BY WT
520100	COTTON, NOT CARDED OR COMBED
520511	SNGL YRN OF UNCMBD FBRS MEASURNG 714.29 DCTX/MORE(NT EXCDNG 14 MTRC NO)
520532	MLTPL(FLDED)/CBLD YRN OF UNCMBD FBRS MEASURNG<714.29 BUT >=232.56 DCTX (> 14 BUT <= 43 MTRC NO PER SNGL YAR
520534	MLTPL(FLDED)/CBLD YRN OF UNCMBD FBRS MEASURNG<192.31 BUT>= 125 DCTX (>52 BUT <=80 MTRC NO PER SINGLE YAR
520542	MLTPL(FLDED)/CBLD YRN OF CMBD FBRS MEASURNG PER SNGL YRN<714.29 BUT>=232.56 DCTX(>14 BUT <=43 MTRC NO PER SNGL Y
520543	MLTPL(FLDED)/CBLD YRN OF CMBD FBRS MEASURNG PER SNGL YRN <232.56 BUT >=192.31DCTX(>43 BUT <=52 MTRC NO PER SNGL Y
520544	MLTPL(FLDED)/CBLD YRN OF CMBD FBRS MEASURNG PER SNGL YRN<192.31 BUT>=125 DCTX(>52 BUT <=80 MTRC NO PER SNGL Y
520546	MLTPL (FOLDD)/CABLD YRN OF COMBD FBRS MSRNG PER SNGL YRN BETWN 106.38 AND 125 DCTX AND BETWN 80 AND 94 MTRC NO.
520612	SNGL YRN OF UNCMBD FBRS MEASURNG<714.29 BUT >=232.56 DCTX(>14 BUT <=43 MTRC NO)
520622	SNGL YRN OF CMBD FBRS MEASURNG<714.29 BUT>=232.56 DCTX(>14 BUT<=43 MTRC NO)
520623	SNGL YRN OF CMBD FBRS MEASURNG <232.56 BUT >= 192.31 DCTX(>43 BUT <=52 MTRC NO)
520624	SNGL YRN OF CMBD FBRS MEASURNG <192.31 BUT>=125 DCTX (>52 BUT <=80 MTRC NO)
520912	UNBLCHD 3/4 THRED TWILL INCL CROSS TWILL COTTON FABRICS WEIGING MORE THAN 200 GM PER SQM
521214	OTHR WOVN FBRCS OF COTTON OF YRNS OF DIFF COLOURS WEIGHING NOT MORE THAN 200 G/M2
521215	OTHR PRNTD WOVEN FBRCS WGHNG <=200 G/M2
540251	OTHR YARN OF NYLON OR OTHER POLYMDS SNGL WITH A TWIST EXCEEDING 50 TURNS PER METRE
540261	OTHR YARN OF NYLON OR OTHER POLYMDS, MULTIPLE(FOLDED)OR CABLED
550130	SYNTHTC FILAMNT TOW, ACRYLIC/MODACRYLIC

Code	Commodity Description
550330	STAPLE FIBRS OF ACRLC/MODACRLC NT CRD/CMBD
550959	OTHER YARN OF POLYESTER STAPLE FIBRES
550969	OTHR YRN OF ACRYLC/MODACRYLC STAPLE FIBRES
550999	OTHR SYNTHTC YRN MXD MAINLY/SOLELY WTH FBRE OTHR THN COTTON/FINE ANML HAIR AND WOOL
580410	TULLES AND OTHER NET FABRICS
681490	OTHER WORKED MICA AND ARTICLES OF MICA ETC
690310	OTHR REFRCTORY CERAMIC GOODS CONTNG BY WT >50% OF GRAPHITE/OTHR FORMS OF CARBON/OF A MXTRS OF THESE PRODUCTS
702000	OTHER ARTICLES OF GLSS
711620	ARTICLES OF PRECIOUS OR SEMI PRECIOUS STONES
720510	GRANULES OF PIG IRON ETC.
722519	FLT-ROLD PRDCTS OF SILICON ELCTRCL STL OTHR THN GRAIN ORIENTED
722860	OTHER BARS AND RODS :
730441	OTHR TUBS,PIPE AND HOLO PROFILE OF CIRCULR CROSS-SECTION OF STAINLES STEEL,COLD DRAWNOR COLD ROLLED
741521	WASHRS(INCL SPRING WASHRS),NOT THREADED
741529	OTHER ARTICLES,NOT THREADED
741910	CHAIN AND PARTS THEREOF
741999	OTHER ARTICLES OF HEADING 7419
760320	POWDERS OF LAMELLAR STRUCTURE-FLAKES
760529	OTHER WIRE OF ALUMINIUM ALLOYS
790111	ZINC, NOT ALLOYD, CONTNG BY WT>=99.99% ZINC
820740	TOOLS FOR TAPPING AND THREADING
840590	PARTS OF GAS GENERATORS
841112	TURBO-JETS OF A THRUST>25 KN
841382	LIQUID ELEVATORS
841490	PRTS OF AIR/VACUM PUMPS,CMPRSSRS AND FANS
841989	OTHR MACHINERY,PLANT AND EQUIPMNT OF HDG8419
842099	OTHER PARTS OF CALENDRNG/OTHR RLNG MACHNS
842119	OTHR CENTRIFUGES,INCL CENTRIFUGAL DRYERS
844511	CARDING MACHINES
844512	COMBING MACHINES
844519	OTHR MCHNS FR PRPRNG TXTL FIBRES
844520	TEXTILE SPINNING MACHINES
844590	OTHER TEXTILE MACHINES OF HDG 8445
844820	PRTS AND ACCSSRS OF MCHNS OF HDG NO.8444/OF THEIR AUXLRY MCHNRY
844831	CARD CLOTHING

Code	Commodity Description
844839	OTHR PARTS AND ACCESSORIES OF HDG 8445
844842	REEDS FR LOOMS,HEALDS AND HEALD-FRAMES
844851	SNKRS,NEDL AND OTHR ARTCLS USD TO FORM STCHS
845190	PARTS OF THE MACHINES OF HDG 8451
845590	OTHER PARTS
846029	OTHR GRNDNG MCHNS IN WHICH THE POSITIONG IN ANY ONE AXIS CAN BE SET UP TO AN ACCURACY OF AT LEAST 0.01 MM
846610	TOOL HOLDERS AND SELF-OPENING DIE-HEADS
846630	DVDNG HEADS AND OTHR ATTCHMNTS FR MCHN-TOOLS
847340	PRTS AND ACCSSRS OF MCHNS OF HDG NO.8472
847720	EXTRUDERS
847730	BLOW MOULDING MACHINES
847751	MCHNRY FR MOULDNG/RETREADNG PNEUMTC TYPES OR FR MOULDNG/OTHERWSE FORMNG INNR TUBES
848220	TAPERED ROLLED BEARINGS, INCLUDING CONE AND TAPERED ROLLER ASSEMBLIES
848280	OTHER, INCLUDING COMBINED BALL OR ROLLER BEARINGS
848299	OTHER BALL/RLR BEARNG PARTS
848340	GEARS AND GEARNG,EXCL TOOTHD WHEELS,TRNSMSN ELMNTS PRSNTD SEPRTLY;BALL SCRWS;GEAR BOXSAND SPEED CHNGRS,INCL TORQUE CNVRTRS
850490	PRTS OF TRNSFRMRS,STATIC CNVRTRS AND INDUCTR
851230	SOUND SIGNALLING EQPMNT
851430	OTHER FURNACES AND OVENS:
851490	PARTS OF ARTCLS IN HDNG 8514
852380	OTHER:
853090	PARTS OF HDNG 8530
853210	FXD CPCTRS DSGND FR USE IN 50/60 HZ CRCTS HVNG A REACTIVE PWR HNDLNG CAPACITY OF NT LESS THN 0.5 KVAR(PWR CAPACITORS)
853225	OTHR FXD CAPACTRS DIELCTRC OF PAPR/PLSTCS
853310	FXD CRBN RESISTORS,COMPOSITION/FILM TYPES
853610	FUSES OF VOLGATE NOT EXCEEDING 1000 VOLTS
854690	ELCTRL INSLTRS OF OTHR MATRLS
860729	OTHR BRAKES AND PARTS THEREOF
870821	SAFETY SEAT BELTS
900110	OPTCL FIBRS,OPTICAL FIBRE BUNDLES AND CABLES
960891	PEN NIBS AND NIB POINTS

Appendix C

1. Revealed Comparative Advantage Index (RCA): RCA for a commodity exported from a country means the importance of this commodity in the export trade of the country in comparison with the importance of the commodity in world exports. Mathematically,

$RCA_{ij} = (x_{ij}/X_{it})/(x_{wj}/X_{wt})$
where x_{ij} = country i's exports of commodity j
X_{it} = country i's total exports
x_{wj} = world exports of commodity j
X_{wt} = total world exports.
When $RCA_{ij} > 1$, i.e. when j's weight in i's exports (x_{ij}/X_{it}) is more than j's weight in world exports (x_{wj}/X_{wt}), country i is said to have a revealed comparative advantage in commodity j. There is a revealed comparative disadvantage if $RCA_{ij} < 1$. When $RCA_{ij} = 1$, there is neither comparative advantage or disadvantage.

By studying the RCA for a commodity exported from a country over time, it can be seen whether the country in question is gaining in comparative advantage regarding a particular commodity. If RCA is falling, the reasons require investigation. (x_{ij}/X_{it}) may have risen less or fallen more than proportionately than (x_{wj}/X_{wt}).

2. One way of checking the reasons for a fall in RCA for a particular commodity is seeing which markets are responsible for this fall. This can be seen from another, slightly different, indicator called Export Specialization Index (ESI).

$ESI = (x_{ij}/X_{it})/(m_{kj}/M_{kt})$, where
m_{kj} = import of commodity j to market k
M_{kt} = world imports of commodity k.
(m_{kj}/M_{kt}) gives the weight of j in market k. So, if RCA_{ij} is seen to fall, then it can be found out for which markets ESI has fallen. Special attention may then be given to those markets regarding the commodity in question.

3. Like RCA, the revealed comparative import intensity (RCII) can also be measured.
$RCII = (m_{ij}/M_{it})/(m_{wj}/M_{wt})$
where m_{ij} = country i's imports of commodity j
M_{it} = country i's total imports
m_{wj} = world imports of commodity j
M_{wt} = total world imports.
This gives an idea whether the proportion of imports of any commodity is more than expected, in terms of the share of that commodity in world imports.

4. Bilateral trade between countries is an important area of trade policy in that bilateral trade agreements are signed to increase trade. However, some points require to be examined before entering into these agreements. Firstly, it is necessary to see whether there is trade complementarity between the two countries. That is, whether the exports of one country match with the imports of the other, and vice versa. Naturally, when trade complementarity is high between two countries, it is beneficial to enter into a trade agreement. If a partner country does not import what India generally exports, there is little point in entering into a trade agreement with that country. The Trade Complementarity Index (TCI) is given as follows:

$TCI = 1 - \sum (|m_{ik} - x_{ij}|/2)$, where

mik= share of commodity i in the imports of market k
xij = share of commodity i in the exports of country j.
It is evident that TCI can have values between 0 and 1. When these shares, are mik and xij are close to each other, (i.e. when trade complementarity increases) TCI is close to 1. As their difference increases, TCI falls.

TCIW = TCI between a country and the World.
RTCI (Relative Trade Complementarity Index) between country k and country j = (TCI between country k and country j) / (TCI between country k and the world)
RTCI gives a measure of the complementarity between two countries as compared to the complementarity between the first country and the world.

5. But another fact may be checked while proceeding to enter into a trade agreement. The trade between the two countries may already be quite high. This can be measured by the Export Intensity Index (EII).
$TII = (x_{ij}/X_{it})/(x_{wj}/X_{wt})$
where x_{ij} = country i's exports to country j
X_{it} = country i's exports to the world
x_{wj} = world exports to country j
X_{wt} = total world exports.
This essentially measures the relative importance of country j in country I's export trade, in comparison with country j's importance as world export destination. EII < 1 or >1 implies less than or more than expected bilateral trade, respectively. If EII is already high, there is little scope of further increasing bilateral trade between i and j. But if is low, and if TCI is high, bilateral trade can very well be increased through trade agreements.

6. A related indicator is the Export Similarity Index (XSI), which helps us identify a country's competitors.
$XSI = \sum [\min (X_{ij}, X_{ik})*100]$
where X_{ij}= share of commodity i in exports of country j
X_{ik}= share of commodity i in exports of country k
XSI can vary between 0 and 100. It will be seen that when $X_{ij}= X_{ik}$ for all i's, XSI = 100, which means complete export similarity between countries j and k. As X_{ij} and X_{ik} start to differ, XSI falls. Countries exporting the same commodities are competitors in the world market, and export strategies, taking in to account such competition, have to be designed accordingly.

7. It is necessary to know whether the exports of a country are concentrated in a few products. A high concentration, while enabling a country to reap the benefits of specialization and economies of scale, also exposes a country to the risks arising from the vicissitudes of global trade. The Hirschman Index (HI), used by UNCTAD, is a handy measure for monitoring export concentration.
$HI = \sqrt{[\sum Sq(x_i/X_t)]}$
where x_i is the country's exports of commodity i
X_t is the country's total exports.
HI ranges from (1/n) to 1. The higher the value of HI, the higher the concentration of exports.

8. Intraindustry trade is of importance as it can increase and expand markets. The standard indicator is the Index of Intraindustry Trade (IIT).
$IIT_{jk} = 1 – [\sum | X_{ijk} – M_{ijk} | / (X_{ijk} + M_{ijk})]$
where X_{ijk} = exports of products of industry i from country j to country k
M_{ijk} = imports of products of industry i from country k to country j.

IIT can take values from 1 (extremely high intra-industry trade, exports equaling imports) to 0 (no interindustry trade at all).