India's International Trade of Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this Chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 Kgs(ITCHS 3105)

Section 1: Introduction: The study uses trade indicators to analyse merchandise export and import data in a way that should beuseful for the purpose of formulation of policy. The indicators provide a glimpse of the trade patterns ofthe world and the performance of India in comparison to various other countries. They have been usedin the case of India's exports of Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this Chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 Kgs (ITCHS 3105)to indicate the possible directions policy may take.

Description: Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this Chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 Kgs(ITCHS 3105)

The data used in this study has been sourced from the United Nations Comtrade Database and the ExportImport Data Bank, Department of Commerce. Computations are primarily based on data at the ITC-HStwo-digit level (HS-31) and ITC-HS four-digit level (HS-3105) and the latest finalized data available onthe UN Comtrade Database up to year 2021. In several cases, trends from 2017 to 2021 have been shown.

Table 1: ITCHS Classification of Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this Chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 Kgs (ITCHS 3105)

ITCHS Code	Name/Description
3105	**Name:**Fertilizers, mineral or chemical; n.e.c. in heading no. 3105 **Description:**Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this Chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 Kgs

Section 2: Trends in International Trade i.e Exports & Imports of Fertilizers, mineral or chemical; n.e.c. in heading no.(ITCHS 3105)

A glimpse of the top 15 exporters of Fertilizers, mineral or chemical; n.e.c. in heading no. (ITCHS 3105)etc. in the world is given in below Table: 2

Table 2 & 3 shows the top 15 exporters of Fertilizers, mineral or chemical; n.e.c. in heading no. (ITCHS 3105). China, USA, Israel, Spain andLithuania are the top 5 exportersin 2021 with a total world share of 66%

Table 2: Exports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITCHS 3105) in Million US dollars.

Countries	Export Value (in Million USD)				
	2017	2018	2019	2020	2021
China	7188.074	9327.277	7951.960	6792.953	12326.788
USA	4459.061	4633.508	5009.127	4156.880	4989.522
Israel	1928.452	2119.472	1991.732	2033.180	2505.238
Spain	903.215	1009.702	1068.568	1191.145	1516.166
Lithuania	743.557	846.058	865.696	883.385	1417.365
Netherlands	903.214	933.517	1061.339	1087.181	1397.375
Belgium	1526.010	1624.000	1573.512	1551.958	1310.981
Poland	495.889	514.580	585.734	574.971	862.046
Germany	570.581	605.189	627.801	594.899	764.531
Australia	337.725	418.709	313.661	392.950	678.807
Italy	384.700	389.664	393.298	380.227	591.309
Mexico	411.010	572.153	395.801	409.644	560.314
Turkey	219.702	267.119	319.542	444.504	548.141
Chile	294.427	402.195	400.775	389.447	444.499
Serbia	138.603	187.442	258.443	228.182	373.801
Others	15702.045	18630.801	17316.686	17276.098	3932.556
Total Export Value	**36206.264**	**42481.386**	**40133.673**	**38387.603**	**34219.439**

Sources: Computed from UN Comtrade database

Table 3: Shares of countries in % in world export of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)

Countries	Export Value (Share %)				
	2017	2018	2019	2020	2021
China	19.85	21.96	19.81	17.70	36.02
USA	12.32	10.91	12.48	10.83	14.58
Israel	5.33	4.99	4.96	5.30	7.32
Spain	2.49	2.38	2.66	3.10	4.43
Lithuania	2.05	1.99	2.16	2.30	4.14
Netherlands	2.49	2.20	2.64	2.83	4.08
Belgium	4.21	3.82	3.92	4.04	3.83
Poland	1.37	1.21	1.46	1.50	2.52
Germany	1.58	1.42	1.56	1.55	2.23
Australia	0.93	0.99	0.78	1.02	1.98
Italy	1.06	0.92	0.98	0.99	1.73
Mexico	1.14	1.35	0.99	1.07	1.64
Turkey	0.61	0.63	0.80	1.16	1.60
Chile	0.81	0.95	1.00	1.01	1.30
Serbia	0.38	0.44	0.64	0.59	1.09
Others	43.37	43.86	43.15	45.00	11.49

Total Export Value	100	100	100	100	100

Similarly, tables 4 and 5 below show the total import of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) by the top fifteen countries and their percentage shares respectively. The top five importersin the list consist of Brazil, India, USA, Canada and Argentinacomprising more than 49% of the worldimportsofFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) in 2021.

Table 4: Imports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) in Million US dollars.

Countries	Import Value (in Million USD)				
	2017	2018	2019	2020	2021
Brazil	5452.42	5726.15	5924.72	5501.78	11927.23
India	3464.81	6301.99	5328.31	5558.42	7562.47
USA	1955.29	3195.57	3022.83	1961.88	4032.57
Canada	1367.28	1558.74	1991.77	1795.93	2799.24
Argentina	904.71	1191.59	1093.24	1136.56	2196.33
Australia	1096.30	1244.69	1300.16	1128.01	1968.85
Ukraine	1519.46	1225.65	1512.52	1219.12	1814.25
Pakistan	1311.66	1755.76	971.23	767.00	1567.14
Mexico	977.44	1213.99	1041.59	1089.22	1401.06
China	1071.19	1531.67	1483.01	1395.06	1385.39
France	838.54	909.45	1015.45	924.38	1364.27
Spain	952.07	1087.46	1117.30	977.22	1327.31
Turkey	907.94	731.13	934.99	718.81	1049.69
Poland	596.62	676.18	725.87	701.21	995.93
Romania	536.03	576.79	730.29	523.74	908.39
Others	19827.99	20075.16	19160.38	18615.23	15420.94
Total Import Value	**42779.76**	**49001.98**	**47353.65**	**44013.56**	**57721.06**

Table 5: Shares of countries in % in world imports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)

Countries	Import Value (Share %)				
	2017	2018	2019	2020	2021
Brazil	12.75	11.69	12.51	12.50	20.66
India	8.10	12.86	11.25	12.63	13.10
USA	4.57	6.52	6.38	4.46	6.99
Canada	3.20	3.18	4.21	4.08	4.85
Argentina	2.11	2.43	2.31	2.58	3.81
Australia	2.56	2.54	2.75	2.56	3.41
Ukraine	3.55	2.50	3.19	2.77	3.14
Pakistan	3.07	3.58	2.05	1.74	2.72
Mexico	2.28	2.48	2.20	2.47	2.43
China	2.50	3.13	3.13	3.17	2.40
France	1.96	1.86	2.14	2.10	2.36
Spain	2.23	2.22	2.36	2.22	2.30
Turkey	2.12	1.49	1.97	1.63	1.82
Poland	1.39	1.38	1.53	1.59	1.73
Romania	1.25	1.18	1.54	1.19	1.57

Others	46.35	40.97	40.46	42.29	26.72
Total Import Value	**100**	**100**	**100**	**100**	**100**

Tables 6 and 7 below show the top fifteen destinations for Indian exports of Fertilizers, mineral orchemical; n.e.c. in heading no (ITC HS 3105) denoting the values and percentage shares respectively.Nepal, United Rep. of Tanzania, Mozambique, China and USA are the countries which constituted thelargest markets for India's exportsof Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)from 2017-2021with export-value share of 40% in 2021.

Table 6: India's exports ofFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) tovarious countries (in million US dollars)

Countries	Export Value (in Million USD)				
	2017	**2018**	**2019**	**2020**	**2021**
Nepal	7.07	18.23	29.24	19.64	26.11
United Rep. of Tanzania	0.11	0.01	1.38	1.21	2.14
Mozambique	1.72	12.99	5.17	7.55	1.86
China	0.04	0.75	1.73	1.42	1.81
USA	0.20	0.25	0.35	1.91	1.72
Indonesia	1.75	1.53	0.72	1.06	1.57
Malaysia	11.74	13.32	4.37	0.82	1.45
Malawi	2.41	0.16	0.12	0.04	0.94
Zambia	1.52	0.27	0.10	0.05	0.90
Thailand	0.34	0.44	0.17	0.47	0.63
Canada	0.05	0.21	0.16	0.45	0.52
Ghana	0.00	0.00	0.00	0.00	0.32
Australia	0.10	0.10	0.21	0.30	0.26
Bangladesh	0.14	0.09	0.15	0.10	0.24
United Arab Emirates	0.04	0.09	0.24	0.65	0.19
Others	38.64	68.34	80.97	60.51	44.23
Total Export Value	**65.86**	**116.77**	**125.08**	**96.20**	**84.87**

Table 7: Various countries' share (in %) in Indian exports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)

Countries	Export Value (Share %)				
	2017	**2018**	**2019**	**2020**	**2021**
Nepal	10.73	15.61	23.37	20.42	30.77
United Rep. of Tanzania	0.16	0.01	1.11	1.26	2.52
Mozambique	2.61	11.13	4.13	7.85	2.19
China	0.06	0.64	1.38	1.48	2.14
USA	0.30	0.21	0.28	1.99	2.02
Indonesia	2.66	1.31	0.58	1.10	1.85
Malaysia	17.83	11.41	3.49	0.85	1.71
Malawi	3.66	0.13	0.09	0.05	1.11
Zambia	2.31	0.23	0.08	0.05	1.05
Thailand	0.52	0.37	0.13	0.49	0.74
Canada	0.07	0.18	0.13	0.47	0.62
Ghana	0.00	0.00	0.00	0.00	0.37
Australia	0.15	0.09	0.17	0.32	0.30

Bangladesh	0.21	0.08	0.12	0.11	0.28
United Arab Emirates	0.06	0.07	0.20	0.68	0.23
Others	58.67	58.53	64.73	62.90	52.11
Total Export Value	**100**	**100**	**100**	**100**	**100**

Sources: Computed from UN Comtrade database

In similar vein, tables 8 and 9 show the top fifteen destinations for Indian imports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) denoting the values and percentage shares respectively. China, USA, Israel, Spain and Lithuaniaare the countries from which India imported Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)shown in descending order of magnitude of import-values, from 2017-2021 with total import-value share of around 48% in 2021

Table 8: India's imports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)from various countries (in million US dollars)

Countries	Import Value (in Million USD)				
	2017	**2018**	**2019**	**2020**	**2021**
China	824.57	1447.25	1036.12	688.05	1212.88
USA	442.02	862.22	900.42	753.27	1195.35
Israel	19.29	310.41	40.58	474.16	708.95
Spain	108.02	196.66	241.36	374.88	389.94
Lithuania	43.94	145.01	123.30	185.09	125.20
Netherlands	40.86	30.58	44.00	84.01	55.89
Belgium	7.13	9.23	10.72	13.89	15.18
Poland	8.77	34.48	40.97	26.74	15.07
Germany	0.00	0.00	10.44	9.54	12.58
Australia	6.14	10.93	7.15	8.58	12.52
Italy	3.02	11.06	7.42	4.52	10.02
Mexico	8.73	2.43	0.89	21.27	4.81
Turkey	0.85	1.31	1.56	3.19	4.31
Chile	0.00	0.00	0.64	28.25	3.58
Serbia	2.21	2.80	3.66	4.65	3.34
Others	1949.24	3237.60	2859.08	2878.34	3792.85
Total Import Value	**3464.81**	**6301.99**	**5328.31**	**5558.42**	**7562.47**

Sources: Computed from UN Comtrade database

Table 9: Various countries' share in % in Indian imports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)

Countries	Import Value (Share %)				
	2017	**2018**	**2019**	**2020**	**2021**
China	23.80	22.96	19.45	12.38	16.04
USA	12.76	13.68	16.90	13.55	15.81
Israel	0.56	4.93	0.76	8.53	9.37
Spain	3.12	3.12	4.53	6.74	5.16
Lithuania	1.27	2.30	2.31	3.33	1.66
Netherlands	1.18	0.49	0.83	1.51	0.74
Belgium	0.21	0.15	0.20	0.25	0.20
Poland	0.25	0.55	0.77	0.48	0.20
Germany	0.00	0.00	0.20	0.17	0.17
Australia	0.18	0.17	0.13	0.15	0.17
Italy	0.09	0.18	0.14	0.08	0.13
Mexico	0.25	0.04	0.02	0.38	0.06
Turkey	0.02	0.02	0.03	0.06	0.06

Chile	0.00	0.00	0.01	0.51	0.05
Serbia	0.06	0.04	0.07	0.08	0.04
Others	56.26	51.37	53.66	51.78	50.15
Total Import Value	**100**	**100**	**100**	**100**	**100**

Sources: Computed from UN Comtrade database

Section3: Export IntensityIndex

Export Trade Intensity Index (ETII) of a country with respect to an importing country is the share of theexporting country's merchandise going to that particular importing country divided by the share of worldexports going to that importing country. In other words, it is the importance of that importing country asa destination for the exporting country's merchandise outflow, as compared to the importance thatimporting country enjoys as a destination of world exports. But algebraically, it is equal to the exportingcountry's share in the importer's market as compared to the same country's market share in the worldmarket. Table 10: below shows the indices of some countries with respect to India for ITC-HS Chapter31, Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc.belong

Table 10: Export Trade Intensity Indices for Fertilizers, mineral or chemical; n.e.c. in heading no(ITC-HSChapter31) of Countries w.r.t. India

Countries	2017	2018	2019	2020	2021
U A E	15.15	12.78	19.94	20.32	21.00
Australia	2.67	3.36	1.58	0.75	3.46
U S A	0.87	0.66	0.85	0.80	0.75
China	0.44	0.42	0.84	0.66	0.56
Brazil	0.36	0.07	0.30	1.23	0.56
Japan	0.65	0.72	0.32	0.40	0.41
U K	0.02	0.12	0.41	0.07	0.39
Germany	0.04	0.00	0.00	0.00	0.00

Source: Computed from UN Comtrade database

Table 10 shows that the Export Intensity Indices of India with UAE, Australia, and Brazil aregreater than 1, implying India gives much more importance to these countries as a destination for itsexports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc. than the rest of the world does.

Section 4: RCA and RCII

While looking at the Export Intensity Index is one approach, the other involves the use of informationregarding source countries which places high importance on its exports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc. in terms of value, relative to the importance in world exports; and likewise, also enjoyingsimilar relative importance in the destination country's imports. The first is known as RevealedComparative Advantage (RCA) and the second Revealed Comparative Import Inclination (RCII). RCAindex for a commodity (or commodity group) exported from the source country is higher than 1 if itsimportance is more in the source country's total

exports than in world exports, and vice versa. Similarly, RCII index for the destination country's imports for a commodity (or commodity group) is higher than 1 if its importance is more in the destination country's overall imports than in world imports, and viceversa.

Table 11: RCA of various countries' exports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC-HSChapter31)

Countries	2017	2018	2019	2020	2021
Nigeria	11.53	11.02	9.22	7.85	11.34
Azerbaijan	10.49	10.27	9.05	8.46	11.69
Kuwait	10.71	10.84	9.15		11.03
Brunei		10.27	8.51	8.23	10.43
Kazakhstan	7.26	9.26	6.94	6.11	7.50
India	1.27	1.40	1.48	1.31	1.36

Source: Computed from UN Comtrade database

For the year 2021, the RCA of various countries' exports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc.(ITC-HSChapter 30) is given in table 11. India is at an advantage in supply-side for exports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)
…etcto the world since RCA >1 as seen from table 11.

Similarity, if the RCII in the destination country is greater than 1 then the country imports Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc. to an extent more than overall world trends warrant. Therefore, if India seeks to expand its exports, these countries are the preliminary list of options.

Table 12: RCII of various countries' imports of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC-HSChapter31)

Countries	2017	2018	2019	2020	2021
India	2.59	2.24	2.49	2.50	2.90
Belarus	2.78	2.33	2.64	2.02	2.17
Greece	2.34	2.02	2.17	2.22	2.14
Cyprus	1.84	1.48	3.15	1.51	1.47
Burkina Faso	2.06	2.01		2.21	2.68
Japan	1.89	1.70	1.75	1.75	1.75

Table 12 shows the RCII indices of various countries' importsFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc. ports of (ITC-HS Chapter 31). Table 12 below shows that Belarus, Greece, Cyprus, Burkina Faso & Japan have RCII>1 indicating a higher than average appetite for imports of the commodity that the rest of the world and these countries should thus serve as potent destination markets for India's Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)goods exports.

Section 5: Competitiveness Index and Intra-Industry Trade

(i). Competitiveness Index:

The idea of market dominance can be viewed from a different perspective. The competitiveness index of India's export of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc.tells how important India's product is (in terms of market value share) with respect to its competitors in a destination country. While an index value >1 is definitely good for India, similarly, an index value <1 shows that it has been overshadowed by the products of other exporters. Table 13 shows the indices of Indian exports as well as other top exportersof Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc.China, Hong Kong, USA, Germany and Franceare the top importing countries. For Indian exports, the index is high only for China and Hong Kong(>1). It has poor values, especially for USA, Germany and France, implying India must step up its game in these importing countries (with index < 1) to compete with other exporters ofFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc.

Table 13: Competitiveness Indices (Product) of various exporter countries w.r.t Fertilizers, mineral or chemical; n.e.c. in heading no.(ITC-HSChapter31)

Countries	2016	2017	2018	2019	2020
China	2.48	1.94	2.22	2.33	1.89
Hong Kong			0.41	3.32	2.94
USA	0.49	0.48	0.11	0.19	0.09
Germany	0.17	0.53	0.28	0.17	0.19
France	0.00	0.00	0.01	0.02	0.04

Table 14: Competitiveness Indices (Market) of various exporter countries w.r.tFertilizers, mineral or chemical; n.e.c. in heading no.esw.r.t (ITC-HSChapter31)

Countries	2016	2017	2018	2019	2020
China	1.98	1.61	1.96	2.01	1.44

Hong Kong			0.00	0.00	0.00
USA	0.69	0.89	0.16	0.23	0.10
Germany	0.25	0.41	0.20	0.23	0.26
France	0.00	0.00	0.01	0.02	0.03

Source: Computed from UN Comtrade database

(ii). Intra-Industry Trade:

Intra-industry trade is of importance as it can increase and expand markets. The standard indicator is the Index of Intra-industry Trade (IIT). The index can be calculated within individual sectors as well. Intra-industry trade is generally high in case of the manufacturing sector. An increase in IIT may signify a maturing of this sector, and hence, a regular monitoring of this index may be useful. Intra-industry trade is a common world-wide phenomenon export and import of the commodities produced by the same industryor 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 one.

Table 15: Intra-Industry Trade in Fertilizers, mineral or chemical; n.e.c. in heading no.(ITC-HSChapter31) between India and Some Major Importing Countries in 2020)

IIT between India and Partner Countries	
Countries	**Grubel-Lloyd Index in 2020**
United Arab Emirates	0.445
Iraq	0.010
Rep. of Korea	0.909
Singapore	0.437
Malaysia	0.993
Russian Federation	0.004

Source: Computed from UN Comtrade database

Table 15 shows varying degrees of IIT between India and some major partners. The values are very high (>0.9) between India and Malaysia and India and Rep of Korea showing greater interdependence (exports and imports by the same sector) in international trade within the same industry. The sources of gains from intra-industry trade between similar economiesnamely, the learning that comes from a high degree of specialization and splitting up the value chain and from economies of scaleare not contradictory to the earlier theory of comparative advantage

Section6: Summary

ForFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) …etc., China, USA, Israel, Spain and Lithuania are the top 5 exporters from 2017 to 2021 covering more than 66 percentofworldexportvalueof the commodity. The top five importers consist of Brazil, India, USA, Canada and Argentina comprising more than 49% of the world importsof Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) …etc.in 2021.

Nepal is the only country which constituted the largest markets for India'sexports of commodity class ITC-HS 3105 from 2017-2021, with export-value share of 26% in 2021. China& USA are the countries from which India importedFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc., with a magnitudeof import values from 2017-2021with total import-value share of around 32% in 2021.

The market indicators for India in terms of Fertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105)…etc.,can be improved with respect to other major importers. Lower values of the Competitiveness indexbetween India and the major importing countries, particularly Hong Kong, USA, Germany and Francearetestimony to this.

Export Intensity Indices of India with UAE, Australia & Brazil aregreaterthan 1, implying India gives much more importance to thesecountriesasadestinationforitsexportsofFertilizers, mineral or chemical; n.e.c. in heading no (ITC HS 3105) …etc., than the rest of the world does.

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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 arevealed comparative disadvantage if $RCA_{ij} < 1$. When $RCA_{ij} = 1$, there is neither comparativeadvantage   nor   disadvantage.

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

2. one way of checking the reasons for a fall in RCA for a particular commodity is seeing whichmarkets 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 forwhich markets ESI has fallen. Special attention may then be given to those markets regarding thecommodity in question.

3. Like RCA, the revealed comparative import intensity (RCII) can also be measured.

$$\textbf{RCII = (mij/Mit)/(mwj/Mwt)}$$

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:

$$\textbf{TCI} = 1 - \sum (|\,mik - xij\,|/2)$$

Where, m_{ik} = share of commodity i in the imports of market k
x_{ij} = 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 m_{ik} and x_{ij} 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).

$$\textbf{TII = (xij/Xit)/(xwj/Xwt)}$$

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 agreement

6. Arelated indicator is the Export Similarity Index (XSI), which helps us identify a country's competitors.

$$XSI = \sum [\min(Xij, Xik)*100]$$

Where,Xij= share of commodity i in exports of country j
Xik= share of commodity i in exports of country k

XSI can vary between 0 and 100. It will be seen that when Xij= Xik for all i's, XSI = 100, which means complete export similarity between countries j and k. As Xij and Xik 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.

$$HI = \sqrt{[\sum Sq(xi/Xt)]}$$

Where, xi is the country's exports of commodity i
Xt 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 isthe Index of Intraindustry Trade (IIT).

$$IITjk = 1 - [\sum |Xijk - Mijk| / (Xijk + Mijk)]$$

Where, Xijk = exports of products of industry i from country j to country k
Mijk = imports of products of industry i from country k to country j.

IIT can take values from 1 (extremely high intra-industry trade, exports equalling imports) to 0 (nointerindustry trade at all)