

**REVEALED COMPARATIVE ADVANTAGE: AN ANALYSIS
FOR INDIA AND CHINA**

Asha. M. Goudar* , Dr. B. H. Nagoor**

*Research Scholar, Department of Studies in Economics, Karnatak University, Dharwad, Karnataka, India,

ashamgoudar@gmail.com

**Professor, Department of Studies in Economics, Karnatak University, Dharwad, Karnataka, India,

nagoor_bh@yahoo.co.in

Abstract:

The remarkable growth rate of India and China together wondered world economy. Rapid economic growth labour abundant economies with very different export mixes. China is more integrated with sharing manufacture goods. For India service exports are important. The purpose of this paper is to analysis of the trends and patterns of growth of India's trade with Chinese economy and to estimate the extent of Intensity of trade relations between India and the China. The present study gives more importance to comparative advantage of India and China' 19 major commodities from 1995 to 2021. Trade openness Index, Trade Intensity Index have been calculated to know the Export and Import Intensity trade flow between two countries. The results shows that India occupied majority commodities of exports majority in the primary commodities. While China is dominated in manufacture sector. However, after division the manufactures into several sub categories, it has been observed that India has comparative advantage for few products under manufactures such as chemical products and iron and steel products. There is huge scope for exports of these two product groups for India. China enjoys comparative advantage for machinery and transport equipment which includes electronics excluding parts and components and parts, components of electrical and electronics. There is a huge scope for exports of these commodities from China to India. In this context, the present paper makes an attempt to how this bilateral trade helps to facilitate more relationship among these two nations and benefits for future.

Keywords: Economic growth, RCA, Trade Intensity

1. Introduction

The process of globalization has established China and India as the new economic powers in the world scenes. Their speedy economic development is one of the most remarkable achievements in the world economy in recent century. In the 1950s, India and China were same stage of economic development, however, with early adoption of liberal trade policy by China, China is able to grow faster than India.

During the past two decades India and China have relaxed the trade restrictions and welcomed the foreign trade which sustained economic growth and achieved attractive GDP growth rates.

China and India's speedy economic development is one of the most enormous achievements in the world economy till 21st Century. India's trade relation with China dates back to ancient times, but it began to change in the 1980s with the opening of both the economies. With the huge populations both these nations were not the key players in the world economy until recently. With the liberalization of their economies, India and China have accomplished economic growth with constant high growth rates of GDP and are gaining the attention of economist's, politicians and academicians. During the past decades India and China have relaxed the trade restrictions and welcomed the foreign investment which sustained economic growth and achieved attractive GDP growth rates.

2.Review of Literature

Ahmad, Kunroo, Sofi(2018)- according to their study of RCA and bilateral RCA of China and India , this study specifically tries to find out the pattern of exports and areas of specialization of the economies under study. Major findings suggest that both the countries have been performing well, in terms of merchandise trade exports, over the past few decades, especially since 2000.

Batra, Amita; Khan, Zeba(2005)-They Opinions that the In spite of similarity in structure of comparative advantage, their analysis of the degree of competition reveals that there is no correlation between the manufacturing sectors of India and China in the global economy.

Saba Ismail | Shahid Ahmed (2021) they give more importance of trade policy perspective. To promote more exports of items which should have more comparative advantage lies, policies should be framed very well. The study evaluates dynamic structural changes over time using the SRC coefficient for India and China.

Devadason (2012) according him, the export composition of China and India differ significantly, China's exports mainly comprise finished goods, whereas India's exports mainly comprise intermediate goods.

Bagaria and Ismail (2017, 2018, 2019) argued that China's specialization has increased in high technology while there is a sharp decline in the share of low- technology manufactures in China, whereas in India, exports are dominated by resource- based manufactures and low- technology manufactures.

3.Statement of the problem

In the present scenario where India is emphasizing on the development of Industries; India's share in world exports of goods play an important role. In this case, India is competing not only with the developed countries, but also recently emerging powers in Asia. India failed to exploit the economic opportunities that a strong manufacturing sector can offer. Our neighbouring country China is one such example where despite

having similar problems like huge population, unemployment, inflation and lack of sophisticated technology, it has emerged as the largest exporter and second largest trader of the world (Das et al., 2013). There is a huge gap between share of China and India in the world merchandise exports. A comparison between the two becomes mandatory not only to learn from the experience of China, but also to understand the drawbacks of Indian economic policy.

The relationship between the two giants of Asia India and China has been progressing at a tremendous pace. Both nations have witnessed their share of ups-and-downs over the years. The study aims in the assessment of trade of both the nations by bringing out the comparison of particularly focusing on foreign trade. Although China has demonstrated its potential to grow faster consistently for several years, why doesn't India exhibit the same kind of dynamism? In this context, the study tries to evaluate how this bilateral trade helps to facilitate more relationship among these two nations as well as to identify the product groups for which trade can be expanded.

4.Objective of the study

- 1.Analysis of the trends and patterns of growth of India's trade with Chinese economy
- 2.To estimate the extent of Intensity of trade relations between India and the China.
- 3.To identify the commodities with trade potential, which could further enhance the trade relations between China and India.

5.Methodology

The present study was carried out to understand the possible relationships and potentialities of trade and trade complementarity between these two countries. The paper carried out data from 1995 to 2021 and collected through United Nations Conference on trade and Development (UNCTAD) to calculate Revealed Comparative Index, MeanRCA, Trade Intensity Index Index and Trade Openness. Simple statistical tools like percentage, Growth rate are calculated. To check relationship among China and India's trade, It is significant to know the export and import pattern of bilateral trade between India and China through an examination of commodity composition of exports and imports. For the purpose of analysis, all allocated commodities are classified into two major groups I. Primary commodities, precious stones and non-monetary gold and II. Manufactured goods as per the methodology adopted by UNCTAD. The product groups are defined according to Revision 3 of the Standard International Trade Classification (SITC). The Standard International Trade Classification which is a statistical classification of the commodities participating in external trade. The current international standard is the SITC, Revision 3. "UNCTAD product groups" are provided for special analytical interest which has been followed in this study. For the analysis, under all the categories few of the commodities which have been contributed significantly to the total trade of India have been selected.

The 19 major commodities follow as,

The Primary commodities, precious stones and non-monetary gold are sub divided into

1. Primary commodities and
2. Precious stones and non-monetary gold.

Primary commodities are divided into –

- a. Primary commodities excluding fuels and
- b. Fuels.

The Primary commodities excluding fuels are again sub divided into

- i. All food items,
- ii. Agricultural Raw materials and
- iii. Ores and metals.

All food items consist the sub groups of

- A. Food, basic and
- B. Beverages and Tobacco.

The Manufactured goods are sub divided into 3 groups.

1. Chemical products,
2. Machinery and transport equipment, and
3. Other manufactured goods.

Machinery and transport equipment are further divided into

- a. Electronics excluding parts and components,
- b. Parts and components of electrical and electronic goods,
- c. other machinery and transport equipment.

Other manufactured goods consist of two sub groups which are,

- a. Iron and steel and,
- b. Textile yarn, fabrics and clothing.

Models Applied for the Study

- Trade Openness Index
- Revealed comparative advantage Index
- Mean RCA for India and China
- Export Intensity Index
- Import Intensity Index
- Trade Share

I. TRADE OPENESS INDEX

Openness shows a share of sum of total merchandise exports ($\sum X$) and imports ($\sum M$) in the country j gross domestic products (GDP), expressed in current values.

$$O_j = \frac{\sum X + \sum M}{GDP}$$

II. Revealed Comparative Advantage Index:

The paper identifies the pattern of revealed comparative advantage using the Balassa (1965) index for export data. Which has been widely used by economist to know the comparative advantage of a country's exports, product wise and their changing pattern over year. The RCA indicates whether a country is in that stage of covering the products in which it has trade potential, another side of condition in which the number of products that can be competitively exported is static. It can also provide useful information about potential trade prospects with new partners. Countries with similar RCA profiles are unlikely to have high bilateral trade intensities unless intra industry trade is involved. RCA measures, if estimated at high levels of product disaggregation, can focus attention on the other non-traditional products that might be successfully exported. The RCA index of country 'i' for the product 'j' is often measured by the product's share in the country's exports in relation to its share in the world trade:

$$RCA_{ij} = \frac{(X_{ij}/X_{it})}{(X_{wj}/X_{wt})},$$

Where X_{ij} and X_{wj} are the values of country's exports of commodity 'j' and world exports of commodity 'j' and where X_{it} and X_{wt} refer to the country's total exports and world total exports. A value of less than unity implies that the country has a revealed comparative disadvantage in the product. Similarly, if the index exceeds unity, the country is said to have a revealed comparative advantage in the product.

RCA for exports of both China and India is calculated at commodity group level and compares to see the trade complementarities between these two nations, from the aggregated level, RCA are calculated for India and China across 19 major commodity groups for 27 years to examine the comparative advantage in trade.

III. Intensity Indices:

Trade Intensity Index can be divided into Export Intensity Index (EII) and Import Intensity Index (III) to assess the pattern of exports and imports. Following Kojima (1964) and Drysdale (1969) they can be defined as follows:

III.1 Export intensity index: The ratio of export share of a country/region to the share of world exports going to a partner.

EII can be defined as,

$$EII_{ij} = \frac{X_{ij}/X_{iw}}{X_{wj}/X_{ww}}$$

Where x_{ij} is the dollar value of exports of country 'i' to country 'j', X_{iw} is the dollar value of the exports of country 'i' to the world, x_{wj} is the dollar value of world exports to country 'j', and X_{ww} is the dollar value of

world exports. An index of more than one indicates that trade flow between countries is larger than expected given their importance in world trade.

III.2 Import Intensity index:

The ratio of import share of a country/region to the share of world imports going to a partner. III can be defined as,

$$III_{ij} = M_{ij} / M_{iw} / M_{wj} / M_{ww}$$

Where M_{ij} is the dollar value of imports of country/region i to country/region j , M_{iw} is the dollar value of the imports of country/region i to the world, M_{wj} is the dollar value of world imports to country/region j , and M_{ww} is the dollar value of world imports. An index of more than one indicates higher import intensity between the nations.

IV. Trade share:

Trade share is defined as the percentage of trade with a partner to total trade of a country. It is computed as the dollar value of total trade of country i with country j expressed as a percentage share of the dollar value of total trade of country/region with the world. A higher share indicates a higher degree of integration between partner countries. Here the trade share of India's exports and imports with respect to China were calculated for purpose of analysis.

6. Empirical Results and Discussions

Table:1: Aggregate trends of India-China Bilateral Trade (Value in US \$ Millions)

YEAR	India's Exports to China	Growth Rate	% Share of China Exports	Imports from China	Growth Rate	% Share Imports from China	Total Trade with China	Growth	% Share of China in Total Trade of India	Balance of Trade
1995	331		1.08	856		2.46	1187758		1.81	-525
1996	614	85.49	1.85	771	-9.93	2.032	1385933	16.68	1.95	-157
1997	718	16.93	2.05	1067	38.39	2.57	1785772	28.84	2.33	-349
1998	427	-40.52	1.27	1137	6.56	2.64	1564946	-1.23	2.04	-710
1999	538	25.99	1.5	1311	15.30	2.79	1849701	1.81	2.23	-773
2000	734	36.43	1.73	1738	32.57	3.33	2473046	33.69	2.63	-1004
2001	922	25.61	2.12	2168	24.74	4.3	3090946	24.98	3.29	-1246
2002	1531	66.05	3.1	3126	44.18	5.53	4658557	50.71	4.44	-1595
2003	2567	67.66	4.35	4185	33.87	5.76	6752313	44.94	5.13	-1618
2004	4098	59.64	5.34	7182	71.61	7.19	11281463	67.07	6.39	-3084
2005	7183	75.28	7.21	11946	66.33	8.36	19129914	69.56	7.88	-4763
2006	7829	8.99	6.42	16476	37.92	9.23	24306155	27.05	8.09	-8647
2007	9491	21.24	6.32	23482	42.52	10.23	32974491	35.66	8.68	-13991
2008	10093	6.34	5.18	33164	41.23	10.33	43258589	31.18	8.38	-23071
2009	10370	2.74	6.28	31646	-4.577	12.3	42016814	-2.87	9.95	-21276
2010	17439	68.16	7.77	43179	36.44	12.32	60619607	44.27	10.5	-25740
2011	16717	-4.14	5.51	57158	32.37	12.3	73876443	21.86	9.62	-40441
2012	14729	-11.89	4.96	53710	-6.03	10.96	68440130	-7.35	8.7	-38981
2013	16416	11.45	5.21	54550	1.56	11.72	70967062	3.69	9.09	-38134
2014	13434	-18.16	4.16	60257	10.46	13.01	73691955	3.83	9.38	-46823
2015	95765	6.12	3.57	63932	6.09	16.22	73509487	-0.24	11.1	31833
2016	89160	-6.89	3.33	62932	-1.56	17.4	71848456	-2.26	11.47	26228
2017	12495	-85.98	4.17	74499	18.38	16.55	86994427	21.08	11.61	-62004
2018	16375	31.05	5.04	79552	06.78	15.46	95928704	10.26	11.43	-63177
2019	17278	05.51	5.32	75520	-5.06	15.53	92798862	-3.26	11.45	-58242
2020	19008	10.01	6.87	65428	-13.36	17.53	84436607	-9.01	12.99	-46420
2021	23036	21.19	5.82	94295	44.12	16.47	117331786	38.95	12.12	-71259

Source: Authors Calculations based on UNCTAD.stat

Table 1 explain the development of trade relationship between India and China. An attempt has been made to analyse the development of trade, pattern of growth in exports, imports between the two economies. The aggregate trends of India's trade with China have been represented Since 1995 to the latest available the pattern of trade between these two nations has been examined in this section.

A. India's Exports to China: Exports from India to China have been gradually increasing since 1995. The export volume from India to China was US \$ 331 million in 1995 which significantly increased to US \$ 614 million and the highest growth rate 85.35 per cent by 1996. However, they declined to US \$ 427 million in 1998 which was 40.54 per cent lower than its previous year. from then the exports to China have been increasing steadily till 2010 reaching the highest export level of US \$ 17,439 million. However, the Indian exports have been declining slowly and reached to the volume of US \$ 13,434 million by 2014. After 2014 we can see that their quantum jump in India's export to China in 2016 and 2017, but again it goes gradually declining trend. The percentage share of exports to China in total exports by India was 1.08 per cent in 1995, which gradually increased to the highest level in 2010 with 7.77 per cent, however percentage share of exports to China has been declining and reduced to 5.28 percentage in global exports of India in 2021.

B.India's Imports from China: India's imports from China were US \$856 million in 1995, increased gradually to as high as US \$ 94295 million in 2021 and the share of imports from China in global imports to India was only 2.46 per cent for 1995 which increased significantly to a level of 16.47 per cent by 2021.

C. India's Total Trade with China: Total trade of India with China was only US \$ 1,187 million in 1995, slowly increased to the highest volume of US \$ 117,331 million by 2021, Since2003 the trade between these two nations has been increasing deliberately. The percentage share of trade turnover with China in India's global trade turnover was as low as 1.81 per cent in 1995 and gradually increased as high as 12.12 per cent in 2021.

D. India's Balance of Trade with China: from above table we can see that ,the balance of trade between India and China has always been negative path . since the import volume from China is more than the export volume of India to China. The deficit in balance of trade was around US \$ 525 million in 1995 which further extended to as high as US \$ 71259 million by 2021.Thus we can say that India's dependency over China is more than India's exports. Which shows unfavourable condition of balance of trade with China.

Trade Openness INDEX

Table:2:Trade Openness Index of China and India

Year	India Trade openness Index	China Trade Openness Index	Year	India Trade Openness Index	China Trade openness Index
1991	0.13	0.33	2006	0.32	0.64
1992	0.15	0.34	2007	0.32	0.61
1993	0.15	0.32	2008	0.41	0.56
1994	0.16	0.42	2009	0.32	0.43
1995	0.18	0.38	2010	0.35	0.49
1996	0.18	0.34	2011	0.41	0.48
1997	0.18	0.34	2012	0.42	0.45
1998	0.18	0.31	2013	0.41	0.43
1999	0.18	0.33	2014	0.38	0.41
2000	0.20	0.39	2015	0.31	0.36
2001	0.19	0.38	2016	0.27	0.33
2002	0.21	0.42	2017	0.29	0.33
2003	0.22	0.51	2018	0.30	0.33
2004	0.25	0.59	2019	0.28	0.32
2005	0.29	0.62	2020	0.24	0.32

Source:Author Calculation based on data from UNCTAD.Stat .

Note: 2021 Data Not available.

Table2 represents the trade openness index of the two countries for the period under study. It is noticed that the China achieved a sustain and significant increase in trade openness.In post liberalization period China gained spectacular increase in openness with the index rising to 0.64 in 2006.The reason due to China's

entry into WTO and removing tariff and other trade restrictions. and another reason could to be Effective implementation of domestic trade policies. Some how China's Openness has been reduced from 0.64 to 0.32 in 2020 due to impact of global downturns, war, nature calamities.

We can see from 1991 China's openness was nearly double of that India in the same year. India's openness started steady increase after 1991 however not much as China's openness. Lag of domestic trade policies. Less awareness about trading policies for Indian exporters reduced the openness. After 2007 India has been able to increase its trade openness significantly from 2006.

Comparison of the trade openness between China and India reveals that the China has been more open than India. India trying to fill the gaps those gaps which is not good for nation's open up trade. Although, India gets succeed and catching up fast with China.

Trade Intensity Index between India and China

Table:3: Trade Intensity Index between India and China.

Year	EII		III		YEAR	EII		III	
	India	China	India	China		India	China	India	China
1995	0.42	0.76	0.85	0.49	2009	0.77	1.12	1.27	0.94
1996	0.72	0.64	0.72	0.82	2010	0.83	1.04	1.18	0.91
1997	0.81	0.68	0.78	0.98	2011	0.56	0.96	1.17	0.73
1998	0.50	0.71	0.79	1.03	2012	0.49	0.80	0.97	0.57
1999	0.52	0.72	0.81	0.77	2013	0.49	0.80	0.99	0.46
2000	0.50	0.78	0.87	0.09	2014	0.39	0.86	1.04	0.43
2001	0.55	0.87	0.99	0.09	2015	0.35	0.98	1.16	0.42
2002	0.69	0.92	1.10	0.10	2016	0.34	1.13	1.31	0.39
2003	0.81	0.77	0.99	1.25	2017	0.39	1.08	1.28	0.46
2004	0.89	0.89	1.11	1.54	2018	0.45	1.06	1.20	0.46
2005	1.16	0.83	1.14	1.45	2019	0.48	1.06	1.16	0.44
2006	0.98	0.98	1.14	1.19	2020	0.58	1.09	1.18	0.55
2007	0.92	1.14	1.16	0.13	2021	0.47	1.00	1.07	0.50
2008	0.73	1.05	1.15	1.35					
Average 1995-2008	0.73	0.84	0.97	0.81	Average 2009-2021	0.51	1.00	1.15	0.56

Sources: Authors Calculations from UNCTAD.stat

Note: EII: Export Intensity Index, III: Import Intensity Index

Table 3 explains the intensity of trade between India and China. The Value of Export Intensity Index (EII) and Import Intensity Index (III) were calculated for the time period 1995 to 2021, which shows the growing intensity of trade between two countries. The average value of Export Intensity indices values for 9 year, from 1995 to 2008 presents an average value of 0.73, the index value which is lower than one. Which means

lower intensity indices export trade India. The EII values from 1995 to 2021 declining trend but after 2002 there was a significant increase in values both in India and China. There could be reason to decline in India's exports to China because of the global financial crisis in 2007. Which could be seen gradual decline in EII (0.73). Similarly in Import Intensity Index the average value registered for China (0.81) and India (0.97). India's III increasing from 2005 and value is greater than 1, which shows that the greater intensity of India's import trade with China as major source.

Revealed Comparative Advantage Index of China and India :

A Country's Revealed Comparative Advantage index in trade in particular to a commodity has been measured by share of particular commodity in the country's total exports relative to that commodity's share in total world exports. If the ratio is less one which can be interpreted that the country is at comparative disadvantage of that particular commodity. Suppose the RCA value is more than one. It signifies that more comparative advantage for that country. RCA for China and India for the year from 1995-2021 has calculated and compared against each other to find out Trade Complementarity between these two nations. The RCA from 1995-2021 (27 years) depicted in Table 4 and 5 provide the long-term trend for each commodity. The commodity groups for which RCA are calculated includes- primary commodities, precious stones and non-monetary gold; primary commodities; primary commodities excluding fuels; all food items; agricultural raw materials; ores and metals; food, basic; beverages and tobacco; fuels; pearls, precious stones and non-monetary gold; manufactured goods; chemical products; machinery and transport equipment; other manufacturing goods; electronics excluding parts and components; part and components for electrical and electronic goods; other machinery and transport equipment; other manufactured goods; iron and steel; textile yarn, fabrics and clothing. Data for calculating RCA has been collected from UNCTAD Stat.

Table:4 Trends in RCA Index for Commodity wise exports of China

Commodity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
I. Primary commodities, precious stones & non-monetary gold	0.69	0.65	0.63	0.61	0.56	0.52	0.51	0.46	0.41	0.36	0.31	0.27	0.24	0.22
I.1 Primary commodities	0.71	0.68	0.65	0.65	0.59	0.54	0.52	0.47	0.43	0.37	0.31	0.28	0.25	0.23
I.1.a Primary commodities, excluding fuels	0.82	0.81	0.77	0.73	0.74	0.75	0.68	0.63	0.57	0.51	0.49	0.46	0.40	0.37
I.1.a.i All food items	0.93	0.91	0.83	0.79	0.77	0.82	0.75	0.68	0.61	0.52	0.49	0.46	0.42	0.36
I.1.a.i.A Food, basic	0.94	0.93	0.88	0.83	0.83	0.90	0.80	0.74	0.66	0.56	0.54	0.50	0.45	0.39
I.1.a.i.B Beverages and tobacco	0.83	0.78	0.52	0.48	0.38	0.34	0.36	0.32	0.26	0.24	0.20	0.16	0.15	0.14
I.1.a.ii Agricultural raw materials	0.68	0.71	0.66	0.58	0.67	0.62	0.51	0.46	0.39	0.33	0.34	0.32	0.31	0.32
I.1.a.iii Ores and metals	0.63	0.59	0.67	0.68	0.71	0.67	0.63	0.60	0.60	0.61	0.54	0.51	0.41	0.40
I.1.b Fuels	0.50	0.46	0.46	0.46	0.32	0.31	0.33	0.28	0.26	0.22	0.17	0.13	0.12	0.13
I.2 Pearls, precious stones and non-monetary gold	0.28	0.12	0.15	0.15	0.18	0.20	0.21	0.19	0.18	0.19	0.17	0.16	0.14	0.12
II. Manufactured goods	1.16	1.17	1.16	1.16	1.17	1.22	1.21	1.22	1.24	1.27	1.33	1.35	1.36	1.43
II.1 Chemical products	0.66	0.65	0.61	0.60	0.57	0.54	0.52	0.46	0.42	0.42	0.44	0.45	0.47	0.53
II.2 Machinery and transport equipment	0.56	0.62	0.61	0.67	0.73	0.82	0.89	0.98	1.10	1.19	1.27	1.29	1.31	1.40
II.2.a Electronic excluding parts and components	1.24	1.44	1.44	1.63	1.70	1.86	2.09	2.50	3.16	3.36	3.53	3.50	3.58	3.69
II.2.b Parts and components for electrical and electronic goods	0.63	0.69	0.68	0.78	0.86	0.89	1.12	1.31	1.40	1.52	1.66	1.74	1.78	1.91
II.2.c Other machinery and transport equipment	0.40	0.42	0.41	0.43	0.48	0.55	0.54	0.53	0.55	0.58	0.61	0.64	0.69	0.79
II.3 Other manufactured goods	2.23	2.20	2.22	2.14	2.15	2.17	2.03	1.95	1.85	1.81	1.83	1.87	1.87	1.92
II.3.a Iron and steel	1.17	0.89	0.91	0.68	0.62	0.81	0.56	0.46	0.46	0.79	0.83	1.08	1.23	1.36
II.3.b Textile fibres, yarn, fabrics and clothing	3.75	3.65	3.62	3.41	3.43	3.47	3.28	3.12	3.06	2.94	2.98	3.09	3.06	3.11

Commodity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
I. Primary commodities, precious stones & non-monetary gold	0.22	0.22	0.21	0.20	0.18	0.18	0.19	0.21	0.23	0.23	0.23	0.24	0.21	0.19
I.1 Primary commodities	0.23	0.23	0.22	0.21	0.19	0.19	0.20	0.23	0.26	0.25	0.25	0.25	0.23	0.20
I.1.a Primary commodities, excluding fuels	0.37	0.35	0.35	0.35	0.34	0.33	0.34	0.33	0.35	0.34	0.35	0.34	0.28	0.27
I.1.a.i All food items	0.36	0.36	0.38	0.38	0.37	0.35	0.34	0.34	0.37	0.36	0.36	0.35	0.30	0.27
I.1.a.i.A Food, basic	0.38	0.39	0.40	0.41	0.39	0.37	0.36	0.36	0.39	0.38	0.39	0.37	0.32	0.29
I.1.a.i.B Beverages and tobacco	0.14	0.15	0.15	0.16	0.16	0.15	0.16	0.18	0.19	0.18	0.18	0.16	0.11	0.11
I.1.a.ii Agricultural raw materials	0.32	0.33	0.31	0.34	0.32	0.32	0.33	0.30	0.31	0.29	0.30	0.30	0.25	0.25
I.1.a.iii Ores and metals	0.40	0.32	0.31	0.31	0.30	0.30	0.33	0.33	0.33	0.32	0.35	0.33	0.26	0.27
I.1.b Fuels	0.12	0.12	0.11	0.10	0.08	0.09	0.09	0.11	0.13	0.14	0.15	0.16	0.15	0.11
I.2 Pearls, precious stones and non-monetary gold	0.12	0.09	0.08	0.08	0.06	0.05	0.06	0.07	0.05	0.03	0.05	0.05	0.07	0.07
II. Manufactured goods	1.43	1.40	1.44	1.50	1.52	1.51	1.46	1.37	1.34	1.36	1.38	1.36	1.33	1.38
II.1 Chemical products	0.53	0.45	0.52	0.57	0.54	0.53	0.55	0.52	0.52	0.56	0.59	0.57	0.53	0.64
II.2 Machinery and transport equipment	1.40	1.46	1.48	1.50	1.49	1.48	1.40	1.31	1.29	1.33	1.38	1.35	1.33	1.41
II.2.a Electronic excluding parts and components	3.69	3.62	3.65	3.71	3.57	3.51	3.29	2.87	2.91	2.99	3.00	2.89	2.75	2.79
II.2.b Parts and components for electrical and electronic goods	1.91	1.87	1.83	1.96	2.02	2.08	1.93	1.86	1.82	1.81	1.88	1.84	1.65	1.65
II.2.c Other machinery and transport equipment	0.79	0.83	0.87	0.91	0.88	0.86	0.84	0.79	0.78	0.82	0.87	0.86	0.89	1.01
II.3 Other manufactured goods	1.92	1.83	1.88	1.98	2.06	2.05	2.02	1.89	1.85	1.84	1.82	1.82	1.80	1.78
II.3.a Iron and steel	1.36	0.76	0.90	1.02	1.01	1.04	1.25	1.23	1.23	1.06	1.05	1.01	0.88	0.98
II.3.b Textile fibres, yarn, fabrics and clothing	3.11	3.00	3.02	3.08	3.02	2.96	2.85	2.61	2.62	2.61	2.57	2.46	2.48	2.25

Source: Authors Calculations from UNCTAD.Stat

Table:5 Trends in RCA Index for Commodity wise exports of India

Commodity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
I. Primary commodities, precious stones & non-monetary gold	3.44	2.99	2.79	3.17	3.13	2.49	2.58	2.63	2.15	1.68	1.47	1.23	1.09	8.13
I.1 Primary commodities	2.28	2.14	1.92	2	1.69	1.46	1.7	1.69	1.36	1.21	1.07	1.02	9.03	6.92
I.1.a Primary commodities, excluding fuels	3.17	3.19	2.91	2.85	2.65	2.33	2.43	2.42	1.82	1.61	1.49	1.25	1.05	8.4
I.1.a.i All food items	4.19	3.83	3.66	3.66	3.32	3	3.03	2.74	2.03	1.64	1.32	1.12	9.72	8.22
I.1.a.i.A Food, basic	4.67	4.23	4	4.06	3.65	3.33	3.36	3.03	2.23	1.81	1.44	1.23	1.06	8.82
I.1.a.i.B Beverages and tobacco	8.24	1.1	1.38	9.59	1.16	8.13	7.75	7.64	6.09	4.88	4.03	3.61	3.09	3.27
I.1.a.ii Agricultural raw materials	9.74	2	1.59	1.48	1.34	1.06	1.05	9.4	8.3	7.71	7.74	9.22	9.12	7.29
I.1.a.iii Ores and metals	2.19	2.22	1.79	1.5	1.64	1.59	1.75	2.53	1.92	2	2.17	1.55	1.21	9.09
I.1.b Fuels	4.57	3.4	2.44	1.25	6.02	5.13	8.26	7.76	8.13	7.8	7.28	8.29	7.75	5.87
I.2 Pearls, precious stones and non-monetary gold	2.43	1.78	1.78	2.06	2.58	2.06	1.89	1.81	1.54	9.96	9.27	5.71	4.99	3.38
II. Manufactured goods	1.62	1.54	1.48	1.45	1.46	1.31	1.37	1.28	1.12	9.2	8.09	6.82	5.52	4.79
II.1 Chemical products	1.77	1.85	1.9	1.79	1.91	1.78	1.83	1.69	1.43	1.17	1.03	9.26	7.37	6.25
II.2 Machinery and transport equipment	4.02	4.03	3.66	3.14	3.03	2.8	3.51	3.34	3.2	2.79	2.78	2.45	2.17	2.33
II.2.a Electronic excluding parts and components	2.07	2.85	2.3	1.07	9.09	8.8	1.39	1.51	1.45	9.07	7.99	6.91	5.34	4.57
II.2.b Parts and components for electrical and electronic goods	2.83	2.69	1.73	1.23	1.38	1.24	2.03	1.69	1.46	1.33	1.05	9.81	9.25	9.51
II.2.c Other machinery and transport equipment	4.88	4.79	4.73	4.32	4.2	4.03	4.64	4.44	4.31	3.86	3.98	3.46	2.99	3.18
II.3 Other manufactured goods	3.36	3.17	3.06	3.16	3.23	2.95	2.93	2.7	2.33	1.86	1.57	1.3	1.02	8.02
II.3.a Iron and steel	2	2.04	2.22	1.66	2.25	2.21	1.93	2.41	2.49	1.97	1.68	1.44	1.14	9.75
II.3.b Textile fibres, yarn, fabrics and clothing	7.78	7.83	7.15	7.37	7.67	6.93	6.63	5.92	4.83	3.76	3.28	2.74	2.2	1.76

Commodity	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
I. Primary commodities, precious stones & non-monetary gold	1.14	9.47	7.23	6.84	7.82	7.25	8.44	8.78	7.8	6.96	6.81	7.53	6.01
I.1 Primary commodities	9.06	7.83	5.88	6.18	6.95	6.41	6.89	7.06	6.59	6.01	6.00	7.06	5.44
I.1.a Primary commodities, excluding fuels	1.01	8.63	6.08	7.28	7.33	6.6	7.45	7.2	6.96	6.01	5.93	7.25	5.31
I.1.a.i All food items	8.45	7.1	6.49	7.44	8.14	7.44	8.24	7.95	7.65	6.68	6.67	8	6.04
I.1.a.i.A Food, basic	8.84	7.5	6.97	7.99	8.73	7.98	8.81	8.47	8.2	7.19	7.17	8.56	6.45
I.1.a.i.B Beverages and tobacco	5.37	3.68	2.3	2.66	2.85	2.5	3.15	3.31	2.63	2.32	2.3	2.57	1.79
I.1.a.ii Agricultural raw materials	7.88	9.29	8.33	1.45	1.09	7.97	7.5	6.61	5.87	5.75	4.57	5.74	4.85
I.1.a.iii Ores and metals	1.48	1.1	4.62	4.4	4.41	4.34	5.64	5.59	5.83	4.7	4.84	6.16	4.24
I.1.b Fuels	8.07	7.14	5.72	5.4	6.67	6.26	6.24	6.87	6.12	6.02	6.08	6.74	5.61
I.2 Pearls, precious stones and non-monetary gold	4.75	3.36	2.56	1.36	1.52	1.65	2.14	2.09	1.84	1.72	1.5	1.11	1.18
II. Manufactured goods	7.27	5.15	4.39	4.63	4.63	4.43	5.23	5.47	4.94	4.6	4.93	5.25	4.07
II.1 Chemical products	7.76	6.33	5.33	6.09	6.42	5.77	7.43	7.76	6.93	6.96	7.57	8.74	5.8
II.2 Machinery and transport equipment	3.88	2.75	2.39	2.29	2.43	2.42	2.74	2.8	2.55	2.54	2.81	2.84	2.26
II.2.a Electronic excluding parts and components	8.24	5.45	4.83	4.22	4.47	4.08	5.15	4.88	3.65	3.53	4.07	4.05	3.2
II.2.b Parts and components for electrical and electronic goods	3.21	1.6	1.58	1.41	1.26	8	8.01	8.56	7.17	8.04	1.23	1.26	1.11
II.2.c Other machinery and transport equipment	4.81	3.72	3.06	3	3.3	3.48	4.01	4.07	3.79	3.75	3.98	4.22	3.29
II.3 Other manufactured goods	1.23	8.47	7.07	7.58	7.19	6.9	8.16	8.7	7.94	6.8	7.08	7.35	6.02
II.3.a Iron and steel	1.21	1.1	6.59	7.59	8.93	7.62	8.16	9.06	1.12	8	8.93	1.26	1.05
II.3.b Textile fibres, yarn, fabrics and clothing	2.33	1.83	1.43	1.47	1.58	1.43	1.78	1.77	1.57	1.36	1.33	1.34	1.12

Source: Authors own calculation from UNCTAD

Table 4 and 5 indicate that the Revealed comparative advantage between China and India's commodity is fluctuating. However, India is dominating trade majority in all commodities associated Primary commodities as group China 0.71 of RCA value in 1995 which gradually declined to 0.20 in 2021 shows that China is comparatively disadvantage of export of primary commodity. On the other hand, India RCA is high than China, which signifies that India can have more exports of primary commodities (2.28 to 5.44). In

Manufactured goods, as a whole India also dominating at all most of manufacture goods. In other commodities India is comparatively highest advantage. China has remained comparatively disadvantageous the period of study.

Mean Revealed Comparative Advantage Index

Table:6 Mean Revealed Comparative Advantage Index

Commodity	China Mean RCA	India Mean RCA
Primary commodities, precious stones & non-monetary gold	0.34	4.85
Primary commodities	0.36	4.55
Primary commodities, excluding fuels	0.48	4.47
All food items	0.51	5.47
Food, basic	0.55	5.55
Beverages and tobacco	0.27	3.98
Agricultural raw materials	0.40	5.70
Ores and metals	0.45	3.35
Fuels	0.21	6.18
Pearls, precious stones and non-monetary gold	0.12	2.89
Manufactured goods	1.33	4.15
Chemical products	0.53	4.81
Machinery and transport equipment	1.17	2.89
Electronic excluding parts and components	2.83	4.60
Parts and components for electrical and electronic goods	1.53	3.69
Other machinery and transport equipment	0.70	3.94
Other manufactured goods	1.96	4.86
Iron and steel	0.94	3.92
Textile fibres, yarn, fabrics and clothing	3.02	3.32

Source: Computed using data from UNCTAD. Stat

The Mean Revealed Comparative Advantage (RCA) of China and India for the period of 1995 to 2021 for 19 commodity groups has been calculated to identify the comparatively advantageous product groups between these two trading partners. The following table 6 depicts the Mean Revealed Comparative Advantage of India and China. The mean Revealed Comparative Advantage precisely identifies the advantageous products for trade. In view of India's comparative advantage is focused in sectors such as – primary commodities, iron and steel, all food items, pearls, precious stones and non-monetary gold, fuels, chemicals and textiles. On the other hand, China enjoys comparative advantage in sectors such as manufactures, particularly in machinery and transport equipment, electronics, parts and components and textiles. Bilateral trade in these sectors would be beneficial to both the economies.

Descriptive statistics

Table:7 Descriptive Statistics of Revealed Comparative Advantage of India and China Exports (1995-2021)

Independent sample test of Revealed Comparative Advantage of India and China							
Commodity	Country	Mean	S. D	SEM	t value	M.D	95% C. L

							<i>Lower</i>	<i>Upper</i>
Primary commodities, precious stones and non-monetary gold	India	4.85	2.85	0.55	8.85	4.85	3.73	5.98
	China	0.33	0.17	0.03	10.29	0.33	0.27	0.40
Primary commodities	India	4.55	2.79	0.54	8.48	4.55	3.45	5.65
	China	0.36	0.18	0.03	10.47	0.36	0.29	0.42
Primary commodities, excluding fuels	India	4.47	2.59	0.50	8.97	4.47	3.44	5.49
	China	0.48	0.19	0.04	13.56	0.48	0.41	0.56
All food items	India	5.47	2.62	0.50	10.84	5.47	4.44	6.51
	China	0.51	0.21	0.04	12.65	0.51	0.43	0.60
Food, basic	India	5.55	2.76	0.53	10.44	5.55	4.46	6.64
	China	0.55	0.22	0.04	12.88	0.55	0.46	0.63
Beverages and tobacco	India	3.98	2.40	0.46	8.62	3.98	3.03	4.93
	China	0.27	0.19	0.04	7.36	0.27	0.19	0.34
Agricultural raw materials	India	5.70	3.15	0.61	9.42	5.70	4.46	6.95
	China	0.40	0.15	0.03	14.15	0.40	0.34	0.46
Ores and metals	India	3.35	2.02	0.39	8.61	3.35	2.55	4.15
	China	0.45	0.16	0.03	15.02	0.45	0.39	0.52
Fuels	India	6.18	1.73	0.33	18.55	6.18	5.50	6.87
	China	0.21	0.13	0.03	8.22	0.21	0.16	0.26
Pearls, precious stones and non-monetary gold	India	2.89	2.26	0.43	6.65	2.89	2.00	3.78
	China	0.12	0.07	0.01	9.46	0.12	0.09	0.15
Manufactured goods	India	4.15	2.28	0.44	9.45	4.15	3.25	5.05
	China	1.33	0.11	0.02	60.51	1.33	1.28	1.37
Chemical products	India	4.81	2.80	0.54	8.92	4.81	3.70	5.92
	China	0.53	0.07	0.01	40.85	0.53	0.51	0.56
Machinery and transport equipment	India	2.89	0.54	0.10	27.55	2.89	2.67	3.10
	China	1.17	0.31	0.06	19.58	1.17	1.05	1.30
Electronic excluding parts and components	India	4.60	2.41	0.46	9.90	4.60	3.65	5.56
	China	2.83	0.80	0.15	18.31	2.83	2.51	3.14
Parts and components for electrical and electronic goods	India	3.69	3.28	0.63	5.84	3.69	2.39	4.99
	China	1.53	0.47	0.09	16.84	1.53	1.34	1.71
Other machinery and transport equipment	India	3.94	0.58	0.11	35.34	3.94	3.71	4.17
	China	0.70	0.19	0.04	19.54	0.70	0.62	0.77
Other manufactured goods	India	4.86	2.70	0.52	9.36	4.86	3.79	5.92
	China	1.96	0.15	0.03	69.37	1.96	1.90	2.02
Iron and steel	India	3.92	3.22	0.62	6.32	3.92	2.64	5.19
	China	0.94	0.24	0.05	20.07	0.94	0.84	1.03
Textile fibres, yarn, fabrics and clothing	India	3.56	2.53	0.49	7.30	3.56	2.56	4.57
	China	3.02	0.38	0.07	40.77	3.02	2.87	3.17

Sources: Calculated from UNCTAD.Stat

(Note: No of Observation of India and China-27, Sig(2-tailed) or p value significant at (0.000), S.D-Standard Deviation, SEM-Standard Error Mean, M.D-Mean Difference)

The RCA values of both India and China for 19 product groups have been tested for significance in this study. A nation is said to be comparative advantage if Balassa's index value exceeds one and the sector is said to be strongest if it exceeds 2. Revealed Comparative Advantage has distinct characteristics to know the nation's comparative

advantages in 19 sectors. Table 7 shows the descriptive statistics about the revealed comparative advantage of India and China exports. And

A Student's t-test: The RCA values of India and China have been tested for significance using Student's t-test across 19 commodity groups. This test is used to determine whether there exists a significant difference between the values of Revealed Comparative Advantage of India and China which reveals the scope for bilateral trade. The results are depicted in table 7.

7. CONCLUSION AND POLICY IMPLICATION

To summarize, India and China occupied an important segment in world economy and the bilateral trade between these nations is increasing. Despite of having problems like huge population, poverty, low skill labours and many other, both nations took dynamic decision to their economy and becomes true inspirations for other developing countries. It is inevitable that bilateral trade between these two countries. and their trend growth rate picture tells us that strong potential gain from trade. The pattern of trade towards demand and supply for India's market changing according to their needs, benefits, unfortunately India fails to exploit those opportunities even huge resources available. India's trade balance towards China is going in negative path shows that India's dependency over China's manufacture commodities.

The Trade Intensity Index for both countries shows that the India has rigorous imports from China. and meanwhile India's exports to China are not significant. And an attempt has been made to identify the commodity groups in which both the nations have potential for bilateral trade using Revealed Comparative Advantage index. It has been observed that India has comparative advantage for exports of primary commodities, precious stones and non-monetary gold while China has comparative advantage for the exports of manufacture commodities. However, after division the manufactures into several sub categories, it has been observed that India has comparative advantage for few products under manufactures such as chemical products and iron and steel products. There is huge scope for exports of these two product groups for India. China enjoys comparative advantage for machinery and transport equipment which includes electronics excluding parts and components and parts, components of electrical and electronics. There is a huge scope for exports of these commodities from China to India. It has been observed that there is limited complementarity between India and China for trading other machinery equipment and textiles. Both India and China got comparative disadvantage for trading other machinery equipment. Both are competitive for textiles with huge comparative advantage. In both cases, the scope for bilateral trade is limited.

Reference:

Bagaria, Nidhi, and Ismail Saba. (2017) "An Analysis of Composition and Structural Transformation of Exports of China." *International Journal of Applied Research* 3(7): 1101–6.

Bagaria, Nidhi, and Saba Ismail (2019) "Export Performance of China: A Constant Market Share Analysis." *Frontiers of Economics in China* 14(1): 110–30.

Bagaria, Nidhi, and Saba Ismail. 2018. "Technological Intensity of Exports of India and China: A Comparative Assessment." *Journal of International Economics* 9(2): 50–59

Balassa, B. (1965). "Trade liberalization and revealed comparative advantage". *The Manchester School*, 33(2), 99–123.

Batra, Amita; Khan, Zeba (2005) : Revealed comparative advantage: An analysis for India and China, Working Paper, No. 168, *Indian Council for Research on International Economic Relations (ICRIER)*, New Delhi.

Devadason, Evelyn. (2012) –"Enhancing China- India Trade Cooperation: Complementary Interactions?" *China Review* 12(2): 59–84

Imran Ahmad, Mohd Hussain Kunroo, Irfan Ahmad Sofi(2018)- "*An RCA Analysis of India–China Trade Integration: Present, Potential and Prospects*" *Foreign Trade Review* 53(1) 49–58 2018 Indian Institute of Foreign Trade SAGE Publications .

Lenti, R.T., &Beratta, S. (2012). India and China trading with the world and each other. *Economic and Political Weekly*, 47(44), 35–43. Seshadri, V.S. (2009). The changing face of India's external trade. *Economic and Political Weekly*, 44(35), 43–49.

Saba Ismail , Shahid Ahmed(2021)- "Static and dynamic RCA analysis of India and China in world economy" *International Studies in Economics*. wileyonlinelibrary.com/journal/ise3 2022;17:228–260.

Sunandan Ghosh. Manmohan Agarwal,Adrita Banerjee(2019) "India–China Trade: Asymmetrical Developments and Future Prospects"- *South Asia Economic Journal* 20(1) 70–93, 2019 .SAGE Publications.

Tyagi, S. (2014). Composition, intensity and revealed comparative advantage in SinoIndian bilateral trade: A preliminary study. Retrieved 11 January 2017, from <http://www.icsin.org/uploads/2015/04/12/085caa2681e0faae4e9e0ddc6f411bb4.pdf>.