Trade Complementarity Of India And China With Their Trading Partners In Silk Goods

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INTRODUCTION

Many economists believe that the degree of complementarity or competitiveness among the countries is regarded as a crucial element in trade flow between two countries. The complicated structure of global economy makes the countries more interdependent on one another. The economic growth and development of the developing countries depend on securing capital, know-how, and the other necessary factors of production, which largely belongs to the developed countries. Hence, ensuring integration among the developing countries has been taken into serious consideration in the recent years as an appropriate strategy for economic growth and development.

The trade complementarity means the extent of similarity between the export structure of one country and the import structure of another country. Such a comparison would determine the possibility of establishing and promoting trade links between the same. In other words, ascertaining the existence of similarity between the export structure and the import structure of two trade partners is the pre-requisite condition to prescribe any Regional Trade Agreements (RTAs), tariff exemptions, establishment of a common market and finally, setting up of a full economic union between the two. It should be, however, added that in addition to ensuring a high degree of trade complementarity, a number of other elements such as similarities in utilities, geographical proximity, political trends and issues, and specific position of the industrial sector in the developing economies affect the trade patterns between two given countries and the establishment of a durable trade link. Moreover, the determining implications of the afore-mentioned elements on the economic structures of the countries have convinced a number of economists to put forward diverse views on the subject.

Silk is a highly prized natural fibre with unique characteristics not matched by artificial fibres. Though silk is considered as a luxury fibre, it stands for livelihood opportunity for millions as a powerful tool for socio- economic development because of highly employment oriented, low capital intensive and remunerative nature of its production. India is the second largest producer of raw silk next only to China with the total annual production of 18,320 MT during 2007-08. It also remains the second largest consumer of silk goods in the world. The exports of silk goods just occupy 4.20 % share in the total exports of textile and clothing exports of India. However, there has been phenomenal growth in the exports of silk goods in the last two decades. The exports of silk goods steadily increased from a modest level of ₹17 million in 1960-61 to a whopping ₹ 3338.35 million during 2006-07. The export prospects of silk goods are expected to be good in the coming years, as there is gradual upturn in the purchasing power of the people in the developing countries. The developed countries like the USA and Western Europe are slowly shifting their focus from importing silk fabrics for the purpose of processing to direct import of garments and made up items.

In this backdrop, the trade complementarity between India and its trading partners in the trade of silk goods was studied with the intention to comprehend the prospects of the expansion of trade in silk goods among these countries. The complementarity in the trade in silk goods of China with the major importing countries was also analyzed and compared with that of India to understand the nature of relationship, which may influence the Indian silk trade.

METHODOLOGY

There are a number of indices introduced in the empirical studies of the international trade with the objective to compare the commodity compositions of trade flows and measure the intensity of the trade complementarity between two regions. Apart from the **Linnemann's measure**, which has been used to test **Linder's** hypothesis, two better-known measures are the **Grubel-Lloyd index (1975)** for estimating the extent of IIT and the export similarity index formulated by **Finger and Kreinin (1979)**. Trade complementarity is said to exist between pairs of countries, if the

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supply capability of country A matches with the demand potential of country B, and the supply capability of country B matches with the demand potential of country A. However, it is quite possible that the supply capability of country A matches with the demand potential of country B, but not *vice versa*. Under such a situation, partial complementarity is said to exist between two countries. If the demand and supply patterns between the pairs of countries could not match, the complementarity is very poor.

COMPLEMENTARITY INDEX (CI)

The **Complementarity Index (CI)** was introduced by **Linnemann** and used in many studies such as **Panchamukhi (1992) and Sharma (2006)** is adopted in the present study. Algebraically, the CI can be expressed as follows:

$$CI_{ij} = \frac{\sum\limits_{k=1}^{n}\left[X_{ik} * X_{wk} \right]}{\sqrt{\sum\limits_{k=1}^{n} (X_{ik})^2} \sqrt{\sum\limits_{k=1}^{n} (X_{wk})^2}} \qquad \ldots (1)$$

Or

$$CI_{ij} = \frac{\sum\limits_{k=1}^{n}\left[(X_{ik}/X_i) * (X_{wk}/X_w) \right]}{\sqrt{\sum\limits_{k=1}^{n} (X_{ik}/X_i)^2} \sqrt{\sum\limits_{k=1}^{n} (X_{wk}/X_w)^2}} \qquad \ldots (2)$$

X_{ik} in the equation (1) is the share of commodity k in the total imports of country j from country i.

$$X_{ik} = \frac{\text{Country j's imports of commodity k from country i} (X_{ik})}{\text{Country j's total imports from country i} (X_i)}$$

X_{wk} in the equation (1) is the share of commodity k in the total imports of country j from the world

$$X_{wk} = \frac{\text{Country j's imports of commodity k from the world} (X_{wk})}{\text{Country j's total imports from the world} (X_w)}$$

The coefficient of complementarity can vary between zero and one depending upon the element of co-variability between the imports of country j from country i (India or China) and from the world. A higher value of CI implies higher degree of complementarity between country i's export pattern and the country j's global imports.

DATABASE

The present study is based on the time series secondary data pertaining to the period between 1992 and 2007 compiled from COMTRADE database of United Nations. The disaggregated data obtained under the chapters of 50 (silk) and 62 (articles of apparel, accessories, not knit or crochet) of HS1992 were used for analyzing the performance of silk goods exported from India and China. Only the major silk items traded in the world market and available in the COMTRADE database were used in the present study. The silk goods considered for the study accounted for about 92 % of the total value of Indian silk goods exports.

RESULTS AND DISCUSSION

The imports of major silk goods from India increased radically from 167.51 million US$ in 1992 to 495.43 million US$ in 2007, registering an annual compound growth rate of 10.29 % (Table 1). All the countries except Netherlands

recorded positive growth rates in the imports of silk goods from India. The imports of Indian silk goods grew significantly for the countries such as the USA, France, Italy, Spain and Saudi Arabia in the fifteen years period from 1992 and 2007. The imports of Germany, which is one of the top three importers of Indian silk goods, did not grow at a pace witnessed by other major importing countries. This may be due to sharp decline in the imports of silk goods in the recent years by Germany.

Table 1: Value Of Imports Of Silk Goods From India And China By Major Silk Consuming Countries

(Value in Million $)

Country	Imports of silk goods from India			Imports of silk goods from China			Total imports of silk goods		
	1992	2007	ACGR	1992	2007	ACGR	1992	2007	ACGR
USA	32.17	107.37	12.65**	137.61	287.89	1.19	1117.24	873.74	-2.06**
Germany	31.31	25.91	1.57	91.94	75.13	-3.41**	567.55	240.30	-6.37**
France	6.55	17.77	9.00**	19.32	40.28	2.89	244.49	284.64	0.40
Italy	11.61	33.24	12.99**	93.75	213.64	5.84**	442.34	507.53	-0.22
Netherlands	3.54	4.82	-0.93	2.48	13.90	2.21	48.52	37.82	-3.99**
Spain	7.66	27.53	17.95**	10.38	23.98	3.87	115.12	217.64	5.88**
Switzerland	1.76	1.33	0.15	33.81	3.73	-14.89**	112.49	105.24	-1.51
UK	18.68	65.31	8.11**	13.78	42.92	2.38	186.59	273.48	1.30
Canada	3.93	7.23	5.81**	15.48	16.21	-2.87	113.06	70.09	-3.23**
Japan	2.53	4.55	5.92**	189.53	154.42	-1.96	812.95	371.99	-6.55
Singapore	5.55	9.92	7.48**	19.43	18.51	-1.60	61.64	34.78	-6.80**
Saudi Arabia	0.93	8.92	19.67**	3.00	5.36	1.79	13.43	12.55	2.58
Malaysia	1.25	2.57	9.47**	3.50	11.83	1.54	20.36	16.64	-9.06*
Total	167.51	495.43	10.29**	1549.76	1938.44	0.30	2996.47	5232.22	-0.02

Note: ACGR Annual Compound Growth Rate
        ** - Significant at 1 per cent
        * - Significant at 5 per cent

The global imports of silk goods from China were many times higher than that of India. However, the imports of major silk goods from China recorded a modest growth rate of 0.30 % during the period between 1992 and 2007. The problems experienced by the sericulture industry in China during the period between 1995 and 2000 for the adjustment of demand and supply situation and restructuring of silk industry and imposition of quota system by the USA and European Union on the imports of silk goods from China might have resulted in the slower phase of growth in exports of silk goods from China.

The imports of Chinese silk goods experienced positive growth for the countries such as the USA, France, Italy, Netherlands, Spain, the UK, Saudi Arabia and Malaysia, whereas Germany, Switzerland, Canada, Japan and Singapore witnessed negative growth rates in the imports of silk goods from China.

The world trade in the silk goods registered a negative growth rate of -0.02 % during the period between 1992 and 2007. The countries such as the USA, Germany, Netherlands, Canada, Switzerland, Japan, Singapore and Malaysia have reduced the value of imports of silk goods, whereas, other major countries such as France, Italy, Spain and the UK maintained their value of imports of silk goods during the period.

COMPLEMENTARITY IN TRADE OF SILK GOODS

The empirical evidence indicates that the exports of silk goods from India and China grew impressively in major American, European and Asian markets. The question arising is whether the similarity between the growth pattern of Indian silk goods exports to major consuming markets and the growth pattern of their respective market shares suggests the growing/emerging compatibility between Indian silk goods exports to these markets and their global imports. This hypothesis is tested by examining the import behaviour of the major trade partners of India from the rest of the world within the silk goods space.

One way of ascertaining potentials of trade cooperation between a pair of countries is by comparing their export and import vectors at a point of time. A matching between the export supply of one country and import demand of the partner country can be captured by constructing a Trade Complementarity Index. The Complementarity Index (CI) was calculated for four points of time namely, 1992, 1997, 2002 and 2007 with a view to reveal dynamics of change therein.

TRADE COMPLEMENTARITY BETWEEN INDIA AND ITS TRADING PARTNERS

The comparison of share of silk goods in India's total exports to major countries with the share of silk goods in their global imports for the year 1992, 1997, 2002 and 2007 is shown in Table 2. The share of silk goods in the global imports of all the countries witnessed gradual decline over the period from 1992 to 2007, as the rate of increase in trade of other commodities was more than that of silk goods. The share of Indian silk goods in the imports of the major consuming countries decreased during the period between 1992 and 1997. However, there was marginal increase in the share of silk goods in the total imports from India in 2002 compared to 1997 for the countries such as the USA, Italy, Spain, Switzerland, the UK, Japan, Saudi Arabia and Malaysia. The share of silk goods in the total imports from India declined for all the major silk consuming countries in the subsequent period i.e. 2007 and the reached the lowest of all the four periods considered for the study.

Table 2: Share of Silk Goods in India's Total Exports and Global Imports of Major Importing Countries

Sl. No	Country	Share of Silk Goods in India's Total Exports				Share of Silk Goods in the Global Imports			
		1992	1997	2002	2007	1992	1997	2002	2007
1	USA	0.8188	0.8051	0.9272	0.5333	0.2019	0.1188	0.0679	0.0433
2	Germany	1.9635	1.1978	0.8432	0.5483	0.1390	0.0759	0.0363	0.0227
3	France	1.2439	1.3906	1.0573	0.7256	NA	0.0819	0.0631	0.0466
4	Italy	1.6706	1.2149	1.2972	0.8795	NA	0.1754	0.1059	0.0992
5	Netherlands	0.7624	0.5676	0.2286	0.1110	0.0361	0.0209	0.0146	0.0090
6	Spain	3.1007	0.8185	1.4849	1.3415	0.1154	0.0630	0.0558	0.0556
7	Switzerland	0.7912	0.5062	0.5622	0.2330	0.1711	0.1146	0.0783	0.0653
8	UK	1.3771	0.9548	1.1117	1.0388	NA	0.0771	0.0481	0.0438
9	Canada	1.8385	1.4538	0.7321	0.6104	0.0923	0.0377	0.0212	0.0184
10	Japan	0.1575	0.1247	0.2186	0.1394	0.3489	0.1966	0.1076	0.0598
11	Singapore	0.8435	0.9375	0.8456	0.1552	0.0854	0.0797	0.0359	0.0132
12	Saudi Arabia	0.2032	0.2297	0.9388	0.2770	0.0404	NA	0.0298	0.0139
13	Malaysia	0.5889	0.3132	0.7120	0.1390	0.0512	0.0411	0.0119	0.0113
	Total	**0.8088**	**0.6026**	**0.6167**	**0.3396**	**0.1219**	**0.1005**	**0.0569**	**0.0384**

Any particular commodity would have potential trade cooperation, if there were extensive trade complementarities between two trading partners. The Complementarity Index (CI) was constructed between the export pattern of Indian silk goods and the imports of silk goods by rest of the world for a given time period. The CI values between India and its major partners in silk goods are given in Table 3. The coefficient of complementarity between patterns of Indian silk goods exports and the global imports of important trading partners provide support to these observations as the CI is hovering in a narrow range in the post-liberalization period.

It can be inferred from the table that India has high trade potential for the exports of its silk goods, which is evident by high CI values of above 0.92 between India and the world for all the four periods. The CI values were also in the high range for individual trading partners except Netherlands, exhibiting almost perfect complementarity with those countries in trading in silk goods. Netherlands had the medium level of complementarity in the trade of silk goods with India with CI ranging from 0.3801 in 2002 to 0.5826 in 1996. It is also interesting to note that the traditional importers of the Indian silk goods such as Singapore, Saudi Arabia and Malaysia maintained higher level of

Table 3: Estimates of Complementarity Index (CI) in Silk Goods Between India And Its Trading Partners

Sl. No	Country	1992	1997	2002	2007
1	USA	0.6185	0.6451	0.6041	0.7337
2	Germany	0.8876	0.9176	0.9036	0.8827
3	France	NA	0.8527	0.9266	0.9385
4	Italy	NA	0.9974	0.9905	0.9755
5	Netherlands	0.4537	0.5826	0.3801	0.5815
6	Spain	0.8462	0.8282	0.8725	NA
7	Switzerland	0.8867	0.7331	0.5751	0.4815
8	UK	NA	0.8407	0.7608	0.7944
9	Canada	0.5406	0.7211	0.7963	0.6413
10	Japan	0.9238	0.9218	0.7638	0.6805
11	Singapore	0.9608	0.9846	0.9893	NA
12	Saudi Arabia	0.9799	NA	0.8006	NA
13	Malaysia	0.9990	0.9998	0.9950	0.9900
	Total	**0.9605**	**0.9210**	**0.9405**	**0.9472**

complementarity indices compared to the American and European countries.

The value of the index increased over the period for the USA, France, Spain, Singapore, and Canada, whereas, the index value reduced drastically from 0.8867 in 1992 to 0.5751 in 2002 and further to 0.4815 in 2007 for Switzerland indicating shrinking complementarity between India and Switzerland in the trade of silk goods. The index value for 2007 was less than that of 2002 for the countries like Germany, Italy, Switzerland, Canada and Japan implying that though these trading partners have maintained high level of complementarity with India in the trade of silk goods, there is a decline in complementarity in the recent periods.

TRADE COMPLEMENTARITY BETWEEN CHINA AND ITS TRADING PARTNERS

China is the largest exporter of silk goods to the European and American markets, but its leadership position in silk

Table 4: Share of Silk Goods in China's Total Exports and Global Imports of Major Importing Countries

Sl. No	Country	Share of Silk Goods in China's Total Exports				Share of Silk Goods in the Global Imports			
		1992	1997	2002	2007	1992	1997	2002	2007
1	USA	1.6003	0.7517	0.3119	0.1235	0.2019	0.1188	0.0679	0.0433
2	Germany	3.7558	1.1528	0.4171	0.1542	0.1390	0.0759	0.0363	0.0227
3	France	2.5283	0.5185	0.2654	0.1968	NA	0.0819	0.0631	0.0466
4	Italy	8.5581	5.6600	2.4194	1.0092	NA	0.1754	0.1059	0.0992
5	Netherlands	0.2065	0.1797	0.0510	0.0336	0.0361	0.0209	0.0146	0.0090
6	Spain	2.9354	0.4522	0.1534	0.1446	0.1154	0.0630	0.0558	0.0556
7	Switzerland	21.1503	3.2127	0.6444	0.1034	0.1711	0.1146	0.0783	0.0653
8	UK	1.4932	0.4581	0.2107	0.1356	NA	0.0771	0.0481	0.0438
9	Canada	2.3704	0.7648	0.1363	0.0837	0.0923	0.0377	0.0212	0.0184
10	Japan	1.6228	0.4994	0.3025	0.1514	0.3489	0.1966	0.1076	0.0598
11	Singapore	0.9569	0.5339	0.1819	0.0625	0.0854	0.0797	0.0359	0.0132
12	Saudi Arabia	0.6749	0.3437	0.0867	0.0686	0.0404	NA	0.0298	0.0139
13	Malaysia	0.5417	0.2926	0.0530	0.0669	0.0512	0.0411	0.0119	0.0113
	Total	**1.8245**	**0.9450**	**0.3477**	**0.1592**	**0.1219**	**0.1005**	**0.0569**	**0.0384**

trade depends upon the compatibility of its exports with later's global imports of silk. It is observed that the pattern of the exports of silk goods from India is linked to the imports of the European and American markets. In the same way, is there any similarity in the pattern of China's silk goods exports with the imports of its trading pattern?

Looking at the Table 4, it can be inferred that the export share of the Chinese silk goods to the major global markets was higher than the export share of the Indian silk goods, which is due to the dominance of Chinese silk goods in the international markets. However, the export share of silk goods to the major markets like the USA, Germany, France, Italy, Netherlands, Spain, Switzerland, the UK, Canada and Japan reduced significantly over the period from 1992 to 2007. The major reason for the decline in exports share of Chinese silk goods may be due to faster rate of increase in Chinese exports of other commodities to these markets than that of silk goods. The imposition of quantitative restrictions on the imports of Chinese silk goods by the USA and major European countries and sluggishness in demand for silk goods in general in the period between 1995 and 2000 in the global market may be the other reasons for the decline in the commodity share.

The share of silk goods in the global imports of the major silk consuming countries declined over the period from 1992 to 2005 as in the case of export share of silk goods of China. This implies that the global import pattern of the silk goods is in line with the export pattern of silk goods from China.

The estimates of CI in silk goods between China and its trading partners are given in Table 5. The overall results show an extremely high trade complementarity for its trade in silk goods with major silk consuming countries. The index value also has increased from 0.9854 in 1992 to 0.9928 in 2007. It can be inferred from the table that the CI values of individual countries also exhibited high level of complementarity. It is also interesting to add that the CI values were maintained or increased for the year 2007 compared to that of 1992 for all the countries except Switzerland, which recorded a less CI of 0.6693 in 2007, compared to 0.7690 in 1992.

Table 5: Estimates of Complementarity Index (CI) In Silk Goods Between China And Its Trading Partners

Sl. No	Country	1992	1997	2002	2007
1	USA	0.9461	0.8209	0.8773	0.9439
2	Germany	0.9137	0.9700	0.9828	0.9871
3	France	NA	0.7680	0.9195	0.9502
4	Italy	NA	0.9951	0.9942	0.9967
5	Netherlands	0.8495	0.7724	0.9520	0.8727
6	Spain	0.6325	0.8655	0.6706	0.9248
7	Switzerland	0.7690	0.8272	0.7536	0.6693
8	UK	NA	0.7910	0.9920	0.8447
9	Canada	0.8666	0.6488	0.7111	0.9268
10	Japan	0.9566	0.9509	0.9732	0.9457
11	Singapore	0.9622	0.9860	0.9929	0.9619
12	Saudi Arabia	0.9938	NA	0.7894	0.9961
13	Malaysia	0.9991	0.9964	0.9976	0.9916
	Total	**0.9854**	**0.9906**	**0.9817**	**0.9928**

It should also be noted that China had higher complementarity with the entire major importing countries of silk goods than that of India, which is reflected in higher COS values for China compared to India. The results clearly indicate the dominance of China in global trade in silk goods, though India could maintain comparatively high complementarity with the American and European countries in the silk trade and improve its position in the post-liberalization period.

SUMMARY AND CONCLUSION

The high index values of complementarity computed for both India and China indicate that all the major importing countries of silk goods maintained high level of complementarity with China and India in the trade in silk goods. The index values were constantly rising for China's exports of silk goods implying better complementarity of China with its major trading partners in their imports of silk goods when compared to India.

India's growth in the exports of silk goods has been significantly higher in the last two decades. However, its market share in the silk goods trade is very less. Therefore, India has to take strong measures to increase its market share as well as the compatibility between its exports and global imports to major importing countries to improve its trade in silk goods. The Indian exporters should also actively participate in trade fairs, conduct personal visits and concentrate on Customer Relationship Management (CRM) with the buyers for promoting their products in the international market. The silk exporters should also concentrate on fashion, technology, quality and services and compete in the major silk consuming markets.

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