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## PERFORMANCE OF INDIA'S AND CHINA'S MANUFACTURING GOODS EXPORT TO BANGLADESH: CONSTANT MARKET SHARE ANALYSIS

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### ABSTRACT

*Bangladesh has been an important market for India's exports of manufactured goods in the South Asia region. China has, in the last decade, over taken India to become the number one exporter in Bangladesh market. This did not however lead to a decline in India's market share in Bangladesh indicating that India has gained market share at the cost of other exporters. The objective of this paper is to examine how competitiveness, product composition and product adaptation have contributed to both India and China increasing their market share in Bangladesh. The analysis is done using the Constant Market Share Analysis. The period of study is 2005-14. The study finds that China's impressive performance has been because its exports have been very competitive vis-a-vis the other countries exporting to Bangladesh. India's export performance though poor during 2005-10 has shown a remarkable improvement in competitiveness during 2010-14. Improvement in competitiveness was seen in India's exports of both, the labour intensive and capital/technology intensive goods but more so in the latter. On the other hand, China's comparatively less impressive increase in market share during 2010-14, compared to that in 2005-10, was because of a decline in competitiveness of its exports of labour intensive goods and significant negative contribution to product composition effect by its capital/technology intensive exports to Bangladesh.*

### KEYWORDS

India, China, Bangladesh, manufactured exports, competitiveness, constant market share analysis.

### JEL CODE

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### 1. INTRODUCTION

Bangladesh has been one of the important markets for India's manufacturing exports in the South Asia region. On an average, more than 40 per cent of India's manufacturing goods exports to South Asia have gone to Bangladesh during 2005-2014. If we also include the large volume of goods being smuggled from India into Bangladesh and, the over- and under invoicing in formal trade then India's exports to Bangladesh are even higher. On the other hand, India used to be the main source of imports for Bangladesh during the 1990s. Thereafter China has overtaken India relegating India to the second position. In the last decade China's manufacturing exports to Bangladesh have expanded significantly and China's share in Bangladesh's imports from the world has increased from 26.7 per cent in 2005 to 43.2 per cent in 2014. Despite the increasing engagement of China, India has not lost market share in Bangladesh imports which has grown from 10.3 per cent in 2005 to 14.7 per cent in 2014. This shows that India has gained market share in Bangladesh's market vis a vis other countries that export to Bangladesh. However compared to China, increase in India's share cannot be characterised as impressive despite the fact that the India and Bangladesh are countries that share a common border, common history and common culture. India and Bangladesh are also signatories to South Asian Free Trade Area (SAFTA) as well as to Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). Both Agreements allows trade between the member countries under preferential tariffs which would give India's exports a price advantage.

While it has been argued that India's trade with its neighbours is less because of problems of poor infrastructure, high non-tariff barriers, uncertain political relations, similar output structure etc, in this paper we will examine how the structural factors have affected India's export of manufactured goods to Bangladesh and how these factors explain the differences in India's and China's export performance in Bangladesh. The analysis is done by using the Constant Market Share Analysis (CMSA) which basically looks at how a country's export performance is influenced by the product and geographical structure of its exports. The analysis will cover the period 2005-2014.

The rest of the paper is organised as follows, Section II reviews the literature, Section III gives an overview of India and China's exports to Bangladesh, section IV provides the research methodology, section V, presents the estimation results and section V, the conclusion.

### 2. REVIEW OF LITERATURE

Studies that look at the comparative performance of India and China's trade in Bangladesh include, Sahoo (2013) who examines what has contributed to China's growing presence and India's decline in Bangladesh with respect to trade and investment. He finds that the number of commodities with Bilateral Revealed Comparative Advantage has been increasing for China and declining for India during 2000-07. He also finds that the most important factor responsible for China's growing exports to Bangladesh is price competitiveness.

Some of the studies that were undertaken to examine India's export performance using Constant market Share Analysis include, Biswas (1982) who applies the constant market share analysis to understand the export performance of India during 1959-68. Their decomposition reveals substantial unfavourable impact of commodity and market composition on India's exports. The competitive effect was however not insignificant and had a sizeable effect on India's export performance. Tiwari (1985) analyses the competitiveness of India's export during 1970-77 using constant market share analysis and finds that overall India's exports were competitive. However the export growth would have been better had it not been for a negative market distribution effect. Disaggregating India's exports into exports of the traditional and non traditional sector, he finds that India's export of traditional sector were uncompetitive while that of the non traditional sector were competitive. Veeramani (2007) investigates the growth of India's export growth pre (1962-90) and post (1993-94 to 2010-11) reform period using constant market share analysis. Decomposing India's export growth he finds that the actual export growth of India has not been up to the potential offered by the growth of world trade during the pre-reform period. The negative competitiveness effect and negative commodity composition effect were mainly responsible for the poor performance. In contrast, the actual export growth of India, in the case of both merchandise and services, has been above the potential throughout the post-reform period, with the positive competitiveness effect playing the main role, particularly for services exports. Singh (2014) attributes the accelerated performance of India's exports during 1991-2011 to its competitive strength, particularly in the manufactured goods exports. Market-wise analysis reveals that the competitiveness of India's exports in the markets of developing countries was higher than that of the developed countries. Commodity composition however affected India's exports adversely.



### 3. IMPORTANCE OF THE STUDY

Review of the literature reveals that there are hardly any studies that have looked at the comparative performance of India and China in Bangladesh. Given a wider concern that increasing China's influence in South Asia could challenge India's position in the region, this paper will examine if increase in China's engagement has actually led to a displacement in India's economic interaction with an important trade partner, namely Bangladesh, in the region.

### 4. OVERVIEW OF TRADE BETWEEN INDIA AND BANGLADESH

In this section export performance of India and China in Bangladesh in terms of shares and growth rate is described. The specialisation (labour intensive or capital/technology intensive) in the manufactured goods exports of two countries in Bangladesh is also presented along with the changes in their shares in Bangladesh's imports from the world.

Table 1 shows the trends in total manufacturing goods exports of India and China and their share in total exports of the respective countries to Bangladesh during 2005-14.

Table 1 also shows that while nearly 95 per cent of China's total exports to Bangladesh are manufactured goods, India's exports of manufactured goods have ranged between 50-60 per cent of its total exports. In 2005, nearly 52 per cent of India's total exports to Bangladesh used to be of manufactured goods, this has increased to 61 per cent in 2014.

Exports of manufactured goods of both India and China have increased to Bangladesh. India's exports to Bangladesh have quadrupled while that of China's has increased by almost 5 times over the last decade. The share of China in world's total manufactured goods exports to Bangladesh has seen a steady increase; the share of India has been erratic. Although, in 2014 India's share at 15.5 per cent is much higher compared to that in 2000, it is less than the share of China—26.8 per cent— in 2000.

**TABLE 1: EXPORTS OF MANUFACTURED GOODS TO BANGLADESH-INDIA AND CHINA**

	India	China	India	China	India	China
	Manufactured goods \$ billion		Share of manufactured goods in total exports per cent		Share in total world exports of manufactured goods to Bangladesh per cent	
2005	0.89	2.31	51.51	95.96	10.29	26.80
2010	1.70	6.45	56.50	94.95	9.51	35.97
2014	3.81	11.17	60.95	94.83	15.51	45.45

Source: UNCOMTRADE

India's exports of manufactured goods to Bangladesh, during 2005-14, grew at an annual average rate of 19.7 per cent which is quite comparable to that of China's 20.6 per cent (Table 2). Dividing the time period into 2005-10 and 2010-14 shows that this was due to the fact that while India's growth rate was significantly lower than that of China during the earlier period it was much higher than that of China's in the later period.

**TABLE 2: ANNUAL AVERAGE GROWTH RATES OF EXPORT OF MANUFACTURED GOODS TO BANGLADESH- INDIA AND CHINA**

	India	China
	per cent	
2005-10	16.91	24.36
2010-14	27.34	22.64
2005-14	19.70	20.61

Source: UNCOMTRADE

Disaggregation of exports into labour intensive and capital/technology intensive manufactured goods is presented in Table 3. China exports more of labour intensive manufactured goods to Bangladesh. This is not surprising given the dominance of China in labour intensive industries. In contrast, India exports proportionately more of capital/technology intensive goods to Bangladesh. This too, is not surprising as there is an increasing bias towards capital intensive production in India which has skewed India's export basket. According to Veeramani (2012) the share of capital intensive products has doubled during 1993-2010, while that of labour intensive goods has halved.

**TABLE 3: EXPORT OF LABOUR INTENSIVE AND CAPITAL/TECHNOLOGY INTENSIVE GOODS TO BANGLADESH-INDIA AND BANGLADESH**

	China		India		China	India	China	India
	LI	CI	LI	CI	Share in world exports of LI to Bangladesh		Share in world exports of CI to Bangladesh	
	\$ billion				per cent			
2005	1.53	0.78	0.38	0.51	38.06	9.42	16.94	11.06
2010	3.70	2.74	0.81	0.89	50.89	11.15	25.77	8.39
2014	6.72	4.46	1.57	2.24	58.18	13.64	34.18	17.16

Source: Author's calculations.

Note: LI=Labour intensive goods; CI=Capital/technology intensive goods

Table 3 also shows that the share of India and China in world's exports to Bangladesh of both labour intensive and capital/technology intensive goods has increased. China's share has increased relatively more significantly in labour intensive goods while India's share, in capital/technology intensive goods.

Overall, China's performance has been much better than that of India's in the exports of manufactured goods to Bangladesh. However, India has shown an improved performance during 2010-14. It would therefore be of interest to examine what factors were responsible for this.

### 5. RESEARCH METHODOLOGY

In order to analyse the comparative performance of manufacturing exports of India and China to Bangladesh, Constant Market Share Analysis (CMSA) has been used. The idea behind CMSA is that the product and geographical structure of a country's exports can affect its export performance. Thus if a country's exports are concentrated in products and markets where demand is weak, then its market share will fall even if a country maintains its share in every product and destination market.

The methodology of CMSA was developed by Tyszynski (1951) and later extended by Learner and Stern (1970). This analysis decomposes, ex-post, a country's aggregated export growth into four components-World Trade Effect, Commodity Composition Effect, Market Distribution Effect and Competitiveness Effect. CMSA's interpretation and usefulness was however questioned by Richardson (1971). Later efforts were made by Bowen and Pelzman (1984), Fagerberg and Sollie(1987), etc to improve the consistency and empirical applicability of this methodology.

In this paper we use the methodology developed by Fagerberg and Sollie(1987). Fagerberg and Sollie consider the change in market share instead of absolute change in exports. Their version of CMSA presents five effects: the product (PE) and market (ME) composition effects, the competitiveness (CE) effect, the product adaptation (PA) effect and the market adaptation (MA) effect. The latter two effects measure the extent of a country's ability to adapt its exports to the changes in the commodity composition demanded in the importing country as well as the ability to redirect its exports to fast growing markets. Thus change in the market share ( $\Delta M$ ) of a country can be decomposed as:

$$\Delta M = PE + ME + CE + PA + MA \tag{1}$$

Fagerberg and Sollie version can be applied when a country is exporting to a number of destination markets as well as to a single market. As we want to analyse the export performance of manufacturing exports of India and China to just one market namely, Bangladesh, the change in market share of India(China) in Bangladesh would decompose into three effects— the competitiveness effect, the product composition effect and product adaptation effect. Thus,

$$\Delta M_i = \Delta X_i^a + \Delta X_i^b + \Delta X_i^{ab} \tag{2}$$

Where,

$$\Delta X_i^a = \sum (a_{it}^k - a_{i0}^k) b_{i0}^k \tag{3}$$

$$\Delta X_i^b = \sum (b_{it}^k - b_{i0}^k) a_{i0}^k \tag{4}$$

$$\Delta X_i^{ab} = \sum (a_{it}^k - a_{i0}^k) * \sum (b_{it}^k - b_{i0}^k) \tag{5}$$

And,

$a_i^k = x_i^k / X_w^k$ , where  $x_i^k$  is export of country i (India/ China) of commodity k to Bangladesh and,  $X_w^k$  is world export of commodity k to Bangladesh.

$b_i^k = x_i^k / X_i$ , where  $X_i$  = total export of country i.

$M_i = \sum a_i^k * \sum b_i^k$ , where  $M_i$  is market share of country i

$$\Delta M_i = M_t - M_0$$

The first term on the right-hand side of equation (2) measures the competitiveness effect, the second term the product composition effect and the third term, product adaptation effect. A positive value for the first term indicates that India (China) is gaining competitiveness in exports of manufactured goods in Bangladesh. Positive value for the second term shows that, India (China) is specialising in exports of those goods that have a high share in total imports of Bangladesh. Finally, the sign of the third term is positive if India (China) has been successful in adapting its exports to the changes in the commodity composition of Bangladesh.

The analysis uses annual export data in nominal US dollar and covers the period 2005 to 2014. The time period has been divided into 2005-10 and 2010-14 for the CMSA. The data used is SITC two digit level. The exports of manufactured goods are thus disaggregated into 35 categories presented in Table 4.

TABLE 4: SITC CLASSIFICATION

SITC Code	Description	SITC Code	Description
51	Organic chemicals	71	Power generating equipment
52	Inorganic chemicals	72	Industry special machinery
53	Dyeing/tanning/colour materials	73	Metalworking machinery
54	Pharmaceutical products	74	Industrial equipment nes
55	Perfume/cosmetic	75	Office/data processing machines
56	Manufactured fertilizers	76	Telecomms etc equipment
57	Plastics in primary form	77	Electrical equipment
58	Plastics non-primary form	78	Road vehicles
59	Chemical material/products nes	79	Railway/tramway equipment
61	Leather manufactures	81	Building fixtures etc
62	Rubber manufactures nes	82	Furniture/furnishings
63	Cork/wood manufactures	83	Travel goods/handbag/etc
64	Paper/paperboard/article	84	Apparel/clothing/accessories
65	Textile yarn/fabric/articles	85	Footwear
66	Non-metal mineral manufactures	87	Scientific/etc instruments
67	Iron and steel	88	Photographic equipment/clocks
68	Non-ferrous metals	89	Miscellaneous manufactures nes
69	Metal manufactures nes		

Source: UNCOMTRADE.

Exports of manufactured goods from India and China to Bangladesh have also been classified into labour intensive and capital/technology intensive goods for CMSA. The goods have been classified into the two categories as presented in Table 5.

TABLE 5: CLASSIFICATION OF MANUFACTURED GOODS INTO LABOUR AND CAPITAL/TECHNOLOGY INTENSIVE GOODS

	SITC 2 digit
Labour intensive goods	61 63 65 66 69 76 81 82 83 84 85 89
Capital/ Technology intensive products	51 52 53 54 55 56 57 58 59 62 64 66 67 68 71 72 73 74 75 76 77 78 79 86 87 88 89

Source: Kim S.J and GiSeung Kim, "South Korea's Trade Intensity with China, the USA, and Japan: Its Changes over the Period of 2002-11"

One important point to note is that as the export data used for CMSA is in nominal terms the market share of India/China would also be influenced by changes in the US dollar exchange rate. This needs to be kept in mind when interpreting the results as CMSA does not account for changes in market shares on account of changes in exchange rates.

## 6. ESTIMATED RESULTS

The results of the CMS decomposition during the time periods 2005-2010 and 2010-2014 are presented in Table 6. The section starts by presenting overall assessment of India and China's exports of manufactured goods to Bangladesh. Then a further analysis is presented which is decomposition at the category level namely, for labour intensive and capital/technology intensive goods.

The negative sign on the change in India's market share over 2005-10 (Table 6) indicates that overall India failed to maintain its share in Bangladesh imports in 2010. Decomposition of the total effect shows that this was mainly because, India's exports were not competitive vis-a-vis the rest of the countries exporting to Bangladesh. The product composition of India's exports too contributed to the decline in India's market share, although its contribution was small compared to that of the competitiveness effect. The only factor that contributed positively to India's export performance was India's ability to adapt its exports of manufactured goods according to the goods that were experiencing an increase in demand in Bangladesh. Had it not been for this, India's decline in market share would have been much more.

During 2010-14, overall, India increased its market share in Bangladesh. It was the significant positive contribution of competitiveness effect that resulted in the good performance of India's exports of manufactured goods. Product adaptation effect too contributed positively, although its contribution was much lower than in the previous time period.

TABLE 6: CONSTANT MARKET SHARE ANALYSIS –INDIA AND CHINA

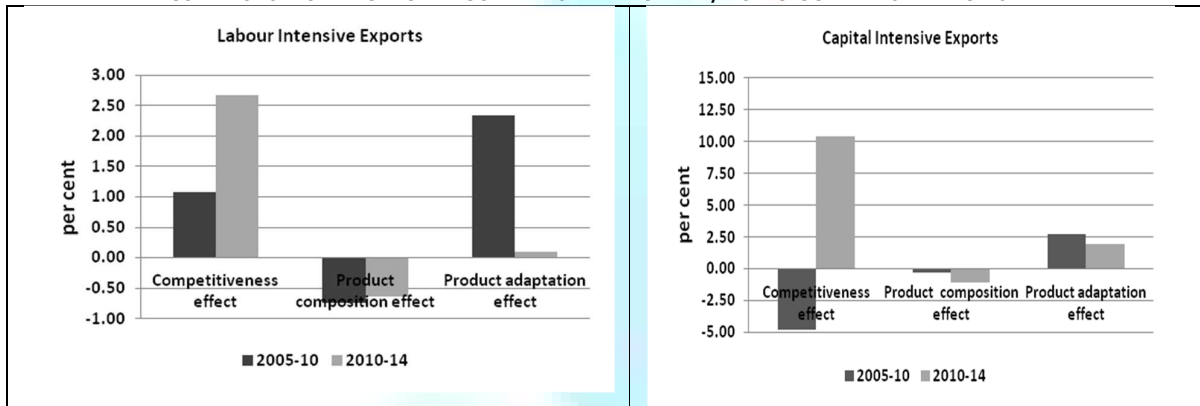
	Change in market share	Competitiveness effect	Product composition effect	Product adaptation effect
<b>India</b>				
2005-10	-0.23	-2.27	-0.80	2.84
2010-14	7.60	6.74	-0.84	1.70
<b>China</b>				
2005-10	9.17	11.02	-2.64	0.79
2010-14	7.19	5.93	-0.95	2.20

China increased its market share of exports of manufactured goods in Bangladesh during 2005-10. This increase was primarily because its exports were highly competitive vis-a vis the other country's that were exporting to Bangladesh. The product adaptation effect also contributed positively although its contribution was quite small. The composition of manufactured products China was exporting to Bangladesh, however, was poor and the negative contribution was significant in impacting China's export performance.

During 2010-14, China's market share increased because of positive contribution from competitiveness effect. The contribution however was less than in the previous time period. The contribution of product adaptation effect increased significantly during this period. Product composition's contribution continued to have a negative effect on China's export performance, although this contribution declined significantly compared to 2005-10.

A further decomposition is done to see which category of products—labour intensive or capital/technology intensive— was mainly responsible for the results shown at the aggregate level. The results for India and China are presented in Figure 1 and Figure 2 respectively.

FIGURE 1: CMSA FOR EXPORT OF LABOUR INTENSIVE AND CAPITAL/TECHNOLOGY INTENSIVE EXPORTS-INDIA

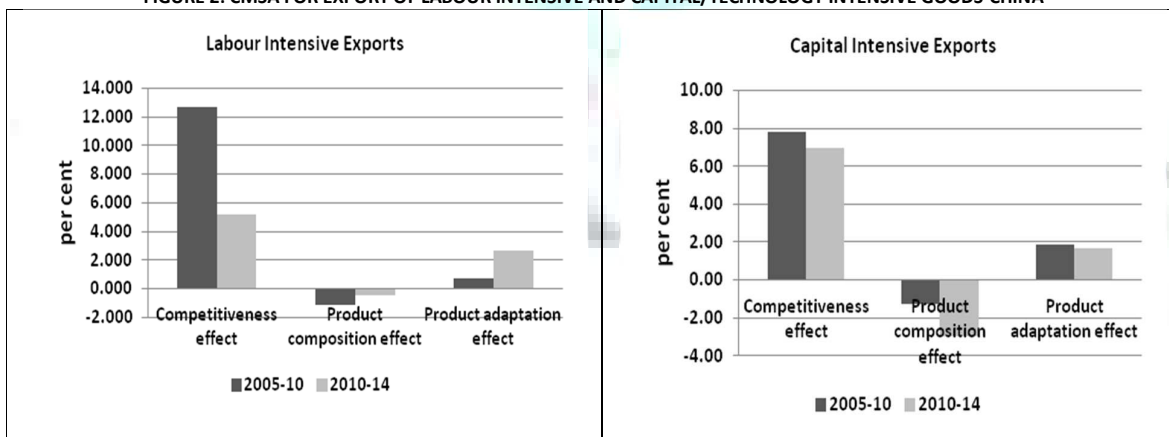


The results in Figure 1 indicate that the inability of India to maintain its market share in 2005-10 was primarily because of lack of competitiveness of its export of capital/technology intensive goods. The labour intensive goods were competitive particularly textile yarn (SITC 65) and non-metal mineral manufactures (SITC 66). The negative contribution of product composition at the aggregate level was because of greater contribution from the composition of labour intensive goods. Although product adaptation effect was positive for both labour intensive and capital intensive goods, the contribution of labour intensive goods was much greater.

During 2010-14, there was an all round improvement in the contribution of competitiveness effect, but the improvement in capital intensive goods was impressive. The contribution of product composition effect to India's market share continued to be negative and the negative contribution was more because of labour intensive goods. Although the contribution of product adaptation effect was positive, the contribution was significantly lower in the case of labour intensive goods.

The CMSA results for China in Figure 2 show that both labour intensive and capital/technology intensive goods contributed to the positive competitiveness effect of China's manufactured exports to Bangladesh during 2005-10. The contribution of labour intensive exports was however much higher. All labour intensive goods, except leather manufactures (SITC 61), contributed positively to the competitiveness of China's overall exports of manufactured goods. Similarly all capital/technology intensive goods, except inorganic chemicals (SITC 52), had a positive sign for competitiveness effect.

FIGURE 2: CMSA FOR EXPORT OF LABOUR INTENSIVE AND CAPITAL/TECHNOLOGY INTENSIVE GOODS-CHINA



It was seen that, overall, China's exports were less competitive in 2010-14 relative to 2005-10. The decline in China's competitiveness effect in 2010-14 was mainly because of lower contribution from export of labour intensive goods. Product-wise, competitiveness effect in 2010-14 turned negative for cork/wood manufactures (SITC 63) and telecommunication equipment (SITC 76). China's product composition of capital/technology intensive products worsened and was the main contributor to negative contribution of product composition of total exports of manufactured goods to Bangladesh. Although, China was able to adapt its products of labour intensive goods, there was a decline, albeit small, in product adaptation of capital/technology intensive exports.

## 7. CONCLUSION

China overtook India, in the last decade, to become the main exporter of manufactured goods to Bangladesh relegating India to the second position. Although China has increased its share in imports of Bangladesh, this has not happened at the cost of India as India too has increased its share in Bangladesh. Even if we look at the growth rate of the two countries' exports to Bangladesh, during 2005-14, we find them to be comparable. However a break-up of this time period into two— 2005-10 and 2010-14— shows that India's performance improved in the latter period which contributed to the almost similar growth rate for the entire period of analysis.

In order to understand how the structural factors played a part in the differences in the export performance of India and China in Bangladesh and, differences in India's and China's performance during 2005-10 and 2010-14, a CMSA was applied. It was found that China's impressive performance in Bangladesh was primarily because its exports of manufactured goods were very competitive in comparison with the other competing countries.

It was also found that the improved performance of India in during 2010-14 was primarily because of significant improvement in the competitiveness of India's capital/technology intensive and labour intensive goods exports to Bangladesh. On the other hand, China's comparatively less increase in market share, during the same time period, was because of a decline in competitiveness of its exports of labour intensive goods and negative contribution to product composition effect of the capital/technology intensive exports.

Two limitations of this study however must be kept in mind. First, the study is based on two points of time and therefore cannot reveal the evolution of competitiveness of India and China for the whole span of time. Second, the CMSA model reveals that a country's exports are competitive or lack competitiveness. It does not however explain whether the competitiveness is because of price or non price factors.

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