

Shift-Share of Analysis of India’s Exportable Silk

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1. Introduction

Shift-share analysis is a statistical method used to analyze and understand the changes in trade patterns over time. It is often used to assess the competitiveness and productivity of different industries or regions. The analysis involves decomposing the overall change in trade into three components: (1) changes due to domestic growth, (2) changes due to the overall growth of the global economy, and (3) changes due to trade competition. By analyzing these components, analysts can better understand the sources of change in a region or industry's trade patterns. Shift-share analysis is often used by economists and policymakers to identify regional economic opportunities and assess the impact of policy interventions. Shift share analysis has been used by exploring export data to find out the potential export products of a region. Shift-Share analysis needs measurements on a variable of interest (an exported product) at the beginning and end of a specified period of analysis. This growth rate for the item can be measured as

$$\Delta V_i = V_{i,t} - V_{i,t-1} \tag{1}$$

Where $V_{i,t}$ is the export in year t, and $V_{i,t-1}$ is the export in year t-1 for an item.

Now the growth rate of all items (k) is the ratio of total value of terminal time, periods to the total value at the initial time period:

$$k = \frac{\sum_{i=1}^n V_{i,t}}{\sum_{i=1}^n V_{i,t-1}}, \text{ where } i = 1, 2, \dots, n \tag{2}$$

The expected value of the growth is the product of growth rate of all items and the value at the initial time period:

$$E(V_{i,t}) = kV_{i,t-1} \tag{3}$$

The expected change of the value of a growth variable for a particular item in a given time period is the difference between the expected value and the actual value for the item at the end of the initial time period. If $E(\Delta V_i)$ is the expected change, then:

$$E(\Delta V_i) = E(V_{i,t}) - V_{i,t-1} \text{-----} \quad (4)$$

The difference between the actual change and the expected change is the net shift. So, if Net Shift is denoted as N_i , then

$$N_i = \Delta V_i - E(\Delta V_i) \text{-----} \quad (5)$$

Now the sum of positive net shifts or the sum of negative net shifts S represents the total absolute net shift.

$$S = \frac{\sum_{i=1}^n |\Delta V_i - E(\Delta V_i)|}{2} \text{-----} \quad (6)$$

The relative gain or loss in the value of a growth variable for a particular product i , in a given time period is defined as the percentage net shift (P_i). So,

$$P_i = \frac{N_i}{S} (100\%) \text{-----} \quad (7)$$

This represents the percentage of the total gain or loss of market share accounted for by each product. The products showing positive net shift are identified as potential export.

2. Objectives and Methodology

This paper tries to find out the strong base of exportable silk items of India. Once the base is understood necessary action could be taken to enhance the production and proper strategy might be formulated in government agencies. Sift share analysis is used to meet the objective. Data are collected from Directorate General of Commerce and Industry, Kolkata, Statistical Handbook of Assam, Central silk Board Publication and UNCTAD Dataset

3. Data Analysis and Findings

The shift share analysis is done in the total exportable silk items in India. The information of Appendix - 1 is used for the analysis. It is to be mentioned that in the product classification of international trade, India follows ITC(Harmonized System) code. But, in the Annual survey of industry the country has its own code of product termed as National Industrial Classification (NIC). At present country follows NIC product code, revision of 2008. In this revision, manufacturing of textiles items are incorporated in Division 13 and 131 product group. To avoid complexities between ITC code and NIC code, information of statistical division of Central Silk Board, Bengaluru is followed in the study. In the

Statistical Publication the exportable items are grouped into 4 heads i.e. Silk goods, Raw yarn, Silk Waste and Cocoon. The groupsilk goods is subdivided into three category i.e. mulberry non mulberry, and mixed/blended. Dress materials, RMG, carpets, sarees, scarves/stoles and others are sub groups of mulberry product. Others include tie, handkerchief, furnishing product and other made-up items. However by considering the amount of non-mulberry product’s export share in country’s total silk export, they are not mentioned as sub-groups and taken into account as only one head. So the total groups taken for analysis are 11in the initial period of 1995-96 and terminal period of 2011-12.The above table (Table 4.2) reveals the findings of the analysis. In the final result the positive net shift of export is shown by 5 product groups and they are dress materials, RMG, scarves and stoles of mulberry group. Non-mulberry group which includes muga, tasar and eri has shown a positive net shift in the analysis. Mixed and blended group has shown negative net shift in the major head. In the silk waste group positive net shift is recorded in the calculation. Cocoons though have not shown any negative net shift, miniscule trade share has made the group irrelevant in the analysis.

Table -1: Net Shift of Exportable Product of Silk of India

Sl. No.	Export Items	1995-'96	2011-'12	ΔV_i	$E(V_{it})$	$E(\Delta V_i)$	N_i	P_i
1	Dress materials	213.54	840.29	626.75	593.95	380.41	246.34	29.41
2	RMG	167.6	764.62	597.02	466.17	298.57	298.45	35.63
3	Carpets	92.77	20.08	-72.69	258.04	165.27	-237.96	-28.41
4	Sarees	171.44	44.95	-126.49	476.85	305.41	-431.90	-51.56
5	Scarves/stoles	45.54	250.29	204.75	126.67	81.13	123.62	14.76
6	Others	46.03	74.58	28.55	128.03	82.00	-53.45	-6.38
7	Non mulberry	52.45	266.61	214.16	145.89	93.44	120.72	14.41
8	Mixed Blended	35.03	22.47	-12.56	97.43	62.40	-74.96	-8.95
9	Rawsilk/ Yarn	21.21	19.63	-1.58	58.99	37.78	-39.36	-4.70
10	Silk waste	0.47	49.77	49.3	1.31	0.84	48.46	5.79
11	Cocoon		0.04	0.04	0.00	0.00	0.04	0.00
12	TOTAL	846.08	2353.33	K=2.78			S=837.63	

Source: Self calculation

From the analysis it is clear that the country enjoys positive net shift in some sub groups of exportable items made of mulberry. In case of non-mulberry, the result is 14.41. In the two major segments of non mulberry silk i.e. in muga and eri, country's production base is very strong. Particularly North-east region of India is known as store house of muga and eri silk. The region enjoys total monopoly in muga production and almost a significant percent of country's total eri production is contributed from NER.

Though the country records positive net shift in some product groups of mulberry, India is not self-reliant of mulberry. Every year country needs to import a substantial amount from China. High price of raw mulberry yarn in China market has created spiral effect in domestic market. Value depreciation of Indian currency against dollar has added salt to the injury. So in the last couple of years the country is experiencing high price rise in raw yarn category. Mulberry import is an international affair and the sector cannot play any role in the determination of exchange rate directly. So, it is highly significant for the country to strengthen the product base of raw materials of the country. Figures (Appendix 2) reveals the country is strong enough in the non-mulberry sector. It is the reason for which we would focus the analysis on non-mulberry as a road to strengthen silk export base of India.

4. Conclusion

Although India reveals comparative advantage in export but in terms of competitiveness the study reveals negative values which signify lack of competitiveness. The Shift share analysis was done to see whether an exportable item has net positive share in the trade. Both mulberry, with few exception and non mulberry are found to have a positive net shift. Along with this silk waste group is also found to have positive net shift. The three major segments of non mulberry silk i.e. muga, tasar and eri, have shown a positive net shift. Mixed and blended group has shown negative net shift in the major heads. Cocoons though have not shown any negative net shift, miniscule trade share has made the group irrelevant in the analysis.

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Appendix 1: Composition of Silk Goods in India's Export , 1995-2011

(In RsCrores)

Particulars	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
A. Silk Goods																	
1. Mulberry																	
a) Dress materials	213.54	245.45	306.87	387.89	483.89	654.21	721.78	850.16	1043.15	1193.08	1242.31	1510.39	1259.29	1354.39	1183.29	1449.47	840.29
b) Readymade garments	167.6	148.56	116.82	205.62	447.57	690.65	588.08	527.2	745.52	689.32	754.9	815.84	744.83	984.83	854.03	680.56	764.62
c) Carpets	92.77	93.76	129.73	138.56	145.43	110.89	172.27	96.13	123.65	120.22	103.36	132.36	72.11	58.67	40.59	21.1	20.08
d) Sarees	171.44	154.05	121.87	105.32	187.54	300.05	305.79	348.87	365.79	237.21	201.46	174.19	77.05	127.35	81.6	100.92	44.95
e) Scarves/s toles	45.54	39.45	54.44	79.35	81.21	79.24	87.02	94.56	166.7	190.76	231.73	226.94	220.15	229.12	273	209.75	250.29
f) Others	46.03	58.3	55.25	96.21	111.47	102.21	117.45	135.74	150.26	187.32	337.89	231.91	160.36	153.56	172.04	106.88	74.58
Total for Mulberry (a to f)	736.92	739.57	784.98	1012.95	1457.11	1937.25	1992.39	2052.66	2595.07	2617.91	2871.65	3091.63	2533.79	2907.92	2604.55	2568.68	1994.81
2. Non Mulberry	52.45	63.57	69.65	82.47	93.54	152.64	170.1	79.99	57.3	123.24	187.76	143.21	118.92	208.67	211.53	192.54	266.61
3. Mixed Blended	35.03	29.14	31.54	56.47	84.22	97.59	110.06	117.76	76.37	56.21	42.32	34.97	17.63	21.28	22.03	27.01	22.47
Total for A. (1+2+3)	824.4	832.28	886.17	1151.89	1634.87	2187.48	2272.55	2250.41	2728.74	2797.36	3101.73	3269.81	2670.34	3137.88	2838.1	2788.23	2283.89
B. Raw Silk & Raw Yarn	21.21	44.72	19.23	66.31	87.5	189.01	50.43	27.88	44.1	79.86	70.81	44.59	44.14	34.81	29.29	39.32	19.63
C. Silk Waste	0.47	3.44	20.89	32.35	33.18	45.49	36.58	15.76	5.34	1.29	19.9	22.78	12.15	5.23	24.92	36.15	49.77
D. Cocoon	-	-	-	-	-	-	-	-	1.01	1.05	1.76	1.17	1.23	0.28	0.12	0.06	0.04
Grand Total (A+B+C+D)	846.08	880.44	926.29	1250.55	1755.55	2421.98	2359.56	2294.05	2779.19	2879.56	3194.2	3338.35	2727.86	3178.19	2892.44	2863.76	2353.33

Source: DGCI & S Database, Kolkata

Appendix 2: Total Silk Production of India and Contribution of Assam to Country's Total, 1990-2011

(Unit MT)

Year	Total Muga production of Assam	Country's Total Muga Silk Production	% to Country's Total	Total Eri production of Assam	Country's Total Eri Silk Production	% to Country's Total	Total Mulberry production of Assam	Country's Total Mulberry Silk Production	% to Country's Total Mulberry
1990-91	69.00	69.06	99.91	335.00	725.00	46.21	18.00	11486.90	0.16
1991-92	72.00	72.06	99.92	375.00	732.00	51.23	18.00	10654.90	0.17
1992-93	60.00	60.06	99.90	389.00	727.00	53.51	20.00	13003.50	0.15
1993-94	75.00	75.08	99.89	411.00	766.00	53.66	28.00	12549.00	0.22
1994-95	74.00	74.09	99.88	437.00	798.00	54.76	24.00	15441.35	0.16
1995-96	86.00	86.15	99.83	418.00	745.00	56.11	23.00	12844.00	0.18
1996-97	72.00	72.22	99.70	439.00	863.00	50.87	18.00	12954.50	0.14
1997-98	59.60	59.85	99.58	407.00	810.00	50.25	15.00	14048.61	0.11
1998-99	72.00	85.00	84.71	407.00	887.00	45.89	18.00	13723.17	0.13
1999-2000	91.00	94.44	96.36	411.00	972.25	42.27	26.00	13987.20	0.19
2000-2001	95.00	98.51	96.44	432.00	1089.00	39.67	34.00	15004.00	0.23
2001-02	93.00	99.50	93.47	449.00	1160.00	38.71	24.00	16682.00	0.14
2002-03	96.00	102.00	94.12	463.00	1316.00	35.18	30.00	15302.00	0.20
2003-04	99.00	105.40	93.93	738.00	1610.00	45.84	16.00	14580.00	0.11
2004-05	104.00	110.00	94.55	554.00	1449.60	38.22	18.00	15515.00	0.12
2005-06	101.00	110.15	91.69	745.00	1453.02	51.27	16.00	16425.05	0.10
2006-07	107.00	115.00	93.04	740.00	1484.90	49.84	22.00	17624.90	0.12
2007-08	105.00	117.00	89.74	837.00	1530.00	54.71	28.00	17419.50	0.16
2008-09	105.00	119.00	88.24	1141.00	2037.51	56.00	30.00	16860.25	0.18
2009-10	93.00	105.00	88.57	1410.00	2460.50	57.31	32.00	17522.10	0.18
2010-11	117.00	124.00	94.35	1714.00	2760.00	62.10	36.00	17760.20	0.20
2011-12	119.00	125.23	95.03	1976.00	3072.20	64.32	33.43	19957.35	0.17
CAGR	2.51%	2.74%		8.40%	6.78%		2.85%	2.54%	

Source: Various Issues of Statistical Handbook, Assam & CSB Statistical Publication 1990-2012