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Performance of global and Indian silk industry: An economic analysis

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Abstract
The major silk producers in the world are in Asia contributing 90 percent of mulberry production and almost 100 percent of non-mulberry silk. The silk production has drastically reduced in developed countries such as Japan, Italy, France, South Korea etc., due to uneconomical labour cost resulting from industrialization. In India, the major states involved in production of mulberry raw silk are Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir. The share of silk imports to total textile imports have declined from 0.067 percent to 0.024, due to the increased production of import substitute bivoltine silk in the country in order to meet the increasing domestic demand. There is much scope to increase the raw silk production in the country, which could make India emerge as a global leader in silk production.

Keywords: Performance, export, growth, demand

1. Introduction
Silk is an insect fibre, with lustre, drape and strength. Because of these unique features, silk is known as the "Queen of Textiles", the world over. India has been the land of ancient civilization and has contributed many things to the world, silk being one of them. India is the second largest producer of silk in the world and also the largest consumer. Nevertheless, India is the only country, which is producing all the four commercial varieties of silk, *viz.*, Mulberry, Tasar (Tropical and Oak), Muga and Eri. Indian sericulture industry has a unique distinction of high employment potential, low capital requirement and provides remunerative income to silk growers (Anonymous, 2020) [1].
Silk has been intermingled with the life and culture of the Indians. India has a rich and complex history in silk production and its silk trade which dates back to 15th century (Guha and Choudhury, 2001) [3]. India's traditional and culture bound domestic market and an amazing diversity of silk garments that reflect geographic specificity has helped the country to achieve a leading position in silk industry.
Sericulture industry stands for livelihood opportunity for millions, owing to its high employment potential, low capital requirement and remunerative nature of its production. The very nature of this industry with its rural based on-farm and off-farm activities and enormous employment generation potential has attracted the attention of the planners and policy makers to recognize the industry among one of the most appropriate avenues for socio-economic development of a largely agrarian economy of India (Anonymous, 2023) [2].
The present study was taken up to analyse the performance of the silk industry at global and country level.

2. Methodology
The analysis was based on the data for 10 years (2012 to 2022) of value of exports of silk and silk products. The secondary data on exports was collected from the International Trade Centre, Central Silk Board, International Sericulture Commission and United Nations Comtrade Database (United Nations Comtrade Database 2020). Compound Annual Growth Rate (CAGR) were calculated to evaluate the export trends to understand the stability (Mondal, 2022) [7].

2.1 Compound Annual Growth Rate of exports
The compound annual growth rate is estimated from the following form

$Y = ab_t^e$ ..... (1)

where,
'Y' is the dependent variable (exported product)
'a' is the intercept term
'b' is the regression coefficient that measures the relative change in Y for a given absolute change in independent variable t
't' is the dependent variable
'e' is the error term.
Eq (1) is converted to linear form by taking log on both sides of the equation and it forms the following form,

ln Y = ln a + t ln b .....(2)
The percent compound growth rate takes the form

CAGR (g) = [antilog b – 1] x 100 ..... (3)

3. Results and Discussion

3.1 Global scenario of sericulture

Silk has a small share of global textile market of less than 0.2 percent, its production base is spread over 60 countries in the world. The major producers are in Asia contributing 90 percent of mulberry production and almost 100 percent of non-mulberry silk. China and India together account for about 94.95 percent of the global raw silk production of about 86317 t during 2021-22 (Table 1). The major silk producing countries in the world are China, India, Uzbekistan, Brazil, Japan, Republic of Korea, Thailand, Vietnam, DPR Korea, Iran etc. Few other countries are also engaged in the production of cocoons and raw silk in negligible quantities *viz*. Kenya, Botswana, Nigeria, Zambia, Zimbabwe, Bangladesh, Colombia, Egypt, Japan, Nepal, Bulgaria, Turkey, Uganda, Malaysia, Romania, Bolivia, etc. The major silk consumers of world are USA, Italy, Japan, India, France, China, United Kingdom, Switzerland, Germany, UAE, Korea, Vietnam, etc. Sericulture industries have been lately established in Brazil, Bulgaria, Egypt and Madagascar as well. The silk production has drastically reduced in developed countries such as Japan, Italy, France, South Korea etc., due to uneconomical labour cost resulting from Industrialization. China is also facing problem of increased labour cost coupled with the decrease in raw silk production over the years.

Table 1: Global scenario of silk production (t)

Country	2011-12	2021-22	Share in production during 2021-22 (%)	CAGR (%)
China	104000	46700	54.10	-17.26
India	23060	34903	40.44	5.78
Uzbekistan	940	2037	2.36	14.60
Thailand	655	503	0.58	-4.85
Vietnam	500	1067	1.24	15.08
Brazil	558	373	0.43	-8.69
North Korea	300	370	0.43	2.42
Iran	120	272	0.32	17.99
Others	153	89	0.10	-8.54
Total	130286	86314	100.00	-10.81

Source: www.inserco.org

3.2 Indian scenario of sericulture

India with the production of 34,903 t of silk during 2021-22 (Table 2) is the second largest producer of silk in the world after China. Among the four varieties of silk produced, Mulberry accounted for 73.97 percent (25,818 t), Tasar accounts to 4.20 percent (1,466 t), Eri accounts to 21.10 percent (7,364 t) and Muga accounts to 0.73 percent (255 t) of the total raw silk production of 34,903 t. The bivoltine raw silk production has increased by 17.07 percent to 7941 t during 2021- 22 from 6,783 t during 2020-21. Further Vanya silks (Tasar, Eri and Muga), have reduced by 8.10 percent during 2021-22 over 2020-21. It is mainly due to reduction in the Tasar silk production by 45.90 percent during 2021-22. The area under mulberry cultivation has increased by 3.20 percent in 2021-22 compared to previous year.

Table 2: Raw silk production in India

Period	Mulberry			Vanya silk (t)	Total silk production (t)
	Area (lakh ha.)	Bivoltine silk production (t)	Multivoltine silk production (t)		
2012-13	1.86	1984	16731	4964	23679
2013-14	2.03	2559	16917	7004	26480
2014-15	2.2	3870	17520	7318	28708
2015-16	2.09	4613	15865	8045	28523
2016-17	2.21	5266	16007	9075	30348
2017-18	2.24	5874	16192	9840	31906
2018-19	2.35	6987	18357	10124	35469
2019-20	2.39	7009	18230	10581	35820
2020-21	2.38	6783	17113	9874	33770
2021-22	2.45	7941	17877	9070	34903
CAGR (%)	2.90**	15.40**	0.81**	7.33**	4.48**

Note: ** indicates 5 percent level of significance, CAGR – Compound Annual Growth Rate

The major states involved in production of mulberry raw silk in the order of their importance are Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir. These states contribute about 95 percent of the country's mulberry raw silk production (Table 3). Sericulture is a tradition in Karnataka and culturally the state accords great value to Silk. It is a fascinating story of Soil to Silk and Fabric. Other states involved in silk production were Bhar, Chhattisgarh, Haryana, Himachal Pradesh, Meghalaya, Mizoram, Kerala, Manipur, Nagaland, Odisha, Punjab, Sikkim, Tripura, Uttarakhand and Uttar Pradesh.

Table 3: State-wise production of raw silk in India (t)

States	2012-13	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-22	Share to average (%)	CAGR (%)
Andhra Pradesh	6550	5086	5970	6778	7481	7962	8422	8835	25.31	6.87
Arunachal Pradesh	22	37	45	54	59	64	43	53	0.15	10.06
Assam	2068	3325	3811	4861	5026	5316	5462	5700	16.33	13.46
Jammu & Kashmir	145	127	145	132	118	117	80	98	0.28	-6.68
Jharkhand	1090	2284	2631	2220	2375	2402	2185	1046	3.00	-0.85
Karnataka	8219	9823	9571	9322	11592	11143	11292	11191	32.06	4.29
Madhya Pradesh	190	257	111	103	100	61	47	30	0.09	-24.17
Maharashtra	97	274	259	373	519	428	428	523	1.50	20.78
Tamil Nadu	1185	1898	1914	1984	2072	2154	1834	2373	6.80	6.24
Telangana		116	119	163	224	297	309	404	1.16	25.02
West Bengal	2072	2391	2565	2577	2394	2295	872	1632	4.68	-8.13
Others	2041	2905	3207	3339	3509	3581	2796	3018	8.65	3.55
Total	23679	28523	30348	31906	35469	35820	33770	34903	100.00	5.08

3.3 Employment generation in sericulture

Sericulture is a labour-intensive activity generating employment to 8.80 million persons in the country during 2021-22 (Fig 1). There was a significant growth of 3.88 percent. Of these, a sizeable number of workers belong to the economically weaker sections of society, including women. Sericulture can help keeping the rural population by employing about one million workers are employed in the silk sector in China and 20,000 weaving families in Thailand and prevent migration to big cities by securing remunerative employment, it requires small investments while providing raw material for textile industries (Anon., 2023) [2].

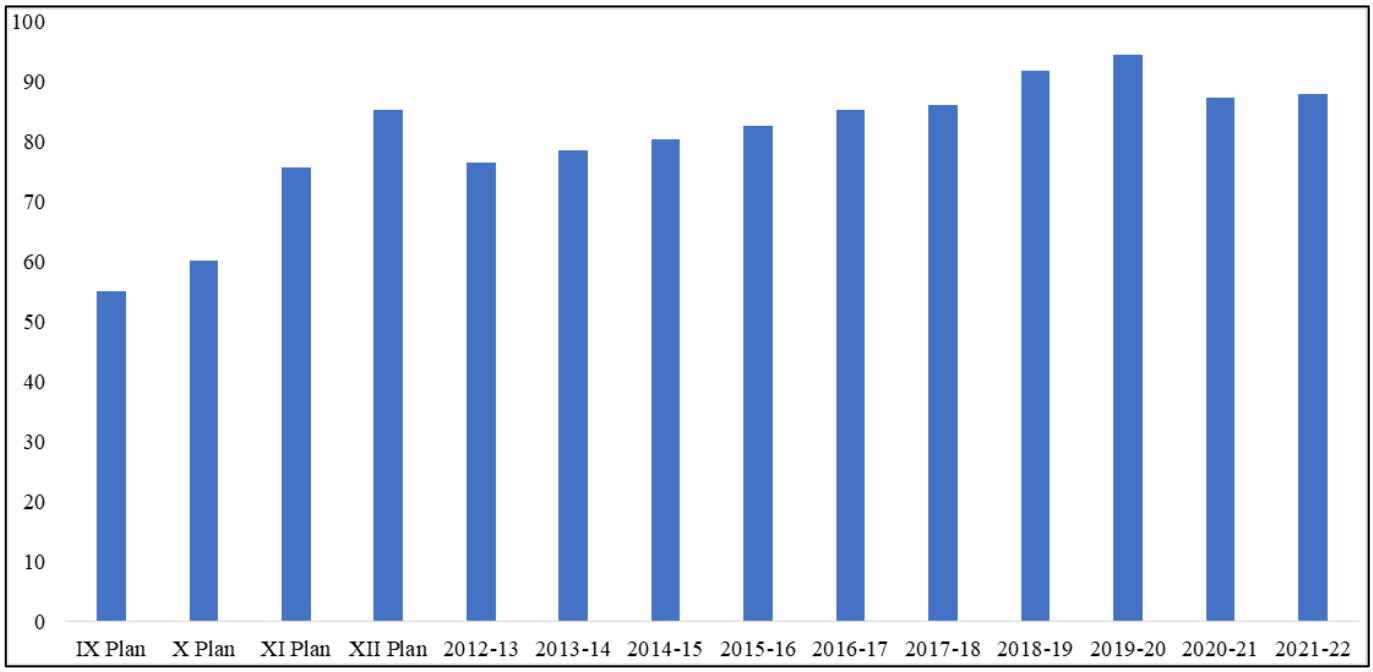

Fig 1: Employment generation in sericulture industry in India (lakh persons)

3.4 Structure of silk products exports

India is the 3rd largest exporter of Textiles and Apparel (T&A) in the world. India's textiles and clothing industry is one of the mainstays of the national economy. The share of textile and apparel including handicrafts in India's total merchandise exports stood at a significant rate of 10.5 percent in 2021-22. India has a share of 4.6 percent of the global trade in textiles and apparel.

The export dynamics of Indian silk and silk products were analysed using the quantity of exports and their earnings during the time period of 2011-12 to 2021-22. The silk products exported include natural silk yarns, fabrics, made-ups, readymade garments, silk carpets and silk waste. The status on exports and imports of silk and silk products are tabulated and presented in table 4. The exports value of silk products from India worth USD 117000 during 2021-22, accounting to 0.03 percent of the total export earnings in the country. The percent of silk imports to total imports have declined from 0.067 percent to 0.024. The quantity of imports of raw silk in the last decade are coming down substantially from 4959 t during 2011-12 to 1377 t during 2021-22. This is due to the increased production of import substitute bivoltine silk in the country in order to meet the increasing domestic demand (Kumaresan *et al*. 2021) [6]. The basic customs duty on raw silk has been enhanced from the level of 10 percent to 15 percent on 1st Feb-2021 to restrict the raw silk imports from the other countries. The Indian Silk Export Promotion Council (ISEPC) has initiated programmes for growth and development of the silk industry at domestic and global level.

Table 4: India's exports and imports of silk and silk products

Year	Total national exports (USD 000)	National silk exports (USD 000)	Share of silk exports to total national exports (%)	Total national imports (USD 000)	National silk imports (USD 000)	Share of silk imports to total national imports (%)	Import of raw silk (t)
2011-12	289565	164	0.056	488976	326	0.067	4959
2012-13	336611	164	0.049	466046	236	0.051	3260
2013-14	317545	141	0.044	459369	219	0.048	3489
2014-15	263889	111	0.042	390799	201	0.051	3529
2015-16	260964	91	0.035	356686	209	0.059	3795
2016-17	295862	77	0.026	443853	251	0.056	3712
2017-18	323998	83	0.026	509273	209	0.041	2785
2018-19	323251	84	0.026	478884	211	0.044	3315
2019-20	275489	82	0.030	367980	111	0.030	1804
2020-21	394814	117	0.030	570402	136	0.024	1978
2021-22	452684	95	0.021	732566	274	0.037	1377

3.5 Demand - supply gap

The silk production in the country is not sufficient to meet the rising demand, particularly to meet the export requirements. Hence, the country is much depending on import of raw silk especially from China. The trade balance of raw silk was found to be negative over the last decade, but the level of imports was reduced with the increasing domestic production (Fig 2). The raw silk imported was further utilized for preparation of readymade garments and products. Though India is a major producer of raw silk, India's silk trade in the global market is not significant as major chunk of Indian silk production (about 85 %) is primarily catering to the domestic market and Indian silk does not have adequate positive brand image in the international market (Roy, 2020) [8].

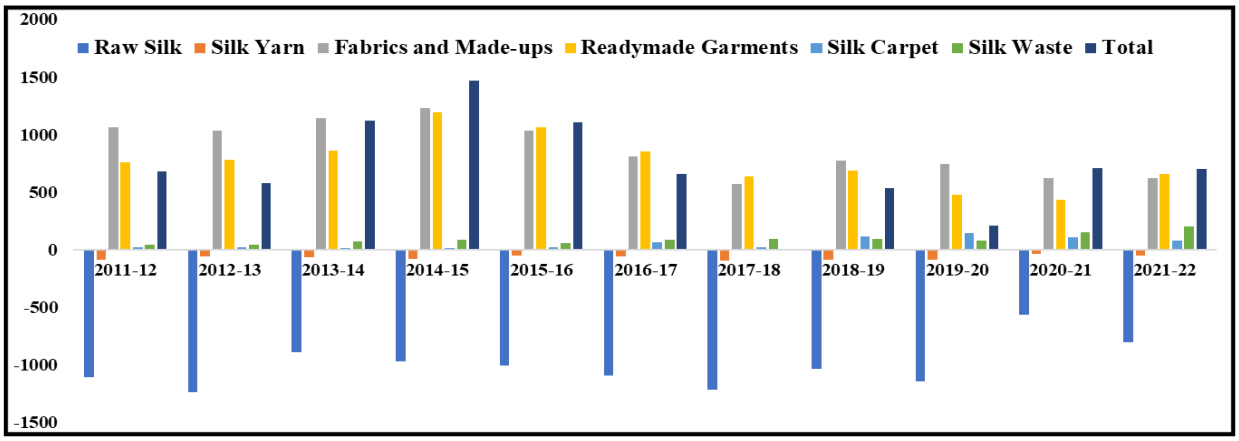

Fig 2: Trade balance in exports and imports of silk and silk goods (Rs. in Crores)

Kumaresan and Indumati (2008) [5] also found that silk waste being utilized as a raw material, its exports have witnessed a strong growth during the last few years due to strong demand for it from China. Halagundegowda *et al*. (2021) [4] also found that the exports all the items except silk waste witnessed negative growth during the post liberalization period and the exports of silk waste grew at a higher rate of 19.84 percent in the post-liberalization period.

3.6 Protection measures against imports of silk

Various measures were taken during the post-independence era by both central and state governments for promoting sericulture, which resulted in an increase in raw silk production in the country from 1,211 t in 1950 to 34924 t in 2021-22. As the demand for silk increased concomitantly, the import of raw silk also grew during the same period to reach 1144 t during 2021-22 from 320 t in 1950, making the Indian silk industry rely on imported silk unfailingly. The Indian sericulture industry has been enjoying various protectionist measures and government concessions for many years. The basic customs duty on raw silk was reduced drastically from 35 to 5 percent in 2011-12. In the subsequent period, the tariffs were pegged in a range between 5 and 15 percent. The anti-dumping duty imposed on raw silk during 2003 continued in different forms up to 2020, whereas the anti-dumping duty on silk fabrics was released during December 2015 (Kumaresan, 2021) [4, 6].

4. Conclusion

The study concluded that there are immense opportunities for Indian silk industry in world market as there was decline of production from China. Enhancing silk production and improving quality to meet the domestic demand and exports are to be focussed to be globally competitive. The significant decline in quantity of imports of raw silk during the last decade was due to the increased production of import substitute bivoltine silk in the country in order to meet the increasing domestic demand.

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