AN OVERVIEW OF THE COTTON AND
TEXTILE INDUSTRIES IN INDIA

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I. Introduction

India's Position in the World Cotton industry

India is one of the largest cotton producers in the world but has played a minor role in the world cotton trade. Following China and the United States (US), India is the third largest cotton producer in the world, with 25% of the world cotton acreage but only 13% of the world cotton output. India ranks fourth in the world in terms of staple fiber output and sixth in the production of filament yarn (World Bank, Vol. II, 1997). Cotton-based garments dominate India's apparel exports. In the Indian economy, the textile industry is one of the largest and most important sectors in terms of output, foreign exchange earnings and employment. Composed of spinning, weaving, fabric processing, and garment making units, the textile industry accounted for one-fifth of India's total industrial output in 1994-95 and about 7% of GDP (World Bank, Vol. II, 1997).

Given India's position in the world cotton market, the objectives of this study[1] were to:

1. describe the cotton production, marketing, and pricing system in India, with due emphasis on its policies that affect the cotton and textile sectors;

2. examine implications of the current cotton and textile policies on India's role in the world cotton trade.

The Indian cotton industry has been characterized as a unique combination of the following: (1) a broad spectrum of production techniques from hand-operated to sophisticated automated technology; (2) a dualistic structure dominated by a rapidly expanding, decentralized, or "unorganized" small-scale segment in weaving, knitting and apparel/garment making, along

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[1] An original objective was to empirically estimate the effects of domestic cotton and textile policies on the production, consumption, prices, and trade of cotton and textiles in India. Failure to collect sufficient disaggregated data for empirical estimation made that objective infeasible.

with a declining vertically integrated, large-scale "composite" mill segment; (3) a predominantly domestic-oriented industry with cotton as the primary raw material; and (4) the existence of a large public sector (20% of the domestic fabric production), composed mainly of nationalized and "sick" mills taken over by the government (World Bank, Vol. II, 1997).

Government policies over the years have shaped India's textile industry as a predominantly domestic-oriented industry. In the past, government emphasis on import substitution and protection of labor interests primarily shaped the structure of the textile industry. During the 1950's, an economic policy of self-reliance extended to the textile industry, and exports were treated as a marginal outlet for domestic surpluses. The Government of India's (GOI) concern for the poor population in their use of "preferred" cotton clothing led it to impose several restrictive fiscal and tariff policies on the domestic use of synthetic fibers. Textile mills were predominantly labor intensive, hence GOI's concern for employment produced several pieces of legislation imposing restrictions on the operation of large composite mills (vertically integrated from spinning through dyeing) and supported the operations of the labor-intensive handloom industry (World Bank, Vol. II, 1997).

A major portion of the output from Indian composite textile mills, particularly fabrics, was exported until the early 1960's. The investment outlook in the textile industry started changing following the Textile Policy of 1985 and the consequent process of liberalization. The weakening of the Indian rupee since 1990 and the drastic changes resulting in relative domestic and world prices that it effectuated increased export interest in textiles as reflected by an increase in the 100% export-oriented cotton spinning mills.[2] India has, however, been only a marginal exporter of cotton (ICRA India Ltd., 1995). The export of cotton yarn, however, does not

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[2] These are mills that are allowed to produce yarn and fabrics for export and are exempt from other production restrictions (discussed later).

constitute a substitution of raw cotton exports, as has been the case in Pakistan and some other developing countries.

*Historical Production and Consumption
of Cotton Lint, Yarn, and Textiles*

Although India accounts for 25% of the total world cultivated area, 7.9 million hectares (ha) in 1994-95, cotton lint production in 1994-95 amounted to only 2.4 million metric tons (mts), or 13% of world production. India's weak production performance is primarily due to its low average yield per ha which increased from 150 kgs /ha per year in the 1970's to 224 kgs/ha in the 1980's (Table 1).

In the 1990's, average yield increased to 300 kgs/ha, but was still considerably below the average yield of the major cotton producing countries around the world. Despite the fact that yields rose by 60% in the past two decades, India continued to lag far behind in terms of efficiency in land-use. One of the reasons for low land efficiency might be the low price of cotton in India, which existed due to government policies targeted at keeping the domestic price level lower than the world price. For Indian cotton farmers, lower price decreases ability to invest in yield-enhancing technologies.

Table 1: Historical Acreage, Yield, and Production of Cotton in India, 1970-95

Production Years	Area Planted	Yield	Total Production
	('000 ha)	(kgs/ha)	('000 mts)
1970	7605	120	909
1971	7800	153	1190
1972	7679	138	1062
1973	7575	143	1079
1974	7562	159	1130
1975	7461	152	1012
1976	6885	147	1229
1977	7866	156	1348
1978	8119	166	1363
1979	8127	168	1322
1980	7824	169	1728
1981	8057	177	1471
1982	7871	187	1333
1983	7721	173	1820
1984	7382	247	1964
1985	7533	261	1579
1986	6948	227	1555
1987	6459	241	1802
1988	7343	245	2308
1989	7331	315	1989
1990	7440	267	2053
1991	7661	268	2380
1992	7541	316	2065
1993	7337	282	2133
1994	7608	280	2278
1995	7992	285	1576

Source: Indian Cotton Annual, EICA.

While synthetic and man-made fabrics have gained at the expense of cotton, total per capita consumption of all kinds of cloth has not increased. Per capita consumption of cotton cloth has decreased from 10.6 meters (mtrs) in 1980 to 7.4 mtrs in 1990(Table 2). The notable development is the steady substitution for cotton cloth by blended and man-made fabric over the 1980-1990 period. In 1979, cotton accounted for 84% of domestic per capita consumption but decreased to 53% by 1990. The sharp increase in the relative prices between cotton and synthetic fibers and between cotton yarn and man-made yarns may account for much of this shift.

Table 2: India's Per Capita and Total Consumption of Cotton, Man-made Fiber, and Cotton Lint, 1979-90

Years	Cotton	Man-made	Total Cotton
	kgs/person		1000 mts
1979	11.46 (84%)	2.19 (16%)	1300
1980	10.56 (79%)	2.87 (21%)	1371
1981	9.57 (78%)	2.74 (22%)	1285
1982	10.04 (74%)	3.48 (26%)	1359
1983	10.12 (74%)	3.58 (26%)	1433
1984	9.94 (72%)	3.90 (28%)	1550
1985	10.75 (68%)	3.60 (25%)	1564
1986	10.75 (66%)	5.08 (32%)	1702
1987	10.75 (66%)	5.60 (34%)	1708
1988	10.75 (66%0	5.60 (34%)	1762
1989	8.40 (56%)	6.67 (44%)	1876
1990	7.44 (53 %)	6.58 (47%)	1958

Numbers in parenthesis are percentage of fiber type in total fiber consumption.
Source: Reproduced from ICRA India Ltd., 1993, p-68.

II. Cotton Production in India

Cotton production in India has been concentrated in three major regions (Figure 1); (i) The Northern Region (Haryana, Punjab, and Rajasthan); (ii) the Central Region (Maharastra, Gujarat, and Madhya Pradesh); and (iii) the Southern Region (Karnataka, Tamil Nadu, and Andhra Pradesh). Maharastra is examined separately from the rest of the states of the central zone because of its large share of production and unique marketing system.

Output in the Northern Region grew at an average of 6.6% per year between 1981-82 and 1993-94. (Table 3) Output in the Southern Region and Maharastra grew by 4.2% and 3.9%, respectively, during the same period under consideration. However, the Central Region exhibited negative (-0.7%) growth between 1981-82 and 1993-94. The growth in output in the Northern and Southern Regions may mainly be due to yield improvements. In the North, where yields are higher than the rest of the country, yields increased 4.5% per year during that period and reached 474 kgs/ha in 1992-93. The Southern Region also displayed yield improvements, with yields rising by 4.2% per year from 166 kgs/ha in 1981-82 to 277 kgs/ha in 1993-94.

Figure 1: Cotton Production by Regions, in the Republic of India, 1994-95
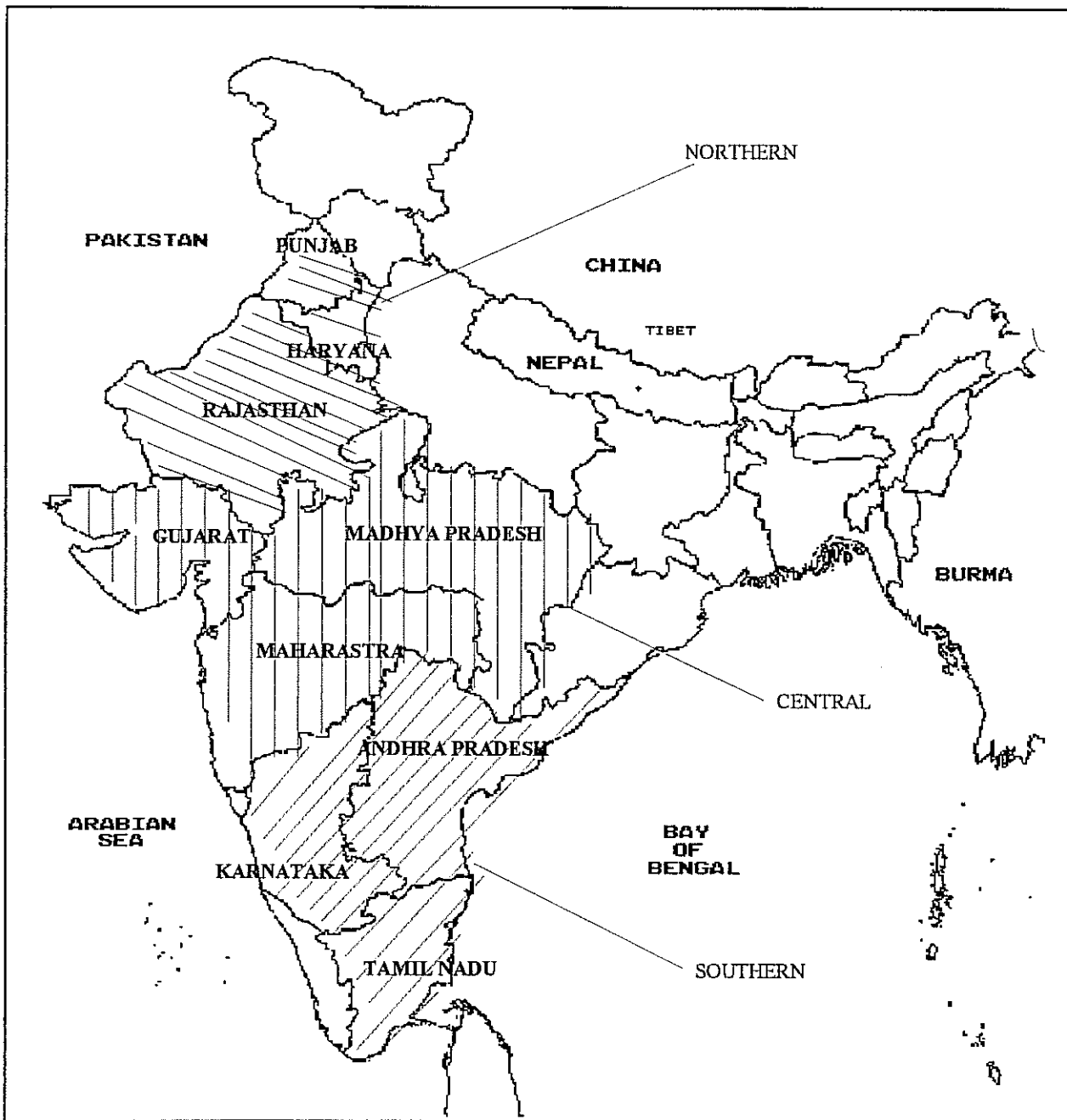
Northern Region, 592,000 metric tons;
Central Region, 877,000 metric tons;
Southern Region, 430,000 metric tons;

The major reason for the yield increases in all of these regions may be due to adoption of improved varieties and irrigated production. Overall, 108 new improved varieties were released in India between 1967 and 1992. Over 26 of these varieties were introduced in the North, 38 in the Central Region and Maharastra, and 44 varieties in the Southern Region[3]. The increased adoption of these new varieties contributed to rising yields.

In 1992-93, improved varieties covered 36% of the total cultivated area in India compared to 10% in 1981-82 (Basu and Paroda, 1995). Maharastra had the largest area planted to hybrid cotton, covering 100,000 ha or 40% of cotton cultivated in the state in 1992-93.

In the Southern Region, an even larger share (61%) of the total of 1.6 million ha of cotton area was planted with improved varieties. Irrigated production in the North contributed to higher yields; for example, in Punjab, Haryana, and Rajasthan, virtually all cotton was grown under irrigation (Table 4). Although total cultivated area in the Central Region, decreased between 1981-82 to 1991-92, the share of irrigated area over total cotton cultivated area increased from 23 to 34 percent (World Bank Report, Vol. II, 1997).

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[3] India is the only country in the world that grows all four cultivated cotton species: Gossypium barbadense, G. hirsutum, G. arboreum and G. herbaceum.

Table 3: Cotton Area, Production, and Yield by Region and All India, 1979-80 to 1993-94.

Category	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94
							Area, 000ha								
North	1335	1322	1390	1518	1476	1202	1237	1311	1382	1490	1634	1646	1644	1697	1660
Central	2331	2167	2145	2076	1943	1908	1938	1889	1224	1653	1411	1529	1695	1931	1610
Maharastra	2588	2667	2710	2648	2685	2685	2753	2693	2518	2628	2636	2730	2724	2480	2480
South	1803	1597	1753	1566	1560	1641	1548	1063	1294	1527	1606	1491	1557	1692	1550
Others	70	70	59	63	57	-54	57	-8	41	45	44	44	42	43	40
India	8127	7823	8057	7871	7721	7382	7533	6948	6459	7343	7331	7440	7661	7543	7340
							Production, 000mt								
North	387	377	404	444	316	390	446	559	470	606	786	677	774	805	592
Central	345	377	413	317	281	397	386	227	99	310	367	292	243	399	345
Maharastra	288	216	249	274	138	249	338	151	250	233	376	320	196	307	447
South	268	252	266	237	341	401	302	278	275	330	402	375	430	449	430
Others	12	10	9	10	9	9	11	-41	-9	8	9	9	8	8	7
India	1300	1192	1340	1281	1086	1446	1484	1174	1085	1486	1940	1673	1651	1969	1821
							Yield, kgs/ha								
North	290	285	291	293	214	324	360	427	340	407	481	411	471	474	356
Central	148	155	193	153	145	208	166	120	81	188	260	191	143	245	214
Maharastra	111	81	92	103	52	93	123	56	99	89	143	117	72	124	180
South	148	158	151	151	219	244	195	262	212	216	251	252	276	265	277
India	160	152	166	163	141	196	197	169	168	202	252	225	216	261	248

Source: Reproduced from World Bank Vol. II, 1997, Annex 4, p-21.

Table 4: Irrigated Area Under Cotton Cultivation, by State (in 1000 hectares)

States	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
					Years					
Andhra Pradesh	190.0	177.2	38.2	96.0	76.3	50.0	52.0	325.0	88.0	82.0
	(40.1)	(40.0)	(8.0)	(17.0)	(12.3)	(12.2)	(9.2)	(51.7)	(13.5)	(12.5)
Gujarat	461.7	359.3	316.1	394.7	430.5	450.1	208.7	424.4	436.0	436.0
	(30.2)	(24.0)	(22.6)	(28.5)	(30.7)	(33.0)	(29.0)	(38.9)	(36.7)	(47.3)
Haryana	310.0	379.0	390.0	288.0	343.0	379.0	413.0	430.0	469.0	489.0
	(94.8	(95.5)	(95.1)	(97.6)	(99.7)	(100.0)	(99.0)	(99.3)	(100.0)	(99.7)
Madhya Pradesh	54.2	53.9	51.5	66.2	60.0	89.0	79.0	131.5	136.0	147.0
	(8.8)	(9.0)	(9.5)	(13.0)	(11.2)	(17.0)	(15.6)	(23.4)	(23.5)	(24.1)
Maharastra	141.1	118.7	103.8	100.2	109.4	66.6	30.0	53.5	91.0	91.0
	(5.2)	(4.5)	(3.9)	(3.8)	(4.0)	(2.5)	(1.2)	(2.0)	(3.4)	(3.3)
Karnataka	80.2	110.0	127.9	182.1	148.7	112.4	100.0	136.4	177.0	145.0
	(7.7)	(11.8)	(14.1)	(21.7)	(22.0)	(27.1)	(21.0)	(20.8)	(25.3)	(24.3)
Punjab	683.0	724.0	635.0	464.0	553.0	562.0	616.0	754.0	728.0	696.0
	(100.0)	(100.0)	(97.70	(98.2)	(98.80	(99.10	(99.2)	(99.5)	(99.4)	(99.2)
Rajasthan	326.9	358.0	380.8	304.7	301.0	343.7	327.4	277.8	410.0	428.0
	(86.1)	(90.2)	(91.5)	(90.9)	(90.4)	(94.2)	(95.2)	(92.8)	(94.4)	(94.1)
Tamil Nadu	96.1	73.2	84.7	129.4	138.0	75.2	108.6	100.3	111.0	77.0
	(40.0)	(45.0)	(47.6)	(51.1)	(54.3)	(40.4)	(44.5)	(41.2)	(41.4)	(32.1)
Uttar Pradesh	25.2	28.1	22.7	15.8	23.9	16.8	18.2	18.3	17.0	14.0
	(83.4)	(79.4)	(75.7	(79.0)	(85.4)	(76.4)	(89.70	(87.6)	(88.5)	(89.1)
Others	(2.0)	(2.0)	(Neg)	(Neg)	(2.10	(2.0)	(2.0)	(2.0)	(1.0)	(1.00
All India	2370.4	2383.4	2150.7	2041.1	2185.9	2146.8	1954.9	2653.2	2664.0	2606.0
	(29.4)	(30.40	(27.9)	(28.1)	(29.0)	(30.9)	(30.2)	(36.10	(34.6)	(35.0)

Numbers in parenthesis are percentage of total area.
Source: Reproduced from World Bank Vol. II, 1997, Annex 4, p-19.

III. Cotton Marketing

Cotton marketing (seed cotton and cotton lint) in India is predominantly handled by the private sector (traders and cooperatives). Although cotton trade is largely private, it is mostly regulated by the GOI and State governments. Past government interventions ranged from storage, movement and credit controls, to the fixing of ginning fees and restrictions on the scale of operations in the ginning sector, to export control. There are three groups in the marketing of cotton: private traders, state level cooperatives, and the Cotton Corporation of India (CCI). According to an estimate by CCI, private traders in 1992-93 handled about 77% of the marketed seed cotton and cotton lint, cooperatives 15%, and CCI 8%. In Maharastra, all seed cotton is purchased by the state government through the Maharastra State Cooperative Cotton Growers' Marketing Federation (MSCCGMF).

Seed Cotton Marketing

Regulated markets or *mandis* are the primary marketing channel for seed cotton. Unlike some countries, Indian farmers sell their cotton in the form of *kapas* or seed cotton. The farmers sell their output in the large assembly markets, which may be regulated or unregulated. The regulated markets (*mandis*) were established under the State Agricultural Product Markets Act and consists of a dense network of delivery points all over the country. About 75% of the seed cotton in India is marketed through over 1,000 of the 6,000 regulated markets in the country. Infrastructure facilities for weighing, handling, moving, and storing cotton in many regulated markets are inadequate. Market information on the transactions, such as volume of arrivals, quantities sold, varieties delivered, and prices realized are not properly collected.

Cotton Corporation of India

In 1970, GOI established CCI exclusively for the purpose of importing cotton to bridge the gap between domestic shortfalls in cotton output. The main role of CCI in the early 1970's was to purchase surplus seed cotton in assembly markets in several states at support prices. However, with prices above the minimum support prices, CCI's role in the cotton market declined. Consequently, in both 1975 and in 1978 CCI's role was expanded, whereby it was allowed to trade cotton for National Textile Corporation (NTC) mills and other private sector firms. Between 1989-90 and 1993-94, CCI's cotton procurement declined from 1.2 million bales to 776,000 bales (1 bale = 170 kgs of cotton lint). By 1993-94, its market share was 6%, down from 9% in 1989-90 (Table 5). CCIs commercial operations were primarily centered in the states of Rajasthan, Gujarat, Madhya Pradesh, and Andhra Pradesh. The excess of purchases over domestic sales is exported, usually through private traders, act as agents for foreign buyers.

Table 5: CCIs Purchases by State and Sales by Buyer, 1989-90 to 1993-94.

	Purchase				
States	1989-90	1990-91	1991-92	1992-93	1993-94
	(bales of 170 kg)				
Punjab	285,967	131,242	207,369	328,043	69,043
Haryana	142,218	79,353	109,857	137,737	47,014
Rajasthan	121,040	108,045	149,389	162,892	130,153
Gujarat	216,409	204,851	154,365	226,602	163,999
Madhya Pradesh	185,375	213,646	126,484	101,618	168,684
Andhra Pradesh	231,249	253,012	171,619	157,827	162,062
Karnataka	38,312	21,314	74,017	66,019	31,063
Tamil Nadu	21,471	7,679	7,147	5,310	4,334
Others	822	97	434	550	0
Total	1,242,863	1,019,237	1,000,681	1,186,589	776,352
	Sales				
NTC	392,527	352,100	406,943	225,999	305,008
SSTC/Cooperatives	162,948	318,918	396,601	135,178	171,786
Privates	43,836	66,347	155,463	133,708	241,259
Total	599,311	737,365	959,007	494,885	718,053

Source: Reproduced from World Bank Vol. II, 1997, Annex 5, p-31.

Cooperative Marketing in Other States

Cooperatives account for a 4% share of marketed cotton. Cooperative marketing follows two methods: (1) all cotton produced by the farmer members is collected and sold in the assembled markets and (2) outright commercial purchases from farmers for sale to cooperative or public sector mills. For example, under the Gujarat cooperative system, members deliver their seed cotton to the societies for processing and sale of pressed bales. Around 65-70% of the estimated value of the seed cotton is paid in advance at this stage to the farmer. At the end of the season, average price for each variety is fixed and the difference between final and advance prices is paid to the farmers. The cooperative marketing arrangements have benefited the members in several respects. A study by Parmer and Ramachandan (1992) found that farmers generated 93 to 96% of final price of cotton through state cooperative marketing agencies. Besides Gujarat, cotton cooperatives are also developed in Punjab, Haryana, and Karnataka. Cotton procurement by different agencies is reported in Table 6.

Table 6: Cotton Procurement by Different Agencies.

	Years				
Agency	1989-90	1990-91	1991-92	1992-93	1993-94
	10,000 bales of 100 kg				
Cotton Corporation of India	1,240	1,019	1,001	1,186	776
Maharastra Monopoly Procurement Scheme	2,080	1,350	1,063	1,990	1,336
State Cooperatives					
Haryana	65	68	106	123	78
Punjab	223	156	191	141	101
Rajasthan	12	22	24	36	41
Gujarat	188	215	191	134	165
Other States	55	41	28	69	30
Subtotal	543	502	540	503	445
Private Trade	9,712	8,829	9,474	10,321	9,768
Total	13,575	11,700	12,078	14,000	12,325

Source: Reproduced from World Bank Vol. II, 1997, Annex 5, p-28.

IV. Cotton Production Policies

The GOI minimum support price dates to the Second World War when the British government prescribed statutory floor and ceiling prices for cotton lint. In 1967, price ceilings were removed but the statutory minimum price for each lint variety was retained to protect farmers from downward price movements. In 1972-73, the support price for cotton lint was converted to a support price for seed cotton. The Commission for Agricultural Costs and Prices (CACP) sets the minimum support price for each cotton variety. The support price is fixed by the Textile Commissioner for the Fair Average Quality (FAQ) grade of each variety of seed cotton on the basis of recommendations from the CACP. The CCI is responsible for procuring cotton from the market to support these prices.

Besides the centrally sponsored price support program, state governments launched separate cotton procurement schemes which assured guaranteed prices for seed cotton. For example, in Maharastra, cotton cultivators were prohibited from selling *kapas* (seed cotton) to

any buyer other than Maharastra State Cooperative Marketing Federation. In the early 1970's, the centrally sponsored Intensive Cotton Development Program (ICDP) assisted farmers with subsidized key inputs. This program was further extended in 1989-90 to cover plant protection, increased area under irrigation, and increased production of export quality cotton. The complexities involved in various state and centrally sponsored price support policies in India make it very difficult to comment on the effectiveness of such policies without further information.

V. Export Policies

As for most agricultural commodities, India's external trade policies for cotton have aimed at domestic self-sufficiency with external trade largely being a "residual" to balance domestic use and production. The implicit underlying principles governing cotton export policies in India may be summarized as: (1) emphasize exports of value-added products rather than raw cotton, (2) keep cotton prices low for domestic industry, and (3) export cotton that is "surplus" to domestic requirements.

To ensure textile manufacturers an adequate supply of cheap raw materials, India sets yearly quotas for cotton lint exports, ranging from 8,000 mts to 255,000 mts, depending on the local supply and demand situation (Table 7). Fluctuating between 1 and 16% as a share of domestic production, exports have until recently been a monopoly of government and cooperative agencies. During the 1995-96 season, exports were opened to private trade, with export allocation awarded through auction. For the 1996-97 season, the export quota for staple cotton was set at 58,650 mt, equal to 345,000 bales (170 kg).

Table 7: India's Cotton Production and Export Quotas, 1984-85 to 1994-95.

Year	Production	Quota	Quota Share of
	(1000 mt)	(1000 mt)	Production (%)
1984-85	1446.2	50.2	3
1985-86	1483.6	235.1	16
1986-87	1173.9	90.4	8
1987-88	1084.9	7.5	1
1988-89	1486.5	36.7	2
1989-90	1940.4	251.8	13
1990-91	1673.2	230.4	14
1991-92	1651.4	25.8	2
1992-93	1969.1	254.3	13
1993-94	1820.7	85.0	5
1994-95	2354.5	17.9	1

Source: World Bank, Vol. I, 1997, Annex 2, p-9.

Depending on the official assessment of the cotton supply situation, export quotas are released in ad-hoc installments during the season; a practice that introduces considerable uncertainty and consequent price discounts on world markets. The arbitrary nature of the quotas has gone so far as a sudden 1994-95 suspension of quotas and temporary halt of shipments for contracts with overseas buyers. Aggravating these discounts are the perceived lower and inconsistent quality of Indian cotton, the need for importers to re-grade cotton and lack of expertise in international cotton trading of the state agencies that dominate export (World Bank, Vol. 1, 1997). Consequently, most CCI and state agency export sales are made on a FOB basis to international cotton merchants, who use Indian cotton merchants as their agents.

Export quotas have the strongest impact of any single policy factor in keeping India's cotton prices low. A study by the World Bank (Vol. I, 1997) found that Indian prices for Extra Long Staple (ELS) and short staple cotton lint were almost 40% and 15%, respectively, below the world price level for the last 15 years. The conceptual model of the economic implications of an export quota on both cotton fiber and yarn is illustrated in the following sub-section. India's export share has historically been small but began to grow significantly after 1980, reaching a total share of 2.3% of the world apparel exports. Indian apparel is exported to over 120

countries, the most significant being the Multi-Fiber Arrangement (MFA) importing countries with a total share of 67.5%.

Conceptual Framework

Effects of the export quota and the price support on cotton are explained in this section. The second-round effects on the textile industry are then examined. Note that the different segments of the textile sector (e.g., yarn, spinning, weaving, etc.) are not separated, but the effects tend to be passed through the system. Following this section, the existing empirical evidence from prior studies, although limited, is presented.

Figure 2, panels A, B, and C depict the price-quantity relationships in the Rest of the World (ROW), the world market, and India for raw cotton fiber, respectively. Panel B shows the excess or export supply function for cotton from India (XSi) and the excess or import demand for ROW (XDr).[4] Assuming no market interference and no transportation costs, the intersection between excess supply (XSi) and excess demand (XDr) generates the world cotton fiber price (Pc). It is observable from panel C that the amount of export will be (Q'i-Qi), which is equal to OXc in panel B. In panel A, ROW imports are equal to (Q'r–Qr), the same as OXc in panel B.

Assume that India imposes an export quota (X) which is less than (Xc). This will create a new kinked supply curve XS'i (panel B), which raises the import price to P'c in ROW. At higher import price, ROW will import less fiber from India and produce more internally. However, the cotton exporters in India and the Indian consumers only have to pay Px (which the producers receive).

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[4] This framework assumes that India would be an exporter of cotton fiber in the absence of its restrictive export policies, and would be large enough to influence world market price.
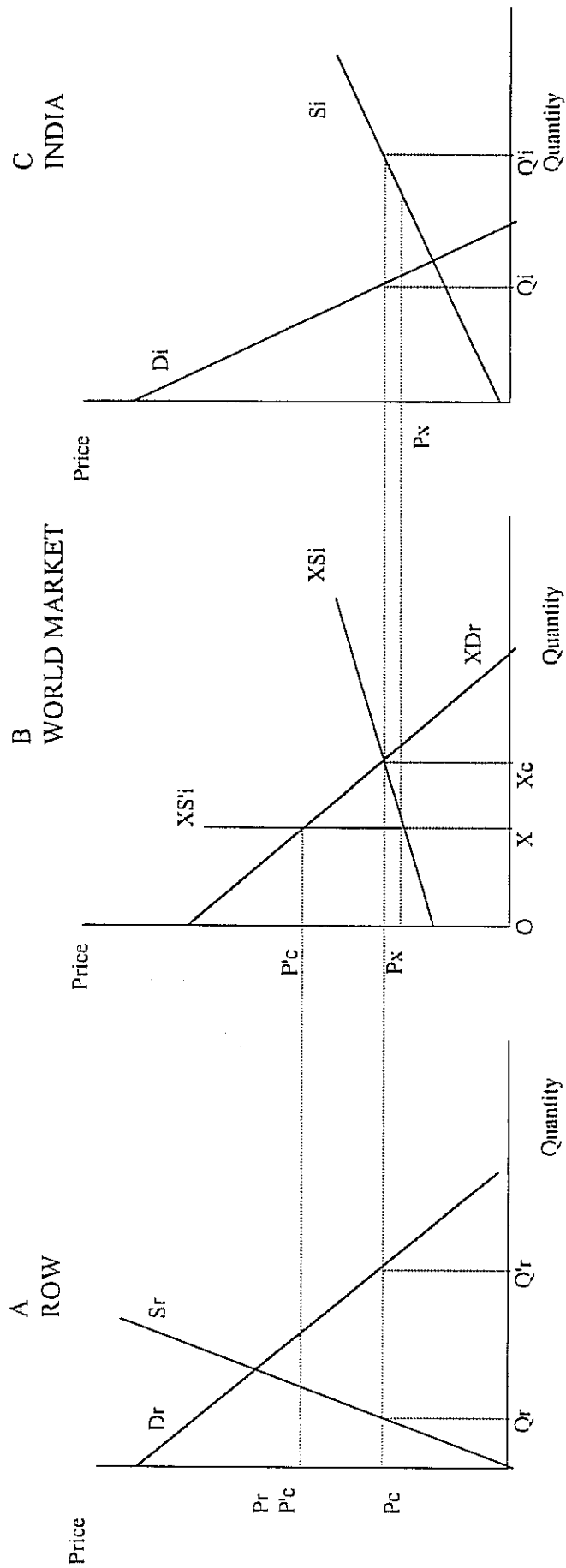
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Figure 2: Effect of export quota on raw cotton fiber in India and the rest of the world

Consequently, within India, consumers (textile manufacturers) pay Px, consume more cotton, and producers produce less cotton. The impact of India's internal price supports for producers appears to be minimal. In recent years the price supports are set below Px, and would appear to have never been above Pc. When shifting market conditions have dropped Px below the internal support price, the GOI has stored the cotton for short periods and sold it or processed it in government mills.

Cotton yarn and fiber markets are interrelated because demand for fiber is a derived demand for yarn. In terms of production costs and revenues these two sectors are highly related. Figure 3, panels A, B, and C depict the yarn markets in ROW, the world market, and India, respectively. The organization of the diagrams are similar to that of Figure 2. In the yarn market in India, producers are the yarn spinners and consumers are the textile mills that produce cotton fabrics and garments. As the price of raw fiber (input) decreases in India because of the export quota on cotton, the cost of producing cotton yarn also decreases, resulting in a shift in the supply curve from S_i to S'_i in panel C. Increased supply of yarn from India causes the export supply curve of textiles in the world market to shift outward from XS_i to XS'_i (panel B). As a result, the world cotton textile price will fall from Pc to P'c. This fall in textile price will lead to an increase in exports from India and penalizes textile manufacturers in ROW.

However, India also has export quotas on yarn and fabrics, with the obvious intent being to increase government exports and capture more of the added value from their processing. Although these effects are not illustrated here, the effects of these quotas are to, e.g., hold yarn prices in India below P'c (with an effect of increasing yarn prices in ROW above P'c), thus subsidizing fabric manufacturers. It is difficult to determine, in the absence of empirical evidence, if the yarn and fabric sectors are net winners or losers in this mixture of effects.
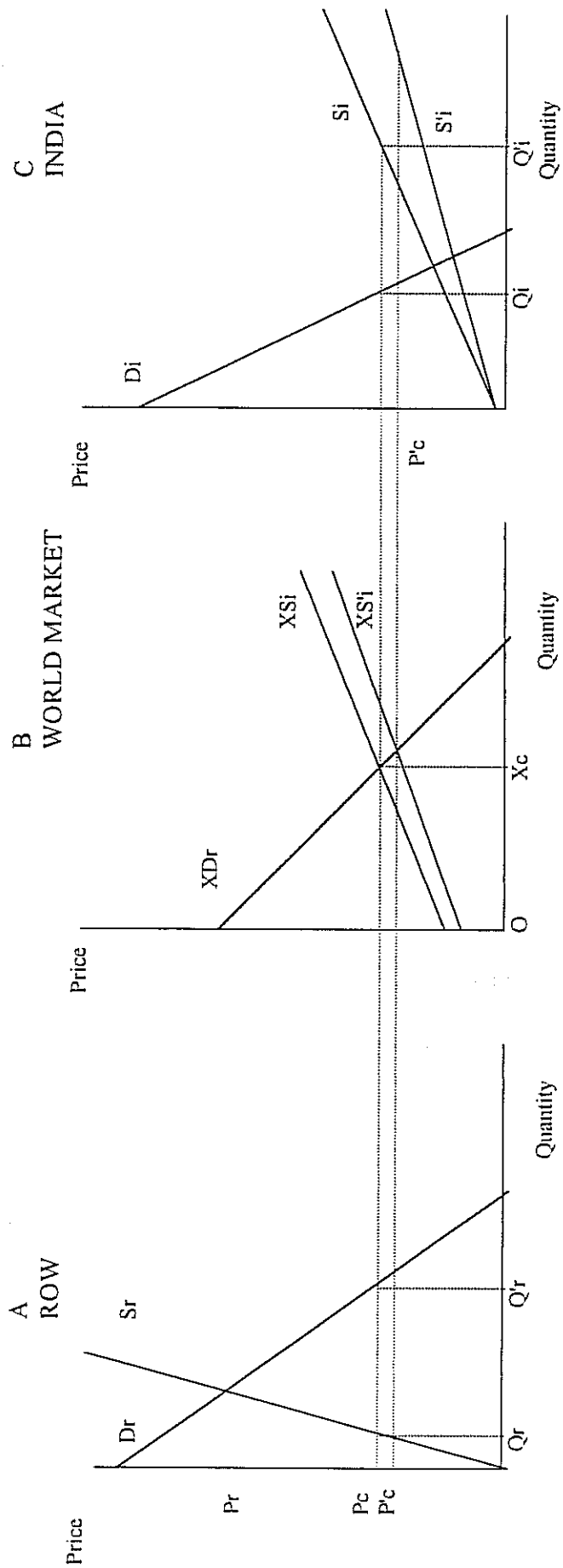
Figure 3: Effect of export quota on cotton yarn in India and the rest of the world

Empirical Evidence

Very few studies in recent years have addressed cotton trade policies in India (Elbehri et al., 1997; Harrison et al., 1995; Kondo, 1995). The study by Harrison et al. concludes that India would benefit from the abolition of the MFA if it is able to improve its competitive position with respect to its main rivals, China, Hong Kong and Taiwan. Harrison et al. contend that India will likely gain more than other textile and apparel exporters from abolition of the MFA, because quotas tend to discriminate against cotton based fibers that tend to be more labor-intensive than other fibers.

The global trade model used by Elbehri et al. (1997) did not adequately address the effects of individual policy actions on the costs and benefits of the economic agents, e.g., cotton growers, spinning mills, and handloom and powerloom operators. To measure the impact of the MFA phase out and domestic regulatory reform (such as liberalization of cotton and cotton yarn exports and removal of hank yarn quotas) on Indian cotton and textile industries, Kondo (1995) applied a partial multi-market general equilibrium model (based on a study by Elbehri et al., 1997). Kondo (1995) used consumer demand elasticities representative of the region of production rather than for India, and assumed a rapid growth in income elasticities. He also assumed that agriculture is shifting from labor intensive to capital intensive.

Kondo modeled the effect of export quota as an export tax equivalent and estimated that the export quota creates a wedge between domestic and international prices of cotton, depressing domestic prices below the world market prices by 15%. The yarn export quota was likewise expected to have an export tax equivalent of 15% on spinning mill yarn prices.

Kondo estimated that cotton growers in India would benefit from the liberalization of cotton exports, with their gross income rising by an estimated 14%. Yarn prices would rise by

an estimated 11%, which is smaller than the 13% increase in cotton prices triggered by liberalization of cotton exports. Less efficient mills with dated technology would suffer the most, followed by those mills for which the yarn export quota is binding, i.e., those producing below 40 counts. The textile industry as a group was estimated to have a 1% loss of income from liberalization of exports.

Kondo maintains that the removal of hank yarn obligation[5] (HYO) imposes a greater loss of income to the handloom weavers because they would no longer be shielded from their low level of productivity. With the decline of handloom production, more textile products would be required to satisfy domestic demand; hence, less would be exported.

Lifting both cotton and cotton yarn export restrictions together while maintaining HYO at 50%, could bring significant income relief to the Indian spinning industry. Kondo argued that cotton growers would be unaffected by the liberalization of yarn exports, but the prior conceptual framework suggests otherwise. Less cotton would be exported because more cotton could be processed domestically by the spinning industry whose level of competitiveness improves with the liberalization of yarn exports. In their model, the income transfer to cotton growers (14%) would come from the weaving sector. This is critical for handloom weavers, who are more sensitive to increases in raw material prices because of their low productivity. They were projected to incur a larger loss of income (12%) than the powerloom sectors (8%).

In general, the Kondo study examined the effects of eliminating the MFA rather than the effects of India's internal policies. However, the directions of change are generally consistent with theory as hypothesized in the conceptual framework. He also did not address impacts on world price. The MFA provides a framework under which developed countries impose quotas

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[5] Hank yarns are used by handlooms and "reeled" manually. The hank yarn obligation is calculated as a percentage of the net qualifying amount after deducting for exports, own consumption, and hosiery yarn output.

on imports of yarn, textiles, and apparel from developing countries. In 1986, India's exports hit the quota ceilings imposed by MFA-importing countries.

Recent developments in the world arena create major opportunities, but at the same time expose India to more intense market competition. The MFA phaseout which began in 1995 creates a new environment for world trade in fibers, textiles and apparel. The abolition of the MFA will increase the scope for countries to expand their exports and create employment in this sector, but there will be intense competition. The growth potential of India's textile industry is particularly important in the light of reforms in textiles and wearing apparel trade, foreseen under the Uruguay Round Agreement of the GATT and the ambitious export-led growth and liberalization programs undertaken by the Indian government since 1991.

One of the most significant accomplishments of the Uruguay Round Agreement was the Agreement on Textiles and Clothing (ATC), which calls for MFA quotas to be progressively phased out during a 10-year transition period. Under the ATC agreement, quota growth rates will increase in three stages: 16 percent in the first three years, 25 percent in the next four years, and finally 27 percent in the final three years. During the Uruguay Round, India agreed to a package of tariff reforms that will greatly reduce tariff levels on import competing industries.

VI. Description of Textile Production in India

This section and the Textile Policy section draws heavily from the "Cotton and Textile Industries: Reforming to Compete," World Bank, Vol. I, II, 1997. The textile industry is composed of spinning, weaving, fabric processing and garment making units. Composite mills and spinning mills comprise the "organized" sector. The composite mills are vertically integrated mills covering the full array of textile processing operations, such as, spinning,

weaving, dyeing, printing, and finishing. In 1994, there were 266 composite mills producing 7% of the total cloth output in India. The spinning sector is comprised of composite mills and independent mills. In 1994-95, production capacity in the spinning industry reached 30 million spindles, 70% of which was in the private sector. Between 1981-82 and 1992-93, the production capacity of the composite mills steadily declined, while the capacity of the independent mills doubled. About one-third of the total spinning capacity is used purely for the production of cotton yarn. The remainder is used for the production of blended yarns (World Bank, Vol. I, 1997.

The "unorganized" sector consists of powerlooms, handlooms, knitting, and yarn and fabric processing units. Production is generally coordinated following two systems: the master-weaver and the loom-owner systems. In the master-weaver system, the fabric supplier, upon accepting an order from a garment manufacturer, purchases yarn and arranges for their weaving. The resulting "gray cloth" is then sent to a processing house for dyeing and printing. All these "subcontractors" are paid on a fixed per meter conversion basis. In the loom-owner system, the loom-owner coordinates all the processing activities. At present, the unorganized sector produces about 90% of the fabrics in India of which powerlooms account for 60% of the total output.

There are over 3.6 million handlooms spread in various parts of the country. The majority of the handlooms are in the state of Tamil Nadu (600,000), Andhra Pradesh (550,000), Assam (500,000), Uttar Pradesh (500,000), West Bengal (300,000), and Haryana (150,000). It is estimated that this sector employs 6-7 million people. This sector caters to the fabric requirements of the rural population and in many areas also specializes in sarees (a woman's garment consisting of a long piece of lightweight material wrapped around the body and over the

shoulder). The share of the handloom sector in total fabric output has declined from 25% in the 1980's to 2% in the 1990's. The major reason for this decline is that the sector is unable to compete with the powerloom sector for mass consumption products such as sarees, shirts, suits, and dress materials. The GOI, through various schemes, has attempted to protect the handloom sector as it is labor intensive and also works as a supplementary wage mechanism in rural areas.

The apparel industry consists of about 77,000 mainly small scale units, of types: domestic manufacturers, manufacturer exporters, and subcontractors. About 80% of the firms belong to cottage and small industry operations with 11-20 sewing machines. The apparel industry employs about 1.8 million people, mostly paid on a piece rate basis. The geographical distribution of firms display a strong regional pattern. Bombay, Delhi, and Calcutta have the largest number of apparel manufactures. Over 93% of the apparel manufacturing firms were established between 1981 and 1989.

VII. Textile Policies

Powerlooms Substituting the Composite Mills

The output of vertically integrated composite mills in India steadily declined through time both in absolute terms and in market share. A number of policies relating to mill operation, pricing, employment and technology adoption produced the current state of affairs.   In the 1950's, restrictions were imposed on loom capacity expansion and automatic loom installation for composite mills. Until the New Textile Policy in 1985, the objective of most of these restrictions was to protect employment within the mill sector as well as promote greater employment in the handloom sector. The GOI introduced price controls and dual pricing to ensure low-priced clothing. Composite mills were directed to produce coarse cloth at statutory

prices. This created a serious financial burden on weaker mills which eventually turned them into "sick mills". Until 1974, the mill sector was subject to excise duties while the handloom and powerloom sectors were exempted from paying any duties.

Powerlooms were exempted from many of the regulations and obligations that were specially made for the mill sector. Being small and scattered, they were not subject to the Factories Act, 1948, and thus were able to keep wages and overhead low. Until 1985 they benefited from lower excise taxes and lower power tariffs. The net effect of these exemptions was a lower powerloom cost of about 8-10% over the mills.

Continued Protection for the Handloom Industry

The handloom sector, because of its large labor base and strong traditional culture, shaped Indian textile policies. According to an estimate by the Office of the Textile Commissioner, about 6.9 million people were engaged in the handloom sector in India in 1995. Due to its labor intensity and the government's continued concern for both employment generation and the protection of labor, many of the restrictions imposed on the composite mill sector, and later expanded to the powerloom sector, were designed to protect the handloom industry.

The Hank Yarn Obligation

The Hank Yarn Obligation (HYO) requires spinning mills to process 50% of their deliveries in hank form, with at most 85% in counts of 40's and below. Although the HYO is exclusively intended for the handloom industry, leakages of 15 to 25% to powerlooms have been reported. On a cost basis, it is less costly for powerlooms to use dyed hank yarn than dyed cone

yarn. In addition, cotton and yarn export restrictions were imposed to ensure adequate domestic supply and keep the domestic prices of cotton and yarn, including hank yarn, at lower than world market levels.

A Decade of Liberalization: 1985-95

In the last decade, the Indian textile industry passed several reforms to increase the efficiency and competitiveness in the industry. The turning point in the development of the textile industry was the Textile Policy of 1985, which began to relax some of the more restrictive policies. In line with the general policy of liberalization, several measures have been undertaken to eliminate/reduce controls.

After long reliance on import substitution and protection of labor interests as the foundations of its strategy for textiles, the government in the mid 1980's began to recognize both the need to generate foreign exchange and to capitalize on the growing international market opportunities. Easing some of the domestic industrial regulations and trade policies, the 1985 Textile Policy included the flexibility to reduce fiscal levies on man-made fibers and yarns and intermediates used as inputs for their production. This was intended to facilitate the increased absorption of man-made and blended fabrics for which consumers displayed increased preferences.

The Statement of Industrial Policy of 1991 and the Textile (Development and Regulation) Order of 1992 eased entry into the spinning and weaving industry. The Industrial Policy of 1991 eliminated the need for mills to obtain licenses for new capacity, removed restrictions that had kept large companies coming under The Monopolies and Restrictive Prevention Act from

making new investments, and provided for some automatic clearances for foreign investment proposals.

Liberalized Tax Policy for Man-made Fibers

In 1996, Tax Policy in Textile Industry reduced the tax differentials between cotton fiber and man-made staple fibers and between cotton yarn and man-made yarn. It was the first time that the Indian government treated man-made fiber as a viable, cost effective substitute for cotton fiber and made man-made fabrics more accessible to a broader portion of the population. The reforms included (i) the reduction of the excise burden on polyester fiber yarn by 10 percentage points to 40%; (ii) merging of excise rates of synthetic filament yarns at 20%; (iii) unified excise duties on cotton, man-made staple, and filament fabrics at 10%; (iv) repealed a 15% ad valorem duty; and (v) changed the additional excise duty from 20% to 10% and cancelled the sales tax on fabrics, which had ranged from 5 to 20%. In February 1997, additional reductions further reduced excise duties on polyester filament yarn from 40 to 30% and reduction of mean excise duty on blended synthetic yarn to 18%. Although these reforms will reduce price disparities between cotton and man-made products, existing duty levels continue to hinder the industry's flexibility to respond to changing domestic and international trends in consumer preferences.

Policies Affecting Industrial Labor

A multitude of labor regulations, under The Factories Act of 1948, discriminated against the organized mill sector. The Factories Act is applicable to all establishments employing 10 or more workers in processes which use power or 20 or more workers in processes which do not use power. These regulations vested strong power in labor unions and fostered employment

rigidities that discouraged investments in more efficient and capital intensive technologies, resulting in significantly increased labor costs in the mill sector. The difference in wages between organized and unorganized sectors range from 50 to 60%.

VIII. Summary and Conclusions

The cotton and textile industries are very important sectors of India's economy, and India is one of the dominant countries in the global economies of cotton and textiles. Within the general setting, India's policies and programs have historically held internal cotton prices in India low in order to subsidize the input costs of its textile manufacturing sector. The Government of India has done this with a complex and intricate network of programs at both national and state levels. The central components of these programs are summarized in this report.

While the basic goals of the policies have likely been achieved, the side effects of the policies are not well understood. Have cotton producers' losses been greater than or less than textile sector benefits? Have the trade effects generally been positive or negative? Have the policies fostered or hindered economic growth in India? What have been the magnitude of impact of these policies on other countries?

These questions have not been answered in this report. Attempts to gather the data with which to answer these questions empirically were not successful; detailed data on the extensive set of policies and programs were not available for enough years to allow econometric estimation. However, pieces of empirical evidence that are available are consistent with the conceptualization of the problem.

Prior studies of the Indian cotton and textile sectors are not fully consistent in their implications toward these questions. Kondo, for example, found that the cotton export quota has

lowered internal cotton prices by about 14%, while the World Bank (1997) study concludes that the export quotas have minor impacts on the cotton and textile industries. Given the conceptual analysis presented here, the World Bank conclusion does not appear plausible. However, the overall conclusion still is that additional detailed empirical analysis is needed.

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