

ANALYSIS OF PRODUCTION AND PRODUCTIVITY

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3.0 INTRODUCTION

Production is the process by which input is converted into output. Growths of economy of a country today are much influenced by production activities of the individual sector of that country. Non- achievements of targets of production and under utilisation of capacity have adverse effects on profitability of the undertaking. "Committee on Public Undertaking (COPU) in India, in this context had recommended that public undertakings should, therefore, do all in their power to achieve optimum level of production and thus contribute to the achievement of country's goal of achieving self reliance."¹

Developmental strategy of a country is a function of relative economic performance of all sectors and the sectoral performance depends upon the efficiency with which the resources are employed to achieve the given targets. Thus productivity of the factors of production determines the growth path of an industrial enterprise.² Productivity improvement is considered vital to achieve several corporate objectives. Measurement of productivity therefore, provides an important tool and a yardstick. It helps to identify problem areas in order to take corrective measures towards planning, redeployment of resources and other management controls to achieve better performance. It also provides measures for comparisons between the performance and the non-performance; between the performance in one period to another or between organisations or plants of an organisation.³

An attempt has been made in this chapter to analyse the production performance and productivity of the cotton textile mills under public and private Sectors in Bangladesh over the period of 1987-88 to 1996-97.

3.1 ANALYSIS OF PRODUCTION PERFORMANCE

In this section we analysed the production performance of cotton textile mills under public sector vis-à-vis private sector during the period under study and also explained the observed differences between the two sectors. From Appendix-1, it can be noted that in almost all the public sector mills the total production showed a declining trend since 1992-93. In the proceeding years Mills-A₃, A₄, A₅, A₇ and A₈ could be able to increase their production while in the other cases the total production fluctuated.

In private sector, a clear increasing trend was observed in Mills- B₇, B₈, B₉ and B₁₀ through out the period and it was observed up to 1994-95 in case of Mills- B₅ and B₆. In other mills a mixed trend could be said to have been established all over the period. The annual average production levels during 1987-88 to 1991-92 and 1992-93 to 1996-97 along with percentage change in production over these two periods for each mill under public and private sector and sector level trends in production are given in Table-3.1 and 3.2. The sectoral trend values of production using least square method are also presented in Figure-1.

The data presented in table-3.1 (on next page) tells us that average production went down in all the public sector mills during the second half of the study period. The drop in production was restricted to below 20% only in case of Mill- A₇. The average production decreased by 20% to 30% in case of Mills-A₁, A₃ and A₁₀ while it decreased by more than 30% in Mills-A₂, A₅, A₆, A₈ and A₉ during 1992-93 to 1996-97. The situation was worst in Mill-A₅ in which the production went down by 55.52% during the same period.

Table-3.1: Production Trends in Public and Private Sector: 1987-88 to 1996-97

[Figure in Lakh kg.]

PUBLIC SECTOR				PRIVATE SECTOR			
Mills	Average Production (1987-88 to 1991-92)	Average Production (1992-93 to 1996-97)	Percentage change	Mills	Average Production (1987-88 to 1991-92)	Average Production (1992-93 to 1996-97)	Percentage change
A ₁	18.15	13.39	(26.23)	B ₁	7.91	22.72	187.23
A ₂	14.62	10.15	(30.57)	B ₂	15.04	19.00	26.33
A ₃	13.15	9.56	(27.30)	B ₃	18.32	21.72	18.56
A ₄	8.24	5.35	(35.07)	B ₄	39.50	56.58	43.20
A ₅	6.07	2.70	(55.52)	B ₅	6.52	8.77	34.51
A ₆	10.08	6.65	(34.03)	B ₆	8.39	18.68	122.65
A ₇	20.50	17.00	(17.07)	B ₇	34.74	91.13	162.32
A ₈	11.09	7.31	(34.08)	B ₈	9.29	17.36	86.87
A ₉	7.22	4.42	(38.78)	B ₉	NA	24.79	NA
A ₁₀	11.05	8.05	(27.15)	B ₁₀	NA	30.11	NA

Source : Compiled from Official Records of BTMC and Member Mills of BTMA; necessary calculations have been made.

Notes : i) Figures in brackets indicate negative changes, ii) NA = Not Applicable

The relative superiority in the production performance was maintained in all the private sector mills. All the mills succeeded in increasing their production during 1992-93 to 1996-97 and no mill suffered a fall in production during the same period. As we can note from the table, after denationalisation Mills-B₁, B₂, B₃, and B₄ achieved better performance in terms of production under private ownership vis-à-vis the performance of the mills under public sector. The average

production was 22.72 lakh, 19.00 lakh, 21.72 lakh and 56.58 lakh in case of Mills- B₁, B₂, B₃ and B₄ respectively during 1992-93 to 1996-97 recording 187.23%, 26.33%, 18.56% and 43.20% increase respectively over 1987-88 to 1991-92. Mills-B₅, B₆, B₇ and B₈ also achieved 34.51%, 122.65%, 162.32% and 86.87% increase in production respectively during 1992-93 to 1996-97 over their average production during 1989-90 to 1991-92. The average production during 1992-93 to 1996-97 were 24.79 lakh kg and 30.11 lakh kg in Mills- B₉ and B₁₀ in which commercial production was started in the year 1992-93.

Table-3.2: Sectoral Trends in Production of Yarn (32s average counts): 1987-88 to 1996-97.
[Figure in lakh kg]

Years	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1987-88 to 1991-92	Average 1992-93 to 1996-97	Percentage change
Average production in public sector	10.02	11.08	12.70	13.15	13.14	11.54	9.87	8.85	8.14	3.90	12.02	8.86	(29.62)
Average production in private sector	17.53	18.41	17.62	17.33	21.05	25.30	29.20	31.25	32.37	37.32	18.39	31.09	69.06

Source : Compiled from Official Records of BTMC and Member Mills of BTMA;

Note : i) Figure in brackets indicates negative changes.

Table-3.2 brings out the trends in production in public sector vis-à-vis private sector textile mills. The average annual production in all the public sector mills taken as a whole decreased by (29.62%) during 1992-93 to 1996-97 over 1987-88 to 1991-92. Production of yarn in these mills dropped from 12.02 lakh kg. annually during 1987-92 to 8.46 lakh kg annually during 1992-97. On the other hand annual average production in all the private sector mills taken as a whole rose from 18.39 lakh kg to 31.09 lakh kg over the same period showing an increase of 69.06%. Taking individual years, we notice a continuous decline in

average production since 1991-92 in public sector mills. The average production in these mills fell down to 3.90 lakh kg during 1996-97 registering (61.08%) decrease over 1987-88. But an opposite picture was shown in performance of private sector mills. A continuous increase in production since 1991-92 was witnessed. The average production in all the private sector mills taken together went up to 37.32 lakh kg in 1996-97 from 17.53 lakh kg in 1987-88 showing an increase of 112.89%. In terms of production performance therefore, private sector mills maintained superiority as compared to their counterparts in the public sector.

3.1.1 Trends in the Efficiency in Production :

Production achieved is a partial indicator of performance. The level of efficiency at which production is carried out is another important indicator of performance.⁴ It needs to be studied if one intends to obtain a more complete picture of performance trend. The data on efficiency level was scanty in both the sectors. Available information on this indicator is “per spindle per shift production (PSPS) in grams (32s average counts)” from public sector but year-wise information as to per spindle per shift production in grams could not be gathered from all the private sector mills. Different mills calculate per spindle per shift production in different counts and in different units of measure. Moreover, some mills did not provide us ready data on this indicator but a formula was given us by them for calculating this. Thus, per spindle per shift production of those private mills whose data was not available has been calculated by us using the following formula suggested by them.

Per Spindle Per Shift Production in Grams (32s average counts):

$$\frac{\text{Annual production in Kg}}{\text{No. of spindles operated X No. of working days X 3 (shift)}} \times 100$$

Table 3.3 : Per Spindle Per Shift Production (32s-average counts)

[in gram]

Mills	Years													
	1987-88	1988-89	1989-90	1990-91	1991-92	Average 1987-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1992-97	% change over 1987-92	
PUBLIC SECTOR	A ₁	98.46	99.50	92.10	91.44	85.62	93.42	83.89	83.32	79.10	70.87	79.89	79.41	(14.97)
	A ₂	86.21	84.82	80.23	75.29	75.63	80.44	76.23	81.59	74.16	68.79	63.29	72.81	(09.49)
	A ₃	68.55	71.27	73.47	71.16	71.04	71.10	72.19	77.16	70.82	70.21	71.38	72.35	01.76
	A ₄	68.22	70.21	72.92	76.53	78.97	73.37	78.08	80.27	79.34	76.05	76.46	78.04	0.6.36
	A ₅	64.64	62.30	58.75	62.34	60.85	61.78	57.33	60.14	75.18	75.46	59.92	65.61	06.20
	A ₆	66.57	64.84	69.32	81.45	85.78	72.51	81.78	82.85	82.42	83.17	86.11	83.27	14.84
	A ₇	76.33	71.24	87.15	91.43	89.79	83.25	89.09	85.57	89.21	88.72	89.17	88.35	06.13
	A ₈	75.42	68.04	67.12	69.22	65.98	69.16	68.61	68.77	67.51	66.57	66.37	67.57	(02.30)
	A ₉	81.90	82.02	79.70	78.82	80.82	80.65	76.62	79.29	74.10	70.32	65.85	73.24	(09.19)
	A ₁₀	66.99	70.39	74.71	67.70	68.55	69.67	91.90	72.65	70.44	65.26	55.82	67.21	(03.53)
	Ave	75.33	74.46	75.55	76.54	76.30	75.54	75.57	77.16	76.23	73.54	71.43	74.79	(00.99)
PRIVATE SECTOR	B ₁	79.66	68.89	72.01	57.55	70.02	69.63	76.26	68.89	67.19	62.65	76.26	70.25	00.89
	B ₂	64.91	63.90	67.18	59.49	63.19	63.73	66.12	69.75	74.70	71.53	64.96	69.41	08.91
	B ₃	76.73	78.25	82.35	78.30	77.91	78.71	79.84	74.33	77.89	79.91	77.44	77.88	(01.05)
	B ₄	100.66	95.48	126.74	81.13	85.31	97.86	115.59	115.48	107.40	105.10	100.96	108.91	11.29
	B ₅	-	-	NA ₁	53.49	45.65	49.57	56.25	67.38	84.15	77.28	53.78	67.77	36.72
	B ₆	-	-	82.67	83.66	100.67	89.00	60.83	85.80	88.88	93.99	85.50	83.00	(06.74)
	B ₇	-	-	87.30	100.36	109.69	99.12	129.46	147.87	128.89	140.46	138.64	137.06	38.28
	B ₈	-	-	63.15	58.35	57.17	59.56	47.50	66.74	78.92	78.07	92.71	72.79	22.21
	B ₉	-	-	-	-	NA ₁	NA ₂	108.29	104.34	83.48	103.87	235.00	127.00	NA ₂
	B ₁₀	-	-	-	-	NA ₁	NA ₂	154.95	148.68	154.61	133.89	142.91	147.01	NA ₂
	Ave	80.49	76.63	83.06	71.54	76.20	75.90	89.51	94.93	94.61	94.68	106.82	96.11	26.63

Source : Compiled from Official Records of BTMC and Member Mills of BTMA; necessary calculations have been made.

Notes : i) '-' indicates the period before establishment and commencement of production,

ii) NA₁= Not Available; NA₂= Not Applicable,

iii) Figures in Brackets indicate negative changes.

The relevant figures for the public and private sectors are presented in Table-3.3. We observed from the table that efficiency measured in terms of per spindle per shift production of yarn fell down in five mills and improved in the other five mills under public sector during 1992-97 over 1987-92. During 1987-92 Mills-A₅, A₈ and A₁₀ had an average per spindle per shift production below 70 grams, it was in the range of 70-80 grams in case of Mills-A₃, A₄ and A₆ and the remaining four mills namely A₁, A₂, A₇ and A₉ achieved PSPS production levels exceeding 80 grams. In contrast, during 1992-97 among the mills having PSPS production below 70 grams, Mill-A₅ had an increase in production but Mills-A₈ and A₁₀ had a decrease in it. Five mills namely Mills-A₁, A₂, A₃, A₄ and A₉ achieved a level in a range of 70-80 grams but Mills-A₁, A₂ and A₉ had a decrease while Mills-A₃ and A₄ did better. Mills-A₆ and A₇ had a moderate performance, their average PSPS production of yarn was more than 80 grams having 14.84% and 06.13% increase respectively over 1987-92. The Public sector average taking all the mills as a whole was 74.79 grams during 1992-97 registering an insignificant decrease (0.99%) as compared to 75.54 grams during 1987-92.

On the other hand, the private sector mills did much better during 1992-97 although their performance judged by PSPS production during 1987-92 was not so better as compared to public sector mills. The average production per spindle per shift taking all the mills together was higher than public sector average up to 1989-90 but in 1990-91 and 1991-92 it was lower than public sector average. During 1987-92, among the eight mills under review, four mills (B₁, B₂, B₅ and B₈) had an average per PSPS production below 70 grams, three mills (B₄, B₆ and B₇) achieved a level in the range of 80 to 100 grams and one mill (B₃) had 78.71 grams. The private sector average PSPS production during 1987-92 was 75.90 grams, a slight higher than 75.54 grams of public sector, while it was 96.11 grams during 1992-97 registering 26.63% increase over 1987-92, much higher than 74.79 grams of public sector. During this period, among ten mills under review

five mills (viz., B₄, B₆, B₇, B₉ and B₁₀) achieved PSPS production levels between 80-150 grams. Three mills (B₁, B₃ and B₈) achieved 70-80 grams and one mill (B₂) had below 70 grams.

3.1.2 Capacity Utilisation :

Capacity utilisation is another index of production efficiency. The profitability of any industry depends to a great extent on the rate of capacity utilisation. "The term capacity utilisation has however frequently been used to mean different things both at micro and macro levels and the same has been measured in a number of ways.⁵

The choice of appropriate measure of capacity utilisation depends on the purpose of the study and the availability of data. Our present purpose is to look into the efficiency of production level of the textile mills under public and private sector. In this case achieving a high rate of capacity utilisation reflects high efficiency of an enterprise or industry as a whole. Due to non-availability of mill level data on installed capacity of production for both the sectors, the extent of capacity utilisation could not be measured in terms of physical output (production). Hence, we measured and analysed the same in terms of spindles by dividing the spindles actually operated by the installed spindles.

Table-3.4 provides the information on the levels and trends of capacity utilisation in the textile mills under public and private sectors during the period 1987-88 to 1996-97.

Table 3.4: Capacity Utilisation in the Cotton Textile Industry

[in percentage]

Mills		Years									
		1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
PUBLIC SECTOR	A ₁	85	89	88	92	87	88	81	71	57**	44**
	A ₂	75	85	82	84	80	78	82	64	64	23
	A ₃	67	78	88	91	90	89	74	55	58	15
	A ₄	86	88	86	85	86	76	49	63	69	39
	A ₅	85	86	91	89	89	71	32	49	38	16
	A ₆	77	82	83	94	92	76	61	62	39	15
	A ₇	82	71*	81**	87**	87**	84**	52**	56**	61**	42**
	A ₈	64	71	76	76	78	67	51	57	55	12
	A ₉	85	84	76	76	78	68	67	60	51	15
	A ₁₀	65	73	83	72	69	76	79	63	36	05
	Ave	77	81	83	85	84	77	63	60	53	23
PRIVATE SECTOR	B ₁	96	94	98	84	42*	34**	68**	71**	54**	50**
	B ₂	91	93	92	80	85	92	92	95	94	92
	B ₃	87	93	91	85	84	91	88	90	93	83
	B ₄	87	88	88	87	87	88	96	96	93	88
	B ₅	-	-	NA	100	100	100	100	100	100	100
	B ₆	-	-	97	98	99	98	99	98	98	98
	B ₇	-	-	100	100	84*	100	100	90*	100	68*
	B ₈	-	-	80	82	85	88	87	88	88	87
	B ₉	-	-	-	-	NA	91	94	62*	80	88
	B ₁₀	-	-	-	-	NA	84	96	92	92	92
	Ave	90	92	92	90	83	87	92	88	89	85

Source: Official Records of BTMC and Member Mills of BTMA.

Notes : i) '-' indicates the period before establishment and commencement of production,

ii) NA= Not Available;

iii) * Indicates initial year of expansion programme; ** average capacity utilisation of unit 1 & 2.

On the basis of above table, the rise or fall in the rate of capacity utilisation of the units under study is as under:

Yearwise Trend Analysis

- (i) **1988-89:** The year 1988-89 can be termed as a year of high rated utilisation of capacity in both the sectors. The rate of capacity utilisation improved in all the cases under public sector except the Mill-A₇ in which the rate decreased over 1987-88 due to initial year of its second unit. The average rate of capacity utilisation for the public sector improved to 81% as against 77% in 1987-88. In the private sector, only four mills namely B₁, B₂, B₃ and B₄ were in operation during 1988-89 and the rate of capacity utilisation increased in all the cases except Mill-B₁ which had a decrease in capacity utilisation.
- (ii) **1989-90:** This year was also year of high utilisation of capacity. The ratio of capacity utilisation improved in most of the cases. Mills having an increase were A₃, A₅, A₆, A₇, A₈ and A₁₀. Mills having a decrease were A₁, A₂, A₄ and A₉. The average rate of capacity utilisation in the public sector was 83% as against 81% in 1987-88. On the other hand, out of four old mills, the rate increased in two mills namely B₁ and B₄ where as the rate decreased in two mills namely B₂ and B₃. The three new mills (B₆, B₇ and B₈) started operation in the years and their capacity utilisation rate were 97%, 100% and 80% respectively. The average rate of seven mills was 92%, same as was in 1988-89.
- (iii) **1990-91:** There was an improvement in capacity utilisation in public sector but a decline in the private sector. Seven public mills had an increase whereas three mills had a decline in capacity utilisation. Among the eight private mills under review, the rate decreased in four mills and increased in two mills while two mills (B₅ and B₇) were in 100% utilisation of

capacity. The average rate of capacity utilisation for the public sector was 85% over 83% in previous year while it was 90% for the private sector over 92% in previous year.

- (iv) **1991-92:** there was an overall decline in capacity utilisation. The public sector average fell down to 84% as against 85% in the previous year; the private sector average fell down to 83% as compared to 90% in the previous year. Out of ten public mills the rate rose in three mills but declined in five mills and remained same in two mills over previous year. While on the other hand, out of eight private mills, the rate of capacity utilisation increased in three mills and declined in three mills while in two mills the rate remained the same as it was in previous year.
- (v) **1992-93 & 1993-94:** The years can be termed as years of low capacity utilisation for public sector. The rate fell down in most of the cases reviewed during these years. Eight mills had a decline in the rate of capacity utilisation while two mills had an increase in the rate. The average rates for the public sector fell down to 77% and 63% respectively as against 84% in 1991-92. In private sector, the average rate of increased to 87% in 1992-93 and 92% in 1993-94 respectively. The rate decreased in only two mills. Mills- B₉ and B₁₀ started production in 1992-93 and their rate of capacity utilisation increased to 94% and 96% respectively in 1993-94 as against 91% and 84% respectively in 1992-93.
- (vi) **1994-95:** There was an overall decline in capacity utilisation in textile industry. The public sector average rate fell down to 60% and in private sector it declined to 88% as compared to 63% and 92% respectively in 1993-94. The rate of capacity utilisation decreased in five public mills. Among the four private mills having decline, the rate declined in two mills (B₇ and B₉) due to initial year of expansion programme.

- (vii) **1995-96:** The private sector had a higher average rate of capacity utilisation as compared to the previous year average. The public sector had a decline. The private sector average increased to 89% as against 88% in 1994-95, where as the public sector average went down to 53% as compared to 60% in 1994-95. The rate decreased in six public mills and increased in four mills. Whereas it decreased in three private mills, increased in three mills and it remained the same in four mills, as it was in the previous year.
- (viii) **1996-97:** There was a massive decline in capacity utilisation in case of all the public mills. The average rate went down to only 23% as against 53% in 1995-96. The private sector average rate of capacity utilisation fell down to 85% as compared to 89% in 1995-96.

There was an overall better performance in capacity utilisation in private sector as compared to that of public sector. The sectoral differences in capacity utilisation may also be presented in Fig. 2.

3.1.3 Reasons for Spindles Stoppage :

There are innumerable factors, which cause under utilisation of capacity in the textile industry in Bangladesh. From a study conducted by Rashid and Karim⁶ the following main factors can be tabulated as responsible for the existence of idle capacity in textile mills under the public sector:

1. Power failure / Low voltage
2. Labour absenteeism
3. Machinery break down and Maintenance
4. Shortage of Cotton and Spares
5. Shortage of back process

6. Shortage of trained and Specialised workers
7. Shortage of working capital
8. Labour strikes
9. Low demand and market restrictions
10. Count change

The present study brought out the following main reasons responsible for idle capacity existed in the selected textile mills under public and private sector.

Public Sector	Private Sector
1) Workers absenteeism	1) Power failure
2) Power failure	2) Shortage of spare parts
3) Machinery breakdown	3) Maintenance of machinery
4) Shortage of spare parts	4) Machinery breakdown
5) Shortage of raw cotton	5) Workers absenteeism
6) Count change, and	6) Count change and
7) Others (e.g., shortage of back process, labour strike, religious purpose, etc.)	7) Others (e.g., shortage of back process, religious purpose, etc.)

In most of the mills under public and private sector, power failure contributed most to spindle under utilisation. The frequency of power failure increased in summer with load shedding. Absenteeism of workers was another major factor in case of public sector mills as well as in some private sector mills. The rate of absenteeism increased depending on the working condition, climate,

season (e.g. festive season), etc. Machinery breakdown and shortage of spare parts also contributed a significant part to spindle under utilisation in all the public sector mills vis-à-vis in some private sector mills. In case of some private sector mills such as B₁, B₅, B₆, B₇ and B₉, there was no idle spindle caused by machinery breakdown during the study period. This might be due to their new and modern machines.

3.2 MEASUREMENT OF PRODUCTIVITY

3.2.1 Methodology :

In the productivity measurement all the physical quantities are expressed per factor unit. The productivity can be measured in (i) *gross output per factor unit*; (ii) *gross value of output per factor unit* and; (iii) *gross value added per factor unit*. Per factor unit means production per unit of a factor or of all factors production corresponding to partial and total factor productivity respectively⁷. To understand productivity changes in the textile industry in Bangladesh we considered only partial productivity measures.

3.2.2 Labour Productivity :

Human skill is very crucial to total input resources. There is thus the need to harness and use human skill to its optimal capacity. Labour productivity is an important component to determine the operational efficiency of an industry. It can be measured in:

- i)
$$\frac{\text{Total Output}}{\text{Labour Input}}$$
- ii)
$$\frac{\text{Value of Output}}{\text{Labour Input}}$$
- iii)
$$\frac{\text{Gross Value Added}}{\text{Labour Input}}$$

Labour Input: The concept of labour input for productivity refers to labour time expended in an establishment of an industry either in terms of man hours or the number of workers⁸. If the number of workers is used as a measure of labour input, changes in the average work-day and work-week are not accounted for. It is suggested that the entire number of man-hours worked gives a more accurate measure of labour input⁹. In the present study, the working hours lost could not be gathered from both the sector, the number of man-days is used as a measure of labour input. Man-days used in our labour productivity measure are those worked by direct and indirect workers in factories.

Value Added: The term 'Value Added' usually denotes the difference between the values of the input and output. According to Labour Bureau (1966), the gross value added in real terms is normally obtained by deducting the value of raw materials, fuel and powers etc. consumed from the value of gross output in the subsequent year, both are taken at their respective prices in the base period. In our study, gross value added has been calculated by deducting total material input i.e., raw materials, power and fuel, and stores and spares from gross value of output as it is done by BTMC, as well as some member mills of BTMA.

The information regarding labour productivity in the public and private sector textile mills are furnished in the following tables. In order to know the trend in labour productivity of both public and private sector, index numbers with 1987-88 as the base year are given in brackets.

It can be observed from Table-3.5 that although yarn production per man-day fluctuated from year to year but the overall trend was towards decrease in almost all the public sector mills. The overall trend of labour productivity in terms of production was towards increase in almost all the private sector mills. The average yarn produced per labour per day during 1987-96 was below 4 kg in three public sector mills, it was 4 to 5 kg. in six mills. While only one public sector mill achieved above 5 kg. per labour per day. The average labour productivity was the

Table 3.5 : Labour Productivity in Terms of Production.

[Figure in Kg.]

Mills	Years	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1987-97	AAG R
PUBLIC SECTOR	A ₁	4.71	5.14	4.58	4.80	4.27	4.41	4.03	4.08	2.90	1.78	4.07	-8.85
	A ₂	6.42	6.76	6.37	5.95	6.08	6.08	7.33	5.79	5.58	1.88	5.82	-8.36
	A ₃	4.14	5.12	6.69	5.72	5.85	6.20	5.50	4.47	4.44	1.15	4.93	-6.30
	A ₄	3.94	4.17	4.21	4.41	4.60	4.32	3.78	5.00	5.60	3.30	4.33	+0.05
	A ₅	3.80	4.05	3.64	3.68	3.91	3.66	2.12	3.07	3.07	1.13	3.21	-7.00
	A ₆	3.72	3.91	5.75	5.47	5.42	4.90	4.22	4.68	3.06	1.19	4.23	-6.88
	A ₇	3.87	1.30	2.72	3.08	3.18	2.14	2.15	2.37	2.55	1.86	2.52	+1.98
	A ₈	4.52	4.59	4.87	5.02	4.92	4.48	3.93	4.29	4.21	0.91	4.17	-9.29
	A ₉	5.38	5.53	4.70	4.73	4.97	4.09	4.23	4.01	2.99	0.56	4.12	-14.74
	A ₁₀	3.90	4.64	5.73	4.63	3.99	4.68	5.22	4.23	2.36	0.25	3.96	-12.70
	Ave	4.44	4.52	4.93	4.75	4.72	4.50	4.25	4.20	3.68	1.40	4.14	-8.79
Index	100	101.80	111.04	106.98	106.31	101.35	95.72	94.59	82.58	31.53			
PRIVATE SECTOR	B ₁	2.94	3.60	4.03	2.90	2.57	4.39	14.04	14.93	12.94	26.12	8.85	42.27
	B ₂	4.49	4.32	4.80	3.71	4.18	4.96	6.38	6.99	6.64	5.58	5.25	4.35
	B ₃	4.44	5.14	5.33	4.80	4.84	5.64	5.59	6.69	7.47	6.13	5.61	4.38
	B ₄	4.74	4.55	4.58	5.13	4.60	6.30	6.60	6.23	6.19	5.97	5.49	3.36
	B ₅	-	-	NA	12.03	10.81	13.32	16.85	22.99	23.19	9.45	15.52	2.94
	B ₆	-	-	6.82	6.75	8.92	5.95	8.38	7.74	8.15	7.93	7.58	4.80
	B ₇	-	-	13.27	13.37	13.19	17.43	20.12	15.58	14.19	12.00	14.89	0.01
	B ₈	-	-	3.58	3.78	4.27	3.63	5.04	6.16	6.02	3.35	4.48	2.57
	B ₉	-	-	-	-	NA	9.66	9.99	6.39	10.21	23.14	11.88	38.45
	B ₁₀	-	-	-	-	NA	17.41	19.34	20.83	15.55	11.30	16.89	-8.47
	Ave	4.15	4.40	6.06	6.56	6.67	8.87	11.23	11.45	11.06	11.14	9.64	12.50
Index	100	106.02	146.02	158.07	160.72	213.73	270.61	275.90	266.51	268.43			

Source : Compiled from Official Records of BTMC and Member Mills of BTMA.

Notes : i) '-' indicates the period before establishment and commencement of production, ii) NA= Not Available;

iii) Labour productivity in terms of production = Gross Output/ Labour Input; Labour Input = Man-days.

iv) AAGR = Annual Average Growth Rate.

lowest in Mill-A₇ while it was the highest in Mill-A₂. Annual Average Growth Rate (AAGR) was negative in eight mills while two mills had positive growth rate. The index of average labour productivity in terms of production taking all the public sector mills decreased from 100.00 to 31.53 from 1987-88 to 1996-97. In between the period till 1989-90 there was witnessed an upward trend but then a down word trend was established till the last. On the other hand, average yarn produced per labour per day during 1987-96 was below 4 kg in no private mills, it was below 5 kg in only one mill, five mills achieved average labour productivity in the range 5-10 kg, the remaining four private mills achieved productivity in the range 10-20 kg. The average labour productivity in terms of production taking all the private sector mills as a whole was 9.64 kg, more than double from the corresponding figure of public sector. The increase in average labour productivity, in all the private sector mills from 1987-88 to 1996-97 was remarkably significant, as the index rose from 100.00 to 268.43 during this period. AAGR was found as positive in all the private sector mills except one. Mill-B₁ had the highest AAGR (42.27) followed by B₉ (38.45) among all the mills under both sectors.

In Table-3.6, the data about labour productivity in terms of value of output in the cotton textile mills under public and private sectors are furnished. The value of output per man-day decreased in 1996-97 over 1987-88 in all the public mills except one. In between the period, neither upward nor downward trend was established. Only mills A₃ and A₈ showed a mixed trend towards labour productivity over the period. In these cases, an upward trend was observed up to 1991-92 but it turned to be downward thereafter. The average value of output per man-day was in the range Tk 200-400 in case of five mills, while the same was in the range Tk 400-500 in case of four mills and one mill achieved the same above Tk 500. The index of average labour productivity in all the public sector mills taken together increased to 129.82 in 1991-92 showing a continuous upward trend

Table 3.6 : Labour Productivity in Terms of Value of Output.

[Figure in Taka]

Mills	Years	1987- 88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1987-97	AAGR
	PUBLIC SECTOR												
A ₁		463.14	431.07	500.31	508.60	524.55	463.37	440.75	451.73	327.14	171.07	428.17	-8.38
A ₂		500.64	577.24	562.25	521.46	582.31	507.58	653.78	592.33	609.38	226.80	533.38	-4.02
A ₃		324.97	414.69	545.99	478.57	555.48	537.87	463.37	487.73	520.17	128.98	445.78	-1.92
A ₄		304.76	355.32	371.52	390.60	459.39	379.58	355.39	531.38	673.42	347.60	416.90	+5.34
A ₅		309.08	383.32	343.73	336.91	422.04	353.50	223.57	346.84	391.16	125.95	323.61	-1.77
A ₆		299.22	345.98	509.04	467.16	526.09	430.12	388.05	507.35	357.43	144.11	397.46	-4.73
A ₇		299.66	95.24	239.90	273.01	326.14	259.78	181.17	256.89	311.63	206.90	245.03	+10.65
A ₈		309.58	322.46	374.32	391.82	404.67	349.69	306.61	419.62	450.32	110.58	343.97	-3.22
A ₉		450.20	507.28	482.23	477.87	504.63	366.01	354.25	415.98	343.64	117.48	401.96	-9.34
A ₁₀		308.78	376.82	469.38	404.96	329.28	385.38	452.80	448.18	254.10	40.26	346.99	-8.86
Ave		357.00	380.94	439.87	425.10	463.46	403.29	381.97	445.80	423.84	161.97	388.33	-4.49
Index		100	106.71	123.21	119.08	129.82	112.97	106.99	124.87	118.72	45.73		
PRIVATE SECTOR													
B ₁		349.90	426.59	506.55	392.08	522.10	1246.28	2148.05	1873.85	1696.93	2909.15	1207.15	+34.61
B ₂		362.99	355.74	391.71	315.57	353.02	416.27	494.87	613.88	617.19	568.72	449.00	+6.00
B ₃		440.68	601.17	675.18	669.69	728.17	851.91	843.42	1179.16	1407.89	1136.16	853.34	+12.51
B ₄		362.74	396.03	374.05	409.55	366.42	499.70	564.31	718.43	769.37	629.02	508.96	+7.56
B ₅		-	-	NA	1204.79	1112.76	1255.55	1519.15	2601.03	2752.47	1101.35	1649.59	+7.21
B ₆		-	-	592.29	628.55	821.10	532.47	737.79	784.83	940.56	873.88	738.93	+8.47
B ₇		-	-	1254.08	1803.99	1469.74	1874.65	2205.69	2302.89	2175.83	1925.14	1876.50	+8.27
B ₈		-	-	476.69	502.56	570.00	570.49	654.57	865.92	932.56	461.66	629.31	+3.31
B ₉		-	-	-	-	NA	1362.34	990.41	831.43	1086.39	1067.33	1067.58	-3.61
B ₁₀		-	-	-	-	NA	1672.19	2220.14	2932.39	2977.44	1708.49	2302.13	+5.94
Ave		379.08	444.88	610.08	740.85	742.91	1028.19	1237.84	1470.38	1535.66	1238.09	1128.25	+15.43
Index		100.00	117.36	160.94	195.43	195.98	271.23	326.54	387.88	405.10	326.60		

Source : Compiled from Official Records of BTMC and Member Mills of BTMA; necessary calculations have been made.

Notes : i) '-' indicates the period before establishment and commencement of production, ii) NA= Not Available; iii) Labour productivity in terms of value of output = Value of Gross Output/ Labour Input; Gross value of output = Value of Total Production add changes in stocks to sales. iv) AAGR = Annual Average Growth Rate.

but it stopped down to 112.97 in 1992-93 and again fell notably to 106.99 in 1993-94. The index further increased during 1994-95 but considerably deteriorated later and it was at the bottom at 45.37 during 1996-97, the last year of the study.

But in the case of private sector, the increase in the average labour productivity from the year 1987-88 to 1995-96 was remarkably significant as the index rose from 100 to 405.10 during this period. Although the index fell down notably to 326.60 in 1996-97, it was more than two times higher than the corresponding figure of public sector. Considering individually, in no cases average value of out put per man-day was less than Tk 400, it was in the range Tk 400-500 in case of only one mill. However, the same was above Tk. 500 in the remaining nine mills. The maximum average labour productivity of Tk. 2302.13 was achieved by newly established mill B₁₀, followed by B₇, B₅, B₁ and B₉ of Tk 1876.50, Tk 1649.59, Tk 1207.15 and Tk 1067.58 respectively. AAGR also recorded relatively better position in private sector mills as against those in public sector mills. Positive AAGR was found in all the mills except one while it was negative in all the mills under public sector except two.

In Table-3.7, the data pertaining to labour productivity in terms of value added of the cotton textile mills under public and private sector are presented. Most important inference that can be drawn on perusal of the above table is that value added per man-day registered a fluctuating trend in case of all the mills under public sector, but during the later years from 1995-96 to 1996-97, it registered a falling trend when the labour productivity showed a substantial decline in all cases over 1987-88. The average labour productivity achieved during 1987-88 to 1996-97 was less than Tk 100 in three mills (A₅, A₇ and A₁₀), it was in the range Tk 100-150 in case of four mills (A₄, A₆, A₈ and A₉), while three mills such as A₁, A₂ and A₃ had it above Tk 150. The average labour productivity in the combined position of all the public mills recorded a fluctuating trend over

Table 3.7 : Labour Productivity in Terms of Value Added.

[Figure in Taka]

Mills	Years	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1987-97	AAGR
PUBLIC SECTOR	A ₁	203.78	164.63	241.55	216.78	263.32	190.36	152.27	158.44	64.64	3.27	165.90	-17.68
	A ₂	227.68	278.44	246.91	215.59	233.79	153.28	194.51	188.42	74.48	25.46	183.86	-14.47
	A ₃	118.00	173.35	218.01	154.88	198.41	206.18	158.06	138.08	124.51	31.28	152.08	-4.99
	A ₄	92.42	154.93	144.88	123.50	171.37	135.11	138.90	177.06	162.82	50.62	135.16	+1.92
	A ₅	99.67	157.15	122.25	102.00	137.75	115.20	73.47	92.43	63.76	13.97	97.77	-9.11
	A ₆	88.65	136.31	183.37	146.73	205.61	156.02	116.90	165.93	63.16	33.57	129.63	-0.84
	A ₇	87.42	36.03	100.41	99.36	134.85	82.88	61.43	78.93	61.83	30.58	77.37	+5.16
	A ₈	139.85	128.69	135.65	119.15	147.11	119.89	96.83	129.43	89.01	24.41	113.00	-11.02
	A ₉	172.09	212.05	178.03	135.95	154.16	122.39	116.47	119.07	70.68	15.37	129.63	-16.13
	A ₁₀	89.49	137.13	183.38	84.79	46.56	89.91	110.44	140.71	11.81	4.82	89.90	-2.15
	Ave	131.91	157.87	175.44	139.87	169.29	137.12	121.93	138.85	78.67	23.34	127.43	-10.92
	Index	(100.00)	(119.68)	(133.00)	(106.03)	(128.34)	(103.95)	(92.43)	(105.26)	(59.64)	(17.69)		
PRIVATE SECTOR	B ₁	126.83	162.38	156.44	152.74	160.36	306.67	566.40	489.09	290.65	624.60	303.62	+29.29
	B ₂	131.27	119.01	118.75	49.80	101.51	108.61	133.13	189.22	189.27	181.43	132.20	+11.53
	B ₃	227.34	354.73	360.43	215.16	345.84	475.49	496.71	636.43	591.44	492.38	419.60	+13.82
	B ₄	155.48	181.82	157.10	174.31	143.18	175.94	183.70	196.72	176.69	283.13	182.81	+8.99
	B ₅	-	-	NA	135.88	211.19	116.39	317.84	435.60	152.72	60.12	204.25	+15.85
	B ₆	-	-	230.56	269.85	385.09	209.09	292.93	313.80	268.07	231.68	275.13	+4.73
	B ₇	-	-	408.90	624.88	633.94	693.22	762.73	797.16	810.12	733.35	683.04	+10.04
	B ₈	-	-	248.66	269.39	278.14	276.15	274.93	313.28	345.25	135.00	267.60	-3.76
	B ₉	-	-	-	-	NA	603.04	477.81	342.98	386.79	357.47	433.62	-10.95
	B ₁₀	-	-	-	-	NA	802.77	1270.06	1261.55	1028.66	635.14	999.64	+0.21
	Ave	160.23	204.49	240.12	236.50	282.41	376.74	477.62	497.58	423.97	373.43	390.15	+11.18
	Index	(100.00)	(127.62)	(149.86)	(147.60)	(176.25)	(235.12)	(298.08)	(310.54)	(264.60)	(233.06)		

Source : Compiled from Official Records of BTMC and Member Mills of BTMA.

Notes : i) '-' indicates the period before establishment and commencement of production, ii) NA= Not Available;
 iii) labour productivity in terms of value added = Gross value added/labour Input: Gross value added = Gross value of Output minus Total Material Input.

the study period and the year 1989-90 had the highest index of productivity at 133.00 while the year 1996-97 had the lowest at 17.69.

In the private sector, the efficiency as measured according to the labour productivity in terms of value added was far better in all the mills as compared to the public sector mills. The average value added per man-day during 1987-88 to 1996-97 was less than Tk 150 in Mill B₂ only and five mills such as B₁, B₄, B₅, B₆ and B₈ had the same in the range Tk 150-350. However, the rest of the mills namely B₃, B₇, B₉ and B₁₀ achieved significant efficiency in value addition as their average productivity had Tk 419.60, 683.04, 433.62 and 999.64 respectively, much higher than that of others in the same sector as well as of their counterparts in public sector. The increase in average labour productivity in terms of value added in all the private sector mills considering together up to 1994-95 was remarkably significant, as the index went up to 310.54 in this year. And then in 1995-96 it stepped down to 264.60 and again to 233.06 in 1996-97 which was more than 13 times from the corresponding figure of public sector. Annual average growth rate had also similar situation as experienced in the earlier case.

3.2.3 Capital Productivity :

Capital productivity may be described as the arithmetical ratio between the amount produced and the amount of capital used in the course of production. It is thus expressed in terms of the following components:

- a) $\frac{\text{Total Output}}{\text{Capital Input}}$
- b) $\frac{\text{Value of Output}}{\text{Capital Input}}$
- c) $\frac{\text{Gross Value Added}}{\text{Capital Input}}$

However, in our analysis capital productivity in terms of value of the output and gross value added have been worked out.

Capital Input:

Capital employed has been taken as capital input. Capital employed is used by different authorities in different ways. Here, we have adopted the net capital employed concept as the base meaning, thereby, the net block of fixed assets, capital work-in-progress, investments and the net current assets. The data about capital productivity have been presented in the following Tables:

Table-3.8 reveals that capital productivity in terms of value of out put in the mills under public sector also did not show any significant improvement on an overall basis in 1996-97 as the productivity decreased in many of the cases over the year 1987-88. Only in Mill-A₃, value of production per unit of capital almost doubled over Tk. 2.42 in 1987-88. In case of Mills-A₅ and A₆, the productivity was negative in 1987-88 due to negative capital employed; Mill-A₅ could be able to decrease it from Tk. (16.42) negative to Tk. (0.17) negative in 1996-97 while it turned from Tk. (3.71) negative in to Tk. 0.82 positive in 1996-97. In case of Mills-A₇, A₈ and A₁₀ capital productivity also turned into negative in 1996-97 due to negative capital employed. The average productivity over the study period was less than Tk 1.00 in four mills such as A₁, A₂, A₇ and A₉, while mill Mills-A₃, A₄, A₅ and A₈ had it in the range Tk 2.00 to 3.00. However, the worst productivity was recorded in Mills-A₆ and A₁₀ as it was Tk. (1.09) negative and Tk. (0.09) negative over the period. The average capital productivity in terms of value of production of all the public sector mills taken together was negative during 1987-88, during 1990-91, 1991-92 and further during 1995-96 and 1996-97. Remarkable increase in average productivity during 1988-89 and 1989-90 was due to abnormally high productivity in Mill-A₅ resulting from very low capital employed during the said periods. The productivity was at the bottom at negative

Table 3.8 : Capital Productivity in Terms of Value of Output.

(Figure in Taka)

Years Mills		1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1987-97	AAGR
		PUBLIC SECTOR											
A ₁		0.46	0.41	0.44	0.42	0.46	0.40	0.38	0.37	0.42	0.37	0.41	-1.96
A ₂		0.91	0.91	0.83	0.76	0.79	0.73	0.82	0.69	0.83	0.40	0.77	-6.21
A ₃		2.42	3.15	2.95	2.97	2.64	2.20	2.85	0.88	2.88	4.68	2.76	+27.43
A ₄		7.38	3.18	1.19	1.28	1.42	1.38	0.80	1.21	1.46	0.92	2.02	-12.32
A ₅		(16.42)	53.27	40.20	(31.28)	(12.90)	(2.44)	(0.50)	(0.57)	(0.72)	(0.17)	2.85	-98.02
A ₆		(3.71)	1.37	0.67	0.92	1.05	1.26	1.88	(10.87)	(4.30)	0.82	(1.09)	-97.79
A ₇		3.41	0.97	0.87	1.21	1.82	3.15	1.05	1.95	(2.21)	(5.67)	0.66	+4.78
A ₈		1.28	3.32	4.06	5.08	7.47	25.54	5.96	4.39	(25.84)	(2.88)	2.84	-42.75
A ₉		0.47	0.53	0.47	0.59	0.98	4.65	0.47	0.70	0.68	0.37	0.99	+42.02
A ₁₀		0.48	0.88	1.13	2.07	(11.86)	(1.02)	1.36	1.93	4.37	(0.22)	(0.09)	-82.16
Ave		(0.33)	6.80	5.28	(1.60)	(0.81)	3.59	1.51	0.07	(2.24)	(0.14)	1.21	-716.99
PRIVATE SECTOR													
B ₁		1.08	1.42	1.75	1.38	0.36	0.37	0.60	0.87	0.82	0.72	0.94	+5.74
B ₂		9.77	0.58	0.62	0.63	0.81	0.93	0.83	0.97	0.58	0.46	1.62	-10.77
B ₃		0.89	0.97	1.02	0.97	1.13	1.23	1.09	1.28	1.46	1.13	1.12	+3.56
B ₄		1.60	1.40	1.55	1.59	1.63	1.54	1.61	1.88	1.70	1.02	1.55	-3.39
B ₅		-	-	NA	0.83	0.84	1.03	1.29	2.22	2.58	0.69	1.35	+10.69
B ₆		-	-	0.22	0.50	0.62	0.54	0.79	0.95	0.96	1.04	0.70	+30.61
B ₇		-	-	0.47	0.85	0.73	1.07	0.76	0.93	0.66	0.81	0.79	+14.34
B ₈		-	-	0.53	0.58	0.68	0.78	0.63	1.54	1.14	1.10	0.87	+19.59
B ₉		-	-	-	-	NA	0.47	0.52	0.53	0.71	0.82	0.61	+15.50
B ₁₀		-	-	-	-	NA	0.54	0.58	0.35	0.27	0.23	0.39	-17.48
Ave		3.34	1.09	0.88	0.92	0.85	0.85	0.87	1.15	1.09	0.80	0.99	-9.66

Source : Compiled from Official Records of BTMC and Member Mills of BTMA.

Notes : i) '-' indicates the period before establishment and commencement of production. ii) NA= Not Available
iii) Figures in Brackets indicate negative productivity due to negative capital employed.

Tk. (2.24) in 1995-96. Annual average growth rate was negative in seven mills while three mills had positive growth rate.

On the other hand, capital productivity in terms of value of production increased in five mills under private sector while decreased in five mills during 1996-97 over 1987-88. In the intermediary period no clear trend was established as the productivity fluctuated in all the cases except B₉ in which the productivity exhibited a continuous upward trend during the five years period. In Mill-B₅ productivity showed an upward trend up to 1995-96 when it rose to Tk 2.58 over 0.83 in 1990-91, the first year of its commercial production, but the productivity stepped down to Tk. 0.69 in 1996-97. The productivity of capital also showed an upward trend over the period in Mill-B₆ except a slight decline in 1992-93. Its productivity was at the peak at Tk 1.04 while it was at Tk. 0.22 in 1989-90. On an average Mills-B₁, B₆, B₇, B₈, B₉ and B₁₀ achieved value of out put in the range Tk. 0.39 to 0.94 per taka of capital employed while Mills-B₂, B₃, B₄ and B₅ achieved it in the range Tk 1.12 to 1.62. The average value of out put per unit of capital taking all the private mills together was only Tk. 0.80 in 1996-97 registering (76.05%) decrease over the year 1987-88.

The average capital productivity was highly positive in the private sector during 1987-88, 1990-91, 1991-92, 1995-96 and 1996-97 but the same happened to be highly negative in case of public sector during the years. Again during 1988-89, 1989-90, 1992-93 and 1993-94 the productivity was lower as compared to public sector. Thus it can be said that the capital resource was not utilised efficiently in the later years in private sector mills also. Annual average growth rate was negative in three mills while seven mills had positive growth rate.

The Table-3.9 exhibits the capital productivity performance of textile mills under public and private sector in terms of value added. The productivity fluctuated year by year in case of all the mills under public sector. It showed notable decrease on an overall basis in 1996-97 in all the cases except Mills-A₃

Table 3.9 : Capital Productivity in Terms of Value Added.

(Figure in Taka)

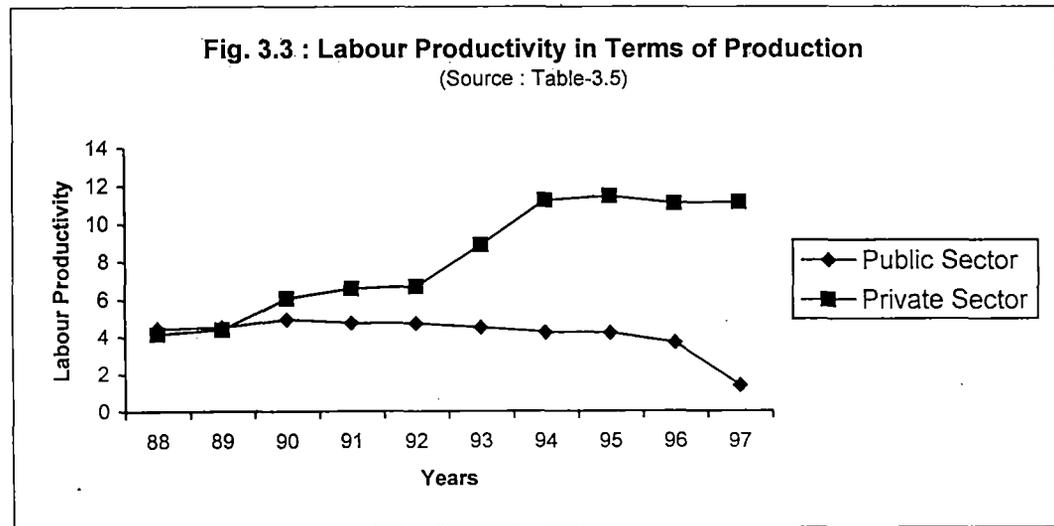
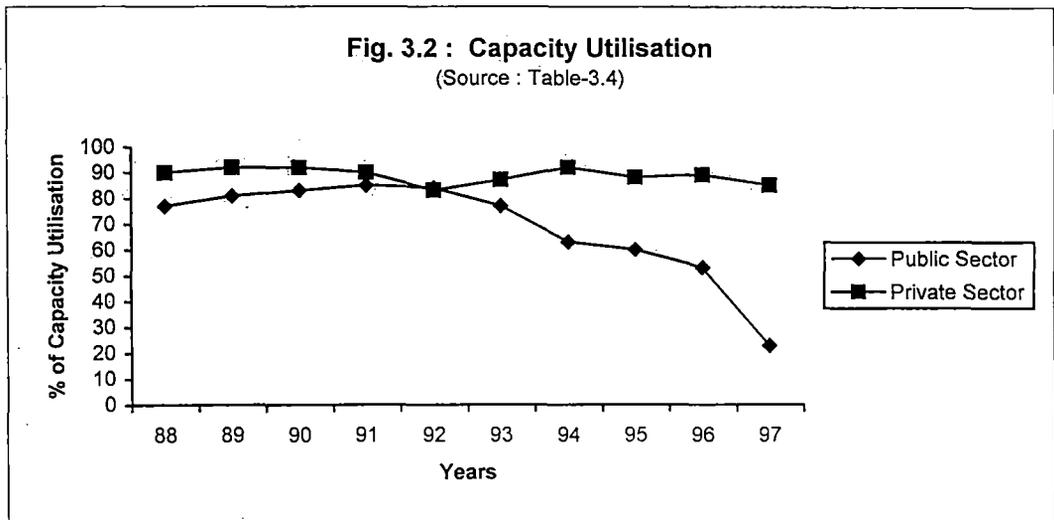
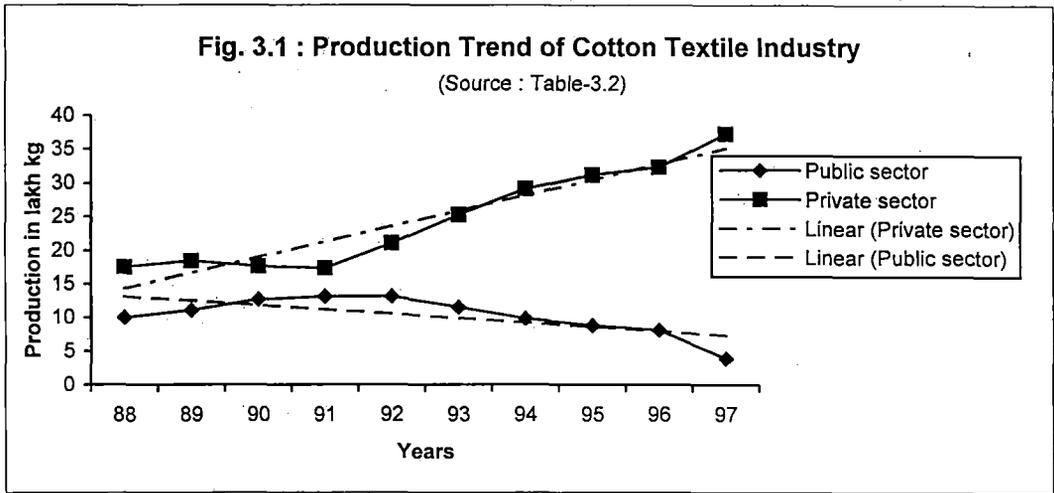
Mills	Years	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	Average 1987-97	AAGR
PUBLIC SECTOR	A ₁	0.20	0.16	0.21	0.18	0.23	0.16	0.13	0.13	0.08	0.01	0.15	-12.44
	A ₂	0.42	0.44	0.36	0.31	0.32	0.22	0.24	0.22	0.10	0.04	0.27	-18.79
	A ₃	0.88	1.32	1.18	0.96	0.94	0.84	0.97	0.25	0.69	1.13	0.92	+21.01
	A ₄	2.24	1.38	0.47	0.40	0.53	0.49	0.31	0.40	0.35	0.13	0.67	-19.70
	A ₅	(5.29)	21.84	14.30	(9.47)	(4.21)	(0.80)	(0.16)	(0.15)	(0.12)	(0.02)	1.59	-115.52
	A ₆	(1.10)	0.54	0.24	0.29	0.41	0.46	0.57	(3.56)	(0.76)	0.19	(0.29)	-116.29
	A ₇	0.99	0.37	0.36	0.44	0.75	1.00	0.35	0.60	(0.44)	(0.84)	0.36	-1.70
	A ₈	0.58	0.61	0.66	0.69	1.27	4.00	0.78	0.81	(2.98)	(0.13)	0.63	-35.92
	A ₉	0.18	0.22	0.17	0.17	0.30	1.55	0.16	0.20	0.14	0.05	0.31	+37.07
	A ₁₀	0.14	0.32	0.44	0.43	(1.68)	(0.24)	0.33	0.60	0.20	(0.03)	0.05	-83.33
	Ave	(0.08)	2.72	1.84	(0.56)	(0.11)	0.77	0.37	(0.05)	(0.27)	0.05	0.47	-487.46
PRIVATE SECTOR	B ₁	0.39	0.54	0.54	0.54	0.11	0.09	0.16	0.23	0.14	0.15	0.29	+3.35
	B ₂	3.53	0.19	0.19	0.10	0.23	0.24	0.22	0.30	0.18	0.15	0.53	-4.03
	B ₃	0.46	0.57	0.55	0.31	0.54	0.69	0.64	0.69	0.61	0.49	0.56	+5.34
	B ₄	0.69	0.64	0.65	0.68	0.64	0.54	0.52	0.51	0.39	0.46	0.57	-5.73
	B ₅	-	-	NA	0.09	0.16	0.10	0.27	0.37	0.14	0.04	0.17	+18.95
	B ₆	-	-	0.09	0.22	0.29	0.21	0.31	0.38	0.27	0.28	0.26	+27.66
	B ₇	-	-	0.15	0.29	0.31	0.40	0.26	0.32	0.25	0.31	0.29	+17.07
	B ₈	-	-	0.28	0.31	0.33	0.38	0.38	0.56	0.42	0.32	0.37	+4.41
	B ₉	-	-	-	-	NA	0.21	0.25	0.22	0.25	0.27	0.24	+7.17
	B ₁₀	-	-	-	-	NA	0.26	0.33	0.15	0.09	0.08	0.18	-19.68
	Ave	1.27	0.49	0.35	0.32	0.33	0.31	0.33	0.37	0.27	0.26	0.35	-12.63

Source : Compiled from Official Records of BTMC and Member Mills of BTMA.

Notes : i) '-' indicates the period before establishment and commencement of production, ii) NA= Not Available
iii) Figures in Brackets indicate negative productivity due to negative capital employed.

and A₇ in which some improvement was observed over 1987-88. The average productivity over the period was in the range Tk. 0.00 to 0.50 in Mills-A₁, A₂, A₇, A₉ and A₁₀. It was achieved in the range Tk. 0.50-1.00 in Mills-A₃, A₄ and A₈. Mill-A₅ had the same of Tk. 1.59 per unit of capital employed while it was negative of Tk. (0.29) in case of Mill-A₆ due to negative capital employed. The public sector average capital productivity was Tk. (0.08) negative in 1987-88 followed by remarkable increase till 1989-90 resulting from abnormally high productivity in Mill-A₅ due to very low capital employed during these years. Since then capital productivity of the public sectors mills fluctuated up to 1995-96 and again rose at Tk. 0.05 in 1996-97 as against Tk. (0.08) negative in 1987-88. In private sector on an overall basis the capital productivity in terms of value added improved in Mills-B₃, B₆, B₇, B₈ and B₉ whereas it declined in Mills-B₁, B₂, B₄ and B₁₀ during 1996-97 over 1987-88. The capital productivity during the period was in the range Tk. 0.00 to 0.50 in case of Mills-B₁, B₅, B₆, B₇, B₉ and B₁₀ while it was in the range Tk. 0.50 to 0.60 in case of Mills-B₂, B₃ and B₉. The private sector average of capital productivity declined to Tk. 0.26 in 1996-97 as compared to Tk. 1.27 in 1987-88. The maximum productivity was recorded in 1987-88 and the minimum was recorded at Tk. 0.26 in 1996-97. Annual average growth rate was negative in three private sector mills as against eight public sector mills.

3.3 GRAPHICAL HIGHLIGHTS



3.4 MEAN AND 't' VALUES OF THE PERFORMANCE INDICATORS AND STATISTICAL SIGNIFICANCE OF MEAN DIFFERENCES

Comparison of mean Value of performance indicators was aimed at finding out the differences in performance of the textile mills under public and private sector. To measure the statistical significance of the differences between the mean values of the indicators used for analysing production and productivity of the public and private sector textile mills and thus, to test the individual discriminating power of the indicators between the performance of the public and private sector mills, t-values of the indicators have been computed.

The mean values of the indicators for public and private sector along with their actual values, their mean differences, standard deviations and t- values are presented in Table-3.10.

We found from Table-3.10 that the mean differences of six indicators out of eight are significant at 0.05 level of significance. The indicators are given below:

P_1 = Average production

P_2 = Per Spindle per shift production

P_3 = Capacity utilisation

P_4 = Labour productivity (production)

P_5 = Labour productivity (value of production)

P_6 = Labour productivity (value added)

The t-values of the mean differences of the indicators are greater than the table value of t (2.101) at 0.05 level of significance. But the mean differences of capital productivity in terms of value of output (P_7) and value added (P_8) are not significant at 0.05 level of significance.

Table-3.10 : Mean and 't' values of the Performance Indicators for Public and Private Sector : 1987-88 to 1996-97.

Table No.		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈
Years & Parameters		3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
PUBLIC SECTOR	1987-88	10.01	75.33	77	4.44	357.00	131.91	(0.33)	(0.08)
	1988-89	11.08	74.46	81	4.52	380.94	157.87	6.80	2.72
	1989-90	12.70	75.55	82	4.93	439.87	175.44	5.28	1.84
	1990-91	13.15	76.54	85	4.75	425.10	139.87	(1.60)	(0.56)
	1991-92	13.14	76.30	84	4.72	463.46	169.29	(0.81)	(0.11)
	1992-93	11.54	75.57	77	4.50	403.29	137.12	3.59	0.77
	1993-94	9.87	77.16	63	4.25	381.97	121.93	1.51	0.37
	1994-95	8.85	76.23	60	4.20	445.80	138.85	0.07	(0.05)
	1995-96	8.14	73.54	53	3.68	423.84	78.67	(2.24)	(0.27)
	1996-97	3.90	71.43	23	1.40	161.97	23.34	(0.14)	0.05
	X ₁	10.239	75.211	68.600	4.139	388.324	127.429	1.213	0.468
	SD ₁	2.829	1.689	19.540	1.023	86.123	45.491	3.035	1.039
	V ₁	8.005	2.855	381.822	1.047	7417.329	2069.496	9.215	1.081
PRIVATE SECTOR	1987-88	17.53	80.49	90	4.15	379.08	160.23	3.34	1.27
	1988-89	18.41	76.63	92	4.40	444.88	204.49	1.09	0.49
	1989-90	17.62	83.06	92	6.06	610.08	240.12	0.88	0.35
	1990-91	17.33	71.54	90	6.56	740.85	236.50	0.92	0.32
	1991-92	21.05	76.20	83	6.67	742.91	282.41	0.85	0.33
	1992-93	25.30	89.51	87	8.87	1028.19	376.74	0.85	0.31
	1993-94	29.20	94.93	92	11.23	1237.84	477.62	0.87	0.33
	1994-95	31.25	94.61	88	11.45	1470.38	497.58	1.15	0.37
	1995-96	32.37	94.68	89	11.06	1535.66	423.97	1.09	0.27
	1996-97	37.32	106.82	85	11.14	1238.09	373.43	0.80	0.26
	X ₂	24.738	86.847	88.800	8.159	942.796	327.309	1.184	0.430
	SD ₂	7.381	11.054	3.084	2.933	417.66	118.492	0.767	0.301
	V ₂	54.481	122.196	9.511	8.605	174278.539	14040.393	0.588	0.091
t-values	5.800*	3.290*	3.324*	4.091*	4.113*	4.979*	0.029	0.110	

Notes : i) P = Performance indicator

ii) * denotes significant at 0.05 level of significance

3.5 SUMMING UP

The present analysis leads us to conclude that the trend in average production during the first half of the study period was towards increase in both the sectors. But during the second half, the average production of all the mills taken together registered a continuous decreasing trend in public sector while the tempo of increasing production activity was maintained in all the private sector mills during this period. The production not only went down in the public mills, the rate of decrease was between 30% to 60% in as many as ten mills. In contrast, a remarkable increase i.e. between 80% to 200% was in four private mills while it was generally 25% to 50%. Idle capacity and stock piling resulting from availability of foreign yarn at comparatively lower price were the main reasons for poor production performance as stated by the managers of public mills. As regards production efficiency, the average per spindle per shift production in all the public mills taken together generated a falling trend during 1992 to 1997 while the same in all the private mills taken together registered a rising trend which indicates better efficiency of private mills in their production activities during this period although there was no significant difference between the two sectors in this regard during 1987-88 to 1991-92.

After analysing capacity utilisation, we also found that the average capacity utilisation rate of all the private sector mills was much higher compared of public sector mills during all the years understudy. In more than half of the mills under public and private sector, power failure contributed most to spindle stoppage in most of the years. Absenteeism of workers was another major factor in case of all public mills as well as in some private mills. However, production efficiency in terms of wastage could not be analysed in this connection due to non-availability of data from private sector mills.

From a further look into productivity, it can be inferred that like other criteria of performance, productivity in terms of production, value of production

and value added in the mills under private sector were higher than those of public mills during the study period. The average labour productivity in all the terms in the private sector generated a rising trend throughout the period with a few sudden break, while a reverse trend was generated in public sector during the second half of the period. As a result, the average labour productivity in terms of production in all the private mills for the entire period was more than double and in terms of value of production and value added it was almost three times higher than the corresponding figures in public sector. Regarding capital productivity in terms of value of output and value added there was no significant differences between the two sectors which indicates capital resources was not utilised efficiently in the mills under both the sector.

The reasons for low labour productivity in public sector compared of private sector were mainly higher man hour loss caused by higher idle capacity, over manning and higher rate of material wastage. Man-hour loss caused production loss and hence productivity came down. Steps should be taken to minimise man-hour loss and production loss through proper utilisation of capacity, pulling down the labour force at optimum level and through minimising wastage rate by ensuring trained and experienced workers and supervisors and regular supply of good quality of raw cotton.

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