CHAPTER - FOUR
STRUCTURE AND PATTERN OF INDUSTRIALISATION IN WEST BENGAL

This chapter, while presenting the statistical profile of West Bengal industry, shall focus on the following three key issues:

i) What has been the extent of industrial decline of West Bengal in terms of certain common effectivity indicators of value addition, employment and profitability?

ii) Even within the context of an overall industrial decline, what kind of technical changes has West Bengal displayed in the structure of its industrial sector over the past few years?

iii) In terms of the composition of West Bengal industry, what are the emerging sectors?

4.1 Position of West Bengal in India and in the Eastern Region

West Bengal is "lagging far behind other industrialised states in wooing investors and has miles to go to reach the goal", - this is the essence of the balance sheet prepared by the corporate sector after conclusion of the third Partnership Summit of the CII (Confederation of Indian Industries) called in Calcutta during January 1997.

This, in spite of the fact that West Bengal has a vast reservoir of technical and managerial skill. Its geographical location more or less in the centre of the eastern and north-eastern region, with the added advantage of the Calcutta-Haldia port complex for serving the wide hinterland stretching from Nepal and Bhutan to Orissa and from easter part of Uttar Pradesh to Arunachal Pradesh bears immense potential. Yet the State has been languishing.

Among the states in the eastern and north-eastern regions of India, West Bengal has some distinctive features. While all the other states in these regions are quite underdeveloped even by Indian standard, West Bengal on the morrow of Independence was the most developed state. While for all the states in the eastern part of the country, the issue today is that of initiating a process of development for catching up with the more developed regions/states, for West Bengal, the problem is that of recapturing its lost momentum of growth. While the rest of India had clearly gained in terms of development to a greater or a lesser degree in the post-Independence period, West Bengal is perhaps the solitary example among the constituent states of the Indian Union which has consistently suffered from economic decline.

It is often alleged that in the struggle to win a share of the limited resources in the hands of the Centre, the eastern region has been losing out compared to the other regions of India. This is not always necessarily the outcome of any deliberate conspiracy to deprive them. It is just that some of the states in this region were too unorganised to exercise any concerted influence on the Centre. In the tug-of-war for resources earmarked for modern development, the governing logic tends to favour the advanced units who are able to absorb the additional resources better. In case of the states in the eastern region, various factors came in the way. Since West Bengal started out with an advantage on the morrow of Independence, the Planning Commission as a matter of policy and in the interest of more balanced regional development tended to pay more attention to other regions and states. Bihar and Orissa did attract a fair proportion of central investment but social backwardness and the pattern of land relations prevented the gains from percolating down to the masses and raising their standard of living. These are the malaise for the whole eastern region.

Unlike some of the other regions in India, where owner cultivators of the land had
ushered in what is known as the Green Revolution, the landed interest, in the eastern region is still imbued with a feudal outlook. This has thwarted the large scale adoption of modern technology in agriculture. In spite of this palpable inhibitor, a remarkable spurt in agricultural productivity has been witnessed during the last decade and a half, particularly in some districts of West Bengal. It is a result of the efforts of a very small stratum of cultivators who, in the face of all odds and with every meagre resources, have adopted modern methods of farming. This only shows the vast potential that is lying latent in this state.

Moreover, as a socio-political system and as a market, India is one and every part of it is dependent on the other. Without oil and timber from Assam, without Bengal's jute, coal, tea and engineering, without Bihar and Orissa's mineral resources and industrial capacities, the nation's economy cannot progress. This will become much more evident as the following tables will elaborate the status of West Bengal in the national economy and in the economy of eastern region.

**Table 4.1**  
*Income from the secondary sector of West Bengal - per cent share of value addition by West Bengal in India and in eastern region - 1960-'61 to 1995-'96.*

<table>
<thead>
<tr>
<th>Year</th>
<th>Share of West Bengal in India</th>
<th>Share of West Bengal in Eastern Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>'60-'61</td>
<td>22.29</td>
<td>67.11</td>
</tr>
<tr>
<td>'65-'66</td>
<td>20.85</td>
<td>65.76</td>
</tr>
<tr>
<td>'70-'71</td>
<td>13.63</td>
<td>60.77</td>
</tr>
<tr>
<td>'75-'76</td>
<td>13.33</td>
<td>54.31</td>
</tr>
<tr>
<td>'80-'81</td>
<td>11.53</td>
<td>62.78</td>
</tr>
<tr>
<td>'85-'86</td>
<td>8.38</td>
<td>48.77</td>
</tr>
<tr>
<td>'90-'91</td>
<td>6.21</td>
<td>41.63</td>
</tr>
<tr>
<td>'93-'94</td>
<td>6.06</td>
<td>36.62</td>
</tr>
</tbody>
</table>


The statistics quoted above testifies to the phenomenal decline of the industrial sector of West Bengal. Steep fall has been registered (especially between '60-'61 and '70-'71) in the share of income contributed by West Bengal in the national total. It seems that the efforts of industrial reform could not create much positive impact, as the share of value addition has not shown any sign of buoyancy even at the turn of the nineties. However, the situation during the eighties and nineties appeared to be not that worse as it was in the sixties and seventies.

In the eastern region itself, the State could not retain its age-old economic dominance. The share of industrial income contributed by the State in the region fell by nearly eight per cent during '60-'61 and '70-'71. Although the share improved marginally (i.e. three per cent) by '80-'81, it was followed by a stupendous fall of nearly 16 per cent in '93-'94.

**Table 4.2**  
*Employment in the registered manufacturing sector of West Bengal - per cent share of West Bengal in India and in Eastern Region*

<table>
<thead>
<tr>
<th>Share of West Bengal in India</th>
<th>'60-'61</th>
<th>'65-'66</th>
<th>'70-'71</th>
<th>'75-'76</th>
<th>'80-'81</th>
<th>'85-'86</th>
<th>'90-'91</th>
<th>'93-'94</th>
</tr>
</thead>
<tbody>
<tr>
<td>'60-'61</td>
<td>22.9</td>
<td>22.08</td>
<td>16.21</td>
<td>14.32</td>
<td>12.34</td>
<td>10.79</td>
<td>9.08</td>
<td>8.48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Share of West Bengal in Eastern Region</th>
<th>'60-'61</th>
<th>'65-'66</th>
<th>'70-'71</th>
<th>'75-'76</th>
<th>'80-'81</th>
<th>'85-'86</th>
<th>'90-'91</th>
<th>'93-'94</th>
</tr>
</thead>
<tbody>
<tr>
<td>'71.89</td>
<td>70.97</td>
<td>65.63</td>
<td>61.19</td>
<td>59.81</td>
<td>56.83</td>
<td>54.34</td>
<td>53.62</td>
<td></td>
</tr>
</tbody>
</table>

Source: Op. cit. table 4.1
The above table justifies the statement that dynamism is petering out of the manufacturing sector of the State. The share of the State in industrial employment in India has continually shrunk - a fall of nearly 15 per cent in 33 years. In the eastern region, with the opening up of new industrial space in the erstwhile backward States like Orissa, Bihar and Assam, the share of West Bengal in industrial employment has been curbed by nearly 20 per cent during 1960 to 1993.

The employment growth rate responds to various macro-economic and micro-economic factors interplaying in the economy. For example, the industrial recession that hit the Indian industries in the mid-sixties, had made its existence felt by registering a poor employment growth rate in '65-'70 (8.15 per cent) which was much lower in comparison to the preceding and the following decades (viz. 37.26% and 22.33% respectively, as portrayed by table 4.3).

Table 4.3
Average growth rate of employment in registered working factories - comparative analysis - India, eastern region and West Bengal (Per Cent)

<table>
<thead>
<tr>
<th></th>
<th>'60-'65</th>
<th>'65-'70</th>
<th>'70-'75</th>
<th>'75-'80</th>
<th>'80-'85</th>
<th>'85-'90</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>37.26</td>
<td>8.15</td>
<td>22.23</td>
<td>20.91</td>
<td>-3.15</td>
<td>+9.24</td>
</tr>
<tr>
<td>Eastern region</td>
<td>34.05</td>
<td>-6.69</td>
<td>15.92</td>
<td>6.54</td>
<td>-10.83</td>
<td>-3.91</td>
</tr>
<tr>
<td>West Bengal</td>
<td>32.33</td>
<td>-12.5</td>
<td>8.07</td>
<td>4.15</td>
<td>-15.29</td>
<td>-8.12</td>
</tr>
</tbody>
</table>

Source: Op.cit table 4.1

As a consequence of such national outcome, the eastern region and West Bengal followed suit. The overall trend of employment growth rate in industries since the mid-seventies indicated an alarming situation. The eastern region had been outpaced by other regions of India. During the mid-seventies, the employment growth rate in industries in the region was only 1/3rd of the national average (i.e. 6.54%). Even at the start of the nineties, whereas the country experienced a growth rate of 9 per cent, the region witnessed a decline of nearly 4 per cent in industrial employment. In the eastern region itself, West Bengal appeared to be most severely hit by industrial stagnation. This is because, the growth rate of industrial employment in the State during the 1970 to 1990 period had always been lower by 5 per cent to 7 per cent when compared to the regional average.

The following table will attempt to reveal the change in industrial structure of West Bengal relative to the country.

Table 4.4
Major industries in West Bengal - per cent share of industrial units and industrial employment in India, 1960-'61 to 1990-'91 (decadal)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Employment</td>
<td>Unit Employment</td>
<td>Unit Employment</td>
<td>Unit Employment</td>
</tr>
<tr>
<td>Jute textile (a)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>27.55</td>
</tr>
<tr>
<td>Cotton textile (b)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3.82</td>
</tr>
<tr>
<td>Paper and products</td>
<td>15.79</td>
<td>24.93</td>
<td>15.92</td>
<td>17.83</td>
</tr>
<tr>
<td>Printing &amp; publishing</td>
<td>13.69</td>
<td>11.52</td>
<td>11.14</td>
<td>12.19</td>
</tr>
<tr>
<td>Rubber and rubber products</td>
<td>33.33</td>
<td>44.25</td>
<td>20.04</td>
<td>38.91</td>
</tr>
<tr>
<td>Chemical &amp; products</td>
<td>21.01</td>
<td>14.78</td>
<td>12.95</td>
<td>12.28</td>
</tr>
<tr>
<td>Basic metal</td>
<td>37.36</td>
<td>34.28</td>
<td>23.24</td>
<td>27.49</td>
</tr>
<tr>
<td>Engineering</td>
<td>7.73</td>
<td>16.18</td>
<td>15.98</td>
<td>23.5</td>
</tr>
</tbody>
</table>

(a) & (b) : Figures for 1960-'61 and 1970-'71 are available for the aggregate industry group-spinning, weaving and finishing of textiles. Source: Statistical Abstract of India, C.S.O. Govt. of India and Economic Review, Govt. of West Bengal, corresponding years.

[35]
Table 4.5
Production of selected industrial items - per cent share of West Bengal in India,
1960-'61 to 1990-'91 (decadal)

<table>
<thead>
<tr>
<th>Items</th>
<th>'60-'61</th>
<th>'70-'71</th>
<th>'80-'81</th>
<th>'90-'91</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute</td>
<td>49.93</td>
<td>50.00</td>
<td>43.66</td>
<td>45.64</td>
</tr>
<tr>
<td>Iron &amp; Steel (a)</td>
<td>32.19</td>
<td>6.50</td>
<td>5.18</td>
<td>9.22 (b)</td>
</tr>
<tr>
<td>Coal</td>
<td>36.4</td>
<td>25.09</td>
<td>17.48</td>
<td>8.35</td>
</tr>
<tr>
<td>Power</td>
<td>13.68 (c)</td>
<td>10.08</td>
<td>6.04</td>
<td>4.48</td>
</tr>
<tr>
<td>Tea</td>
<td>31.99</td>
<td>19.48</td>
<td>25.90</td>
<td>21.03</td>
</tr>
<tr>
<td>Paper &amp; Paper Board</td>
<td>20.54</td>
<td>18.7</td>
<td>10.73</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

(a) Figures include pig iron, steel ingot, semi-finished steel and finished steel except for the year of 1990-'91. b. Figure clubbed for semi-finished steel and finished steel c. Figure compiled for 1961-'62.


Compared to the decade of sixties, the decades of nineties had witnessed drastic fall in employment in all the major industries of the State, except for the engg. industries. Even for jute textile industry in which the State had been enjoying locational advantage, the situation is no better as the share of employment had fallen by 3 per cent in this industry over merely 10 years. Steep fall in both the share of unit and employment had been registered in paper industries and in printing and publishing. Apart from the ubiquitous handicap of raw material for paper, the State had apparently failed to catch up with the pace of technological upgradation which has been so widely adopted in other regions of India to equip the printing enterprises with the up-to-date computerised devices.

The other industry where steep fall in the share of unit and employment had been registered is the rubber industry. The share of employment in this premier industry has fallen by nearly 40 per cent in 30 year (1960 to 1990). Such revelation justifies the urgent need for setting up a large-scale project producing basic chemicals for the chemical and rubber industry of the State. This will resolve the long-drawn problem of inflated freight cost incurred for importing the raw material to the State from the western region of India. The basic metal industries of the State seem to be suffering from structural handicaps and technological decay as the share of employment in this industry has nearly halved over 30 years.

Figures compiled in the above table indicates conspicuous degeneration in the tempo of production in some of the important industrial raw materials. Out of these, fall in the share of iron and steel, coal and paper and paper board were the most noteworthy. With the setting up of new integrated steel plants during the plan periods in other states, the share of West Bengal was bound to go down. The extension of the Bihar coal fields in West Bengal are being in use for quite a long time and consequently, the supply of quality coal is gradually nearing exhaustion. Moreover, transportation and distribution system for coal and power in West Bengal are being in use for quite a long time and consequently, the supply of quality coal is gradually nearing exhaustion. Moreover, transportation and distribution system for coal and power in West Bengal has long been infamous for operational inefficiency, incurring huge losses. This is reflected in the declining share of power production by the State.

4.2 Historical Perspective of Industrial Development in the State

Historically, industrialisation and urbanisation have gone hand in hand, that is to say, the process of industrialisation has inevitably been accompanied by a general increase in the ratio of urban to total population. The economic logic behind this phenomenon has been the existence of a concentration of consumers and infrastructure initially, and agglomeration
economics later on. Subsequently, economic development and industrialisation have intrinsically meant a shift in favour of the manufacturing sector as a source of income and employment and industries have found it advantageous to be located in the urban centres.

This very reason led to the phenomenal emergence of Calcutta as a premier business centre in pre-Independence India. The peculiarities of the situation in this region was that, large houses and foreign companies have historically been the pace setter for industrial development in the private sector. During the colonial days the Bengal Province produced the leadership in industrialisation under the umbrella of the East India Company.

The port location facilitated the control of country trade and commerce. The setting up of banking, insurance companies and British industrial houses provided for the needed finance and public securities. The advent of steam navigation and steam locomotive during the second half of the 19th Century brought a qualitative improvement in the transport system in which Bengal was at the forefront. In 1860, the duty on imported machinery was removed and large scale industry began to develop with the help of British capital in Bengal.

The expansion of railway route mileage led to significant improvement in the relationship between Calcutta and its hinterland. Development of coal mining immediately followed the opening of railways. Bengal Coal Company was set up in 1844 and the no. of workers employed in coal mines increased from 31,000 in 1984 to 75,000 in 1903. In 1874, Barakar Iron Works was established in Burdwan district basing on the neighbouring coal fields. The Calcutta Electric Supply Corporation (CESC) was incorporated in 1892.

On the heels of the infrastructure came up the industries. First came the jute industry in 1872. In 1870, Bally paper mill was set up which was soon followed by three others. Development of the plantation in Assam and sub-Himalayan West Bengal facilitated the proliferation of tea plantation companies with their head quarter at Calcutta. Starting with five companies in the 1860's the number of such companies rose to 58 by 1900.1

At the time of Independence, the predominance of Bengal in the industrial front continued. This is related by the following table:

<table>
<thead>
<tr>
<th>Province</th>
<th>1921</th>
<th>1939</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chennai</td>
<td>8.4</td>
<td>9.7</td>
</tr>
<tr>
<td>Mumbai</td>
<td>25.3</td>
<td>23.0</td>
</tr>
<tr>
<td>Bengal</td>
<td>35.1</td>
<td>28.7</td>
</tr>
<tr>
<td>U.P.</td>
<td>6.3</td>
<td>8.0</td>
</tr>
<tr>
<td>Punjab</td>
<td>3.2</td>
<td>3.9</td>
</tr>
</tbody>
</table>

*Source: Op.cit. 'Focus on West Bengal', p.74.*

The first cotton mill in India was started at Calcutta in 1878 but the attempt was not successful. In spite of being pioneer in the effort, Bengal lost out to Bombay. However, this Industry could reap some benefit from the effects of the Second World War. The capacity hence underutilised was put into good use as the import of foreign-made cloth in India became virtually impossible due to war disturbances.2

The war demand gave the biggest boost to the engineering and allied industries. In 1939, Bengal accounted for 28.7 per cent of the total employment in factories compared to 23 per cent for Mumbai.¹

In 1935 Bombay and Bengal provinces accounted for 28 per cent and 23 per cent respectively of total factory employment in India. In the same year, 15 per cent of the total industrial units were located in the Bombay province while Bengal accounted for a share of 19 per cent.²

The following table will portray the distribution (in per cent) of industrial units and industrial employment in Bengal and Mumbai provinces among some major industrial groups.

<table>
<thead>
<tr>
<th>Industry Type</th>
<th>Units</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mumbai</td>
<td>Bengal</td>
</tr>
<tr>
<td>Food (except beverage)</td>
<td>7.09</td>
<td>25.06</td>
</tr>
<tr>
<td>Cotton Textile</td>
<td>31.62</td>
<td>8.92</td>
</tr>
<tr>
<td>Jute Textile</td>
<td>-</td>
<td>90.49</td>
</tr>
<tr>
<td>Paper and products</td>
<td>7.89</td>
<td>10.53</td>
</tr>
<tr>
<td>Glass</td>
<td>9.09</td>
<td>90.91</td>
</tr>
<tr>
<td>Basic Metals</td>
<td>13.73</td>
<td>3.27</td>
</tr>
<tr>
<td>Metal Products (except machinery and transport)</td>
<td>59.03</td>
<td>25.30</td>
</tr>
<tr>
<td>Machinery (except electrical)</td>
<td>16.52</td>
<td>38.54</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>8.63</td>
<td>13.67</td>
</tr>
<tr>
<td>Railway Workshop</td>
<td>13.66</td>
<td>8.70</td>
</tr>
<tr>
<td>Shipping</td>
<td>8.7</td>
<td>43.48</td>
</tr>
</tbody>
</table>

Source: Statistical Account of British India - 1926-27 to 1935-'36, Govt. of India.

The above table exemplifies the importance of Bengal in the economy of British India. That is, excluding two industries (e.g. cotton textile and metal products), the Bengal province had outpaced the Mumbai province in all the remaining industries.

However, from this very promising beginning of impressive growth of industries, the State of West Bengal (i.e. the erst-while Bengal province) started to send out distinct signs of backslide since the Second World War.

The following table will attempt to catch a glimpse of the industrial scenario in West Bengal during the decades of 50's and 60's. The ebb in the tempo of industrialisation in the State is reflected by the downward moving figures shown under the selected indicators (e.g., growth rate of income from industrial sector; employment growth rate in registered working factories; share of West Bengal in ex-factory value of industrial output, value addition and employment).


[38]
4.3 INDUSTRIES IN WEST BENGAL IN THE POST-INDEPENDENCE DECADES

Table 4.8
Selected indicators showing the performance of manufacturing industry in West Bengal during 1950's and 1960's.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average annual increase/decrease in income from manufacturing industries (per cent) (a)</th>
<th>Average annual increase/decrease in employment of registered working factories (per cent)</th>
<th>Per cent share of West Bengal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951-'52</td>
<td>—</td>
<td>—</td>
<td>27.22 26.13 29.09</td>
</tr>
<tr>
<td>1956-'57</td>
<td>+5.61</td>
<td>+2.0</td>
<td>22.44 25.81 26.63</td>
</tr>
<tr>
<td>1961-'62</td>
<td>+7.56</td>
<td>+10.6</td>
<td>20.5 26.89 22.28</td>
</tr>
<tr>
<td>1965-'66</td>
<td>+11.22</td>
<td>-40.5</td>
<td>21.2 20.84 22.13</td>
</tr>
<tr>
<td>1967-'68</td>
<td>+4.16</td>
<td>-8.0</td>
<td>20.1 18.62 21.15</td>
</tr>
<tr>
<td>1968-'69</td>
<td>-4.84</td>
<td>-15.0</td>
<td>15.56 15.26 18.76</td>
</tr>
</tbody>
</table>

(a) income at '50-'51 prices

Continuous reduction in the share of value addition, ex-factory value of industrial output and employment signifies deteriorating status of West Bengal in comparison to other states of India. Similarly, growth rate of income generated and employment in the manufacturing sector projects a dismal picture. Especially, it seems from the pattern that, the year of 1965-'66 can be considered a demarcation line before which (1951-'62) the industry was experiencing a better time and beyond which the regime of retrogression had set in. The impact of worldwide recession since the mid-sixties had put a brake on industrial development and hence, since 1965-'66 industrial employment registered a drastic fall in West Bengal.

The fall in employment during the late sixties was very much pronounced in two premier and traditional industries of the State, jute and engineering.

Table 4.9
Employment in jute and engineering industry in West Bengal (1965-1969)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average annual per cent change in employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jute industry</td>
</tr>
<tr>
<td>1965-'66</td>
<td>-11.04</td>
</tr>
<tr>
<td>1966-'67</td>
<td>+0.56</td>
</tr>
<tr>
<td>1967-'68</td>
<td>-4.31</td>
</tr>
<tr>
<td>1968-'69</td>
<td>-7.86</td>
</tr>
</tbody>
</table>

Source: Chief Inspector of Factories, West Bengal

Following the same trend elaborated by the above table, the aggregate figure for average daily employment in the registered factories of the State nosedived after 1965 (1965: 9.10 lakhs and 1970: 8.4 lakhs). Sectorwise disaggregation of the organised sector employment exhibits the same trend. The public sector, operating under the aegis of State govt. gained in its share of employment marginally (0.63%) over 1961 and 1969. But during these eight


[39]
years, the market-force-oriented private sector witnessed a fall of 1.15% in its share of employment.  

This decline in the relative position West Bengal in India was evident in other spheres as well. The evidence is the following statement:

'West Bengal occupied (during the period 1952-53 to 1964-65) the 12th, 10th and 9th places in terms of the annual rate of growth in agriculture, production area and productivity (yield per acre) respectively. In fact, all the three growth rates in West Bengal were considerably lower than the national average.' Stagnation in agriculture was indicated by the fall in the percentage of cultivators (38.5% in '61 and 31.97% in '91) and the consequent increase in agricultural labourers (10.45% growth in '61-'71). Census of India - 1971, Economic Report for West Bengal, Govt. of India.'

It was further amplified: 'While in India as a whole the proportion of the working population to the total population increased from 31.9 per cent in 1951 to 42.8 per cent in 1962, the corresponding proportion in West Bengal declined from 35.0 per cent to 33.0 per cent. A look at the comparative literacy rates show that: in 1951, this State held the second place, coming though at a considerable distance after Kerala only. In 1961, West Bengal's position was the fifth'.

In industrial sector West Bengal lagged behind the national aggregate considerably, as suggested by the following table.

<table>
<thead>
<tr>
<th>Table 4.10</th>
<th>Index number of industrial production - India and West Bengal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base 1970=100</td>
</tr>
<tr>
<td>West Bengal</td>
<td>101.9</td>
</tr>
<tr>
<td>India</td>
<td>114.3</td>
</tr>
</tbody>
</table>

(p) = Provisional  
Source : Govt. of West Bengal, Economic Review 1980-'81, Statistical Appendix, p.-86

It can be seen from the above table that, situation of the 60's had turned to the worse during seventies.

Out of the total fall in employment during these years, the largest share (91%) was accounted for by the two premier industries of the State - jute textile and engineering. While industrial employment does not show any sign of buoyancy, the number of job-seekers on the live register of the employment exchange rose by nearly 81 per cent, from 12,01,600 in 1976 to 21,77,300 in 1980 (ibid. p.24).

The overall figures for West Bengal, quoted above, do not, however, reveal one significant dimension of the reality - a wide disparity between the geographically small part of the developed region and the much larger yet under developed region in the State. According to a meaningful indicator, the proportion of under-developed districts and the population therein, West Bengal had 81.2 per cent of her districts as under-developed and 68 per cent of the total State population living there, compared to the all India figures of 63.3 per cent and 57 per cent respectively.  

The percentage of workers to the total population of India according to the 1971 census was 32.9% while for West Bengal it was only 27.9 per cent. The following table will produce a
rendition of the decline in the manufacturing sector of West Bengal in terms of selected parameters during the '70's.

### Table 4.11

**Performance of manufacturing sector in West Bengal during the seventies**

<table>
<thead>
<tr>
<th>Year</th>
<th>Average annual increase/decrease in income from manufacturing industries (per cent) (a)</th>
<th>Average annual increase/decrease in employment of registered working factories (per cent)</th>
<th>Share of West Bengal (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ex-factory value of industrial output</td>
<td>Value addition</td>
</tr>
<tr>
<td>1971</td>
<td>3.44</td>
<td>14.31</td>
<td>14.79</td>
</tr>
<tr>
<td>1973</td>
<td>-3.95</td>
<td>-5.83</td>
<td>12.85</td>
</tr>
<tr>
<td>1975</td>
<td>16.00</td>
<td>-4.33</td>
<td>11.50</td>
</tr>
<tr>
<td>1977</td>
<td>-3.48</td>
<td>-1.51</td>
<td>9.8</td>
</tr>
<tr>
<td>1979</td>
<td>2.82</td>
<td>-1.60</td>
<td>9.8</td>
</tr>
<tr>
<td>1980</td>
<td>-4.51</td>
<td>-4.28</td>
<td>9.81</td>
</tr>
</tbody>
</table>

(a) Income at 1970-'71 prices.

*Source: Same as in table 4.12*

Indeed, in a number of major industries of the State, the average number of workers employed daily declined in large numbers between '74 & '78.

### Table 4.12

**Average number of workers, employed daily in West Bengal.**

<table>
<thead>
<tr>
<th>Industry</th>
<th>1974</th>
<th>1978</th>
<th>Change during 1974-78 (in '000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute textile</td>
<td>250259</td>
<td>233410</td>
<td>-16,849</td>
</tr>
<tr>
<td>Engineering</td>
<td>347577</td>
<td>328520</td>
<td>-19,057</td>
</tr>
<tr>
<td>Rubber &amp; rubber products</td>
<td>16056</td>
<td>14532</td>
<td>-1524</td>
</tr>
<tr>
<td>Letter press, litho printing &amp; book binding</td>
<td>17206</td>
<td>15015</td>
<td>-2191</td>
</tr>
</tbody>
</table>

*Source: Govt. of West Bengal : Economic Review - 1980-'81, Statistical Appendix, p.71*

Moreover, with the pressure of population mounting on the limited resources, the crisis had deepened. West Bengal accommodates 8 per cent of the population of India in 2.7 per cent of the land of the country. The dismal picture of West Bengal’s economy was succinctly presented in the State government's memorandum to the Seventh Finance Commission in 1978, which corroborates the following:

‘West Bengal has a high concentration of the economically weaker section of population as the Scheduled Castes and Scheduled Tribes population constituted 26 per cent of the total population against the national average of 22 per cent. Between 1961 and 1971, the percentage of cultivators to total population of the State declined from 12.77 per cent to 8.93 per cent and the percentage of landless agricultural workers to total population increased from 5.07 per cent to 7.38 per cent.

Over the period from 1965 to 1975, the number of registered factories in West Bengal has remained constant, around 5,600 units and the average daily employment in registered factories at around 8.1 lakh. The relative under-development of West Bengal in general and of its rural area in particular was explicit. The percentage of population below the poverty line in 1977-'78 was 58.94 and 52.54 per cent in the rural and urban areas of West Bengal respectively as against the corresponding all India figures of 50.82 and 48.13 per cent'.

The bad times which engulfed the State during the decade of seventies persisted during the later decades of 80's and 90's as well. The following table will bring out the miserable performance of the registered manufacturing sector in the State during these years.

[41]
Table 4.13

Performance of the manufacturing sector in West Bengal during the eighties.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average annual increase/decrease in income from manufacturing industries (a)</th>
<th>Average annual increase/decrease in employment of registered working factories</th>
<th>Share of West Bengal (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average annual increase/decrease in employment of registered working factories</td>
<td>Ex-factory value of industrial output</td>
<td>Value addition by industry</td>
</tr>
<tr>
<td>1981</td>
<td>8.85</td>
<td>+3.49</td>
<td>10.27</td>
</tr>
<tr>
<td>1983</td>
<td>-2.43</td>
<td>+2.60</td>
<td>9.54</td>
</tr>
<tr>
<td>1985</td>
<td>4.36</td>
<td>-5.72</td>
<td>8.37</td>
</tr>
<tr>
<td>1987</td>
<td>6.14</td>
<td>+3.21</td>
<td>8.9</td>
</tr>
<tr>
<td>1989</td>
<td>3.83</td>
<td>+0.49</td>
<td>6.09</td>
</tr>
<tr>
<td>1990</td>
<td>-0.46</td>
<td>+3.22</td>
<td>6.21</td>
</tr>
</tbody>
</table>

(a) Income at 1980-'81 prices


The index of industrial production for the State when compared to the national average enunciates the disparity loud and clear:

Table 4.14

Index number of industrial production - India and West Bengal (Base : 1980 = 100)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>West Bengal</td>
<td>104.45</td>
<td>109.4</td>
<td>97.8</td>
<td>102.1</td>
<td>108.6</td>
<td>118.5</td>
</tr>
<tr>
<td>India</td>
<td>157.6</td>
<td>162.8</td>
<td>180.3</td>
<td>191.2</td>
<td>200.8</td>
<td>190.7</td>
</tr>
</tbody>
</table>

Source: C.S.O., Govt. of India and Economic Review : 1990-'91, Statistical Appendix, Govt. of West Bengal.

The statistical evidence from the above table suggests that the industrial production progressed much faster on the whole for the country than that in the State. This signifies that other states of the Indian Union faired much better than West Bengal.

The following table giving figures under selected indicators will attempt to portray the performance of registered manufacturing sector of the State during the first half of nineties, the decade of globalisation and reform.

Table 4.15

Performance of the registered manufacturing sector of West Bengal during the nineties.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual average increase/decrease in income from registered manufacturing sector (per cent) (a)</th>
<th>Annual average rate of change in employment in registered working factories (per cent)</th>
<th>Per cent share of West Bengal out of India in value addition by industry</th>
<th>Ex-factory value of industrial output</th>
<th>Employment in registered factories</th>
<th>Productive capital employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-'91</td>
<td>1.62</td>
<td>-1.02</td>
<td>6.8</td>
<td>6.13</td>
<td>9.36</td>
<td>6.98</td>
</tr>
<tr>
<td>1993-'94</td>
<td>6.18</td>
<td>-2.69</td>
<td>6.06</td>
<td>5.38</td>
<td>8.48</td>
<td>7.14</td>
</tr>
<tr>
<td>1995-'96</td>
<td>8.88</td>
<td>0.88 (b)</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

(a) Income at 1980-'81 prices


It becomes apparent from the table that the share of value addition by the State's manufacturing sector was stuck around 6% during this period even though the SDP from the secondary sector witnessed an impressive gain of 8% in terms of average annual growth rate. But in spite of an appreciable growth in industrial income, the alarming trend of diminution in industrial employment continued undeterred during the first half of the nineties. This is denoted by the falling rate of average change in industrial employment and by the shrinking share of the State in employment of the registered working factories in India. All these happenings point to the process of capital deepening operating in the industry, indicated by
the gradual increase in the all-India share of the State in productive capital employed.

The impact of such miserable performance was acute on employment generation in both public and private sectors of the State.

Table 4.16
Sectorwise distribution of estimated employment in West Bengal (number in lakh)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Sector</td>
<td>18.88</td>
<td>13.52</td>
<td>15.80</td>
<td>16.68</td>
<td>16.99</td>
<td>16.84</td>
<td>16.92</td>
</tr>
<tr>
<td>Private Sector</td>
<td>12.26</td>
<td>11.58</td>
<td>10.84</td>
<td>9.95</td>
<td>9.30</td>
<td>8.92</td>
<td>8.87</td>
</tr>
</tbody>
</table>

(p) = Provisional

The above statistics clearly sends an ominous signal. The state-run public sector units, encumbered as they are with their social responsibility of popular welfare, had to absorb a large chunk of employment. The employment gain in this sector was an overwhelming 45 per cent in a short span of 10 years (1970 to 1980). But it seems that, from mid-eighties onwards, the employment absorption capacity in this sector had declined by eight thousand persons. The situation is turning out to be worse in the market-led private sector.

During 1970 to 1980, employment in the private sector fell by 1.42 lakh (13 per cent), a fall of a little over 14,000 persons per annum. However, during the later half of the eighties (1985-'90) the pace of the fall had slowed down to some extent. During this period, employment in private sector decreased at an average rate of 10 thousand persons per annum. The following table portrays the pattern of employment distribution in the major industries of West Bengal.

Table 4.17
Average number of workers employed daily in major industries of West Bengal.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jute Mills</td>
<td>2,47,102</td>
<td>2,28,788</td>
<td>2,23,861</td>
<td>164592</td>
<td>-33.39</td>
</tr>
<tr>
<td>Engineering</td>
<td>3,47,264</td>
<td>3,51,021</td>
<td>3,49,008</td>
<td>360610</td>
<td>3.84</td>
</tr>
<tr>
<td>Iron &amp; Steel</td>
<td>52,416</td>
<td>55,012</td>
<td>48,027</td>
<td>68,061</td>
<td>29.85</td>
</tr>
<tr>
<td>Basic chemicals</td>
<td>34,844</td>
<td>36,188</td>
<td>35,475</td>
<td>19210</td>
<td>-44.87</td>
</tr>
<tr>
<td>Paper &amp; paper products</td>
<td>18,329</td>
<td>18,339</td>
<td>14,337</td>
<td>9442</td>
<td>-48.48</td>
</tr>
<tr>
<td>Rubber &amp; rubber products</td>
<td>15,803</td>
<td>18,339</td>
<td>16,400</td>
<td>12,822</td>
<td>-18.86</td>
</tr>
<tr>
<td>Glass &amp; glass products</td>
<td>7,818</td>
<td>8,417</td>
<td>8,393</td>
<td>9187</td>
<td>17.51</td>
</tr>
<tr>
<td>Printing &amp; book binding</td>
<td>15,477</td>
<td>15,763</td>
<td>15,278</td>
<td>14,377</td>
<td>-7.11</td>
</tr>
</tbody>
</table>


Employment in registered working factories hovered around 8.8 to 8.9 lakh during the eighties and in nine years from 1980 to 1989, the gain was only by 12,000 heads (op.cit. table 4.17 p.26) Conversely, in just three years (from 1987 to 1990), the no. of educated job seekers registered with the employment exchange of the State had shot up by nearly 108,000 persons or 5% (ibid.p.32) and the total no. of job seekers registered with the employment exchange rose alarmingly by 108 per cent during 1980 to 1989 (Ibid. p. 30).

The year of 1989 marked the turning point in Indian economy when the process of
market reform opened India to global competition. Shedding the cocoon of a decade-long industrial dilemma and shrugging off the image of being economically fragile, West Bengal, at last could find its direction for the future, setting the stage for a resurgent industrial economy. According to a recent report by internationally acclaimed consultants, Arthur De Little and Industrial Credit and Investment Corporation of India Limited (ICICI), the changing alignment of factors and rapid growth of the domestic market offers the State a way out from its long drawn industrial stagnation. The report observes that, 'if the State is to regain its halcyon days as a leading industrial pole in India, it should become a competitive economy by world standards. The State's economy can only succeed if it creates an open and truly competitive environment in which capital and labour are constantly being upgraded to achieve higher levels of technology, total factor productivity and quality.' The report further points out that the government will have to play a pivotal role in educating the public that creating new jobs in growing industries is far more desirable than preserving old jobs in dying industries.

For example, the state-run enterprises had caused drain of precious resources from the government. Out of the fourteen public sector enterprises, only three have posted marginal profit during the fiscal year of 1995-96 and on an average, for each of such concern, an annual incentive of Rs.2 crores has to be doled out by the government. According to the statistics published by the RBI report (1996), West Bengal is continually losing out to other states in attracting direct foreign investment. In the year of 1994, West Bengal held the second rank in this respect, but the State slumped to the third position by the year of 1996. It is succeeded by Delhi (367 proposals worth Rs.16,220 crores) and Karnataka (670 proposals worth Rs.10,551 crores).

If statistics given by the 1995-'96 Economic Survey are to be believed, most of the industrial units that were sick before the announcement of the New Industrial Policy by the State government, continue to be sick. Over 37,000 workers are currently jobless and 106 small, medium and big industrial units remain closed in the State.

During the ensuing Ninth Five-year plan, West Bengal has been ranked as 'below the average' for the first time by the Union Government in terms of its economic performance. The mid-term appraisal by the Planning Commission has found West Bengal among the backward states, clubbed with Bihar and Orissa. The 'downgradation' of the State has been on the basis of various economic indicators, including the average per capita income, resource mobilisation, revenue deficit and utilisation of the plan outlay. West Bengal had one of the highest per capita income at the time of Independence. In 1980-'81, the State had more or less the same per capita income compared to the national average. During the current plan year, the national average is Rs.2,280 while West Bengal has a per capita income of Rs.2065 which is nearly half of the per capita income for Delhi, the highest in India (Rs.4000) .

Despite the State government's claim of a 'suitable investment-friendly atmosphere', the actual performance was extremely poor. The mid-term appraisal report says that the State's revenue deficit during the financial year 1995-'96 stood at an astronomical Rs.1,145 crore. The State could not attain its target of Rs.270 crores regarding extra resource mobilisation. Its revenue collection has also been ranked below the average by the Union

11. Nisith Dey, The Bartaman, Calcutta

[44]
Government.

West Bengal is one of the few states which has always approached the Planning Commission to reduce its plan size for lack of proper resource mobilisation. In many areas, the revised outlay, has been half of the initially approved outlay. The State government could spend only 30 per cent of its plan outlay during 1992 to 1994 (ibid.) and in some crucial sectors like agriculture, irrigation and flood control the State had not been able to attain its target.

Moreover, it was pointed out by different surveys of the agricultural ministry that, due to the industrial recession reigning in West Bengal, pressure on the land has been mounting and fragmentation of land has been rampant. Thus, the production pattern is becoming increasingly dependent upon the small and marginal farmers; small size of land holding is deterring the application of fertiliser and other modern agricultural inputs and consequently, capital investment in agriculture is becoming unprofitable.

In this way, failure of the main two economic sectors of the State has made the State to reel under acute job crisis. At the time of the start of Left Front ruling in the State, the no. of registered un-employed persons was 12 lakhs and at the year ending of 1996 it has become 54 lakh 83 thousand — an average annual increase of 19% during a span of 19 years (1977 to 1996) (source : the Employment Exchange, Calcutta).

According to a recent report by Planning Commission, the rate of open unemployment in West Bengal was 6.06 per cent. nearly twice of the national average of 3.37 per cent in the same year. Underemployed persons constituted a share of 8.13 per cent of the State population which was much higher than the national average of 6.9 per cent. The same report puts the figure for educated unemployed in the State at 38.4 per cent of the State population.

The essence of preceding analysis can be put in a gist form. In a publication by Bengal Chamber of Commerce and Industry (op. cit. West Bengal : An Analytical Study, 1971), a detailed exposition about the causes of decline in the State was presented in the following words:

The present situation in West Bengal is the product of a number of physical, social and economic processes, none of which can be expected to yield the desired result if tackled in isolation. For, the analytical chapters have shown that the deterioration of the river system; the impact of partition; the lack of development of the civic services in the Calcutta conurbation; extremely thwarted growth of certain regions in the state; the survival notwithstanding the land reform legislation, of the inequitable and unproductive agrarian framework: the growing unemployment, particularly of the educated and the technically skilled and the near collapse of the education system - all accentuated by the growing lack of resources and intensified by social indiscipline in many cases - have combined to bring about the present state of affairs in West Bengal (ibid. p. 154).

A noticeable feature about the economy of West Bengal for the past many years is the stagnation in structural terms. Between 1960-'61 and 1975-'76, the contribution of agriculture to the state domestic product (at 1960-'61 prices) has stood at about 34 to 36 per cent. On the other hand, whereas 20 per cent of the state domestic product was contributed by the manufacturing sector in 1960-'61, the percentage came down to 18 per cent in 1975-'76.

From 1975-'76 to 1980-'81, another decline was witnessed in the share contributed by agriculture in the total state domestic product. According to the figures based on '80-'81 prices, the share of agriculture was 29% in '80-'81 which improved to 33% in 1985-'86 and

34% in '89-'90. An alarming trend of deindustrialisation had plagued the economic sectors of the State during the 80's. The per cent share of income (at '80-'81 prices) contributed by the manufacturing industries in the total SDP was 24.8% in 1980-'81 which means considerable improvement over the mid-seventies situation. But the industrial sector could not retain this tempo for long and since mid-eighties onwards the relative income had again followed a downward trend (23.75% in 1985-'86 and 22.66 per cent in '89-'90). The latest disaggregated figures of SDP from all sectors show that the per cent share of income from agriculture was 30.5% while for industry it was 17.7% in 1995.16

The absence of any marked diversification in the State's economy is borne out by the results of the Annual Survey of Industries (Census Sector) for West Bengal, 1975-'76... 'the traditional units such as, food manufacturing, textiles, paper and paper products, basic metals, machinery and transport equipment still dominate the field'.

The traumatic shock to the economy of the State as a result of the Partition of the country and its continuing impact are factors which cannot be ignored. About five million displaced persons migrated to West Bengal. In 1962, the central government decided to terminate all aid for displaced persons except for some residuary ones. The central assistance provided to cope with this problem so far, has remained totally inadequate. (ibid. appendix, pp i & ii).

The critical situation in the State as a whole is reflected, as it were in a concentrated focus in the everyday life in the Calcutta metropolitan area. The following is an excerpt from an official document.17

In spite of its awesome size, its wealth and building activity, its vital significance in the national and regional economy, Calcutta is a city in crisis. All who live in this huge metropolitan complex, have daily experience of its characteristic problems: chronic deficit in basic utilities such as water supply, sewerage and drainage; in community facilities such as schools, hospitals, parks and recreation spaces; severe unemployment and underemployment; congested and inadequate transportation; vast housing shortage and proliferating slum areas; soaring land prices and rents... limited State and municipal financial resources to cope with the situation.

Over the past years many boards and committee and commissions have met and deliberated on the problems of the city and issued reports calling for remedial actions. The improvements that were subsequently made, if indeed any action was taken, were inevitably piecemeal, sporadic and inadequate to meet the needs of the rapidly increasing population of Calcutta - Metropolitan Calcutta in effect, has grown in spite of itself - haphazardly, unsystematically, without a suitable structure or coordination of the forces of growth and with a diminishing share for each of its residents in such amenities as the community affords.18

An idea about the anomalies causing abysmal economic decline in West Bengal can be gathered from the tables produced in the appendix, giving statistical evidence of the mounting pressure of population on land (viz. decadal change of population density, per capita net sown area); the urban congestion in the State (viz. urban population density per sq. km. of area, compound annual growth rate of urban population, percentage of estimated mid-year urban population to total population); sectoral allocation of resources (per cent distribution of total expenditure among main economic sectors of the State during the consecutive five-year plans, compound growth rate of plan and non-plan disbursement of money); structure of the work force (growth rate of classified workers in West Bengal) and industrial stagnation.

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18. Ibid.
(viz. share of secondary sector in the total income from all sectors of West Bengal).

It becomes evident from the above discussion that stagnation in the organised manufacturing sector can be attributed to the State's failure in eradicating the gross imbalance and malaise in its ailing economy. Therefore, an effort has been directed for investigating the relationship between indicators of industrial performance and those for the general socio-economic well-being. In the context of this discussion, the trend observed over the years for some of these indicators are produced in table 4.18, 4.19, 4.20 and 4.21 whereby an idea can be gathered about the behaviour pattern of these variables over the last three decades.

The level of industrialisation in the State has been represented in this study by the State Domestic Product contributed by the organised sector of the State.

Table 4.18
State Domestic Product contributed by the organised manufacturing sector of West Bengal - quinquennial growth rate 1960-'61 to 1995-'96. (per cent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual average growth rate (a)</td>
<td>8.92</td>
<td>-2.96</td>
<td>0.84</td>
<td>3.16</td>
<td>0.74</td>
<td>2.47</td>
<td>2.03</td>
</tr>
</tbody>
</table>

(a) At '70-'71 prices (b) For 1990-'93

Source: State Statistical Abstract and Economic Review, Govt. of West Bengal

Income from the manufacturing sector recorded an impressive growth rate during the initial decades of the plan period ('60-'65) but the pace could not be sustained in the face of retrogression which struck all major economic sectors during the mid-sixties and early seventies.

The growth rate gathered some momentum during 1970-'80 but the early years of '80s again spelt doom for the industries. Thus, throughout the 20-years period of 1960-1980, growth of industrial income kept on fluctuating and stagnation reigned all along. However, the decade of nineties has been showing some signs of recovery wherein the growth rate of industrial income gradually improved to reach two per cent. But a come-back to the '50s or early '60s situation remains an elusion.

4.4 Relationship between Industrial Income and Economic Development Indicators:

The foregoing analysis suggests that industrialisation is an outcome of a complete set of circumstances and conditions — that is to say, this phenomenon involves technological, sociological, psychological and economic factors. For a well-regulated and desirable expansion of industries, these variegated factors are to be integrated in the prevailing socio-economic scenario in such a way that these can contribute significantly to long-term productivity improvement.

It has been observed that productivity growth (in industries) can be had through development of material factors on one hand and human factors on the other. Capital formation for example, is of paramount importance in accelerating economic development because increasing capital investment is an indispensible way for introducing new production techniques (in an industrial economy) which can bring in higher labour productivity to the industries. Apart from the accumulation of physical capital (which depends mostly on micro-economic structural conditions), there are at least three other sources of productivity increase in industries: these are, superior organisation and management of enterprises; effective
borrowing and adoption of technical knowledge, and improvement of labour commitment and discipline.

Most of these aforesaid factors (involving the element of human resource) do have crucial bearing on the well-being of industrial economy but choice of these factors as variables (to be used in statistical analysis) has remained limited, especially, at the state level. This is because, some of the indicators (representing these variables) are quantifiable whereas others are non-measurable. Besides, a number of such variables contain serious non-conformity in the time-series data, particularly at the state level. The statistical exercise using such variables thus, remains somewhat partial in its coverage despite the fact that variation in the pace of industrialisation may be affected due to changing behaviour of any one or all of these factors. Hence, it would be worth-while to have a look at the trend(s) witnessed in a number of socio-economic indicators for the state of West Bengal and then to select from them the suitable ones (fit for statistical investigation) depending on the available data pattern.

**Table 4.19**

Selected socio-economic indicators for West Bengal- 1960-61 to 1995-96

<table>
<thead>
<tr>
<th>Year</th>
<th>Per capita surplus/ deficit in state revenue (at current prices) (Rs.)</th>
<th>Per capita development expenditure (at current prices) (Rs.)</th>
<th>Expenditure for technical education out of total expenditure in education (per cent)</th>
<th>Volume of export cargo handled by Calcutta port (annual average growth rate) (per cent)</th>
<th>Credit and advance in deposits of scheduled commercial banks (per cent)</th>
<th>Estimated urban population in total population (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-61</td>
<td>0.22</td>
<td>15.22</td>
<td>6.78</td>
<td>N.A.</td>
<td>106.29</td>
<td>8.62</td>
</tr>
<tr>
<td>1965-66</td>
<td>-0.58</td>
<td>23.07</td>
<td>6.69</td>
<td>N.A.</td>
<td>106.27</td>
<td>9.59</td>
</tr>
<tr>
<td>1970-71</td>
<td>7.87</td>
<td>35.28</td>
<td>5.86</td>
<td>22.36</td>
<td>93.33</td>
<td>11.00</td>
</tr>
<tr>
<td>1975-76</td>
<td>-3.59</td>
<td>70.84</td>
<td>4.53</td>
<td>4.14</td>
<td>72.89</td>
<td>12.72</td>
</tr>
<tr>
<td>1980-81</td>
<td>4.32</td>
<td>144.09</td>
<td>2.60</td>
<td>4.35</td>
<td>60.47</td>
<td>14.26</td>
</tr>
<tr>
<td>1985-86</td>
<td>22.28</td>
<td>273.94</td>
<td>1.98</td>
<td>15.23</td>
<td>50.34</td>
<td>15.78</td>
</tr>
<tr>
<td>1990-91</td>
<td>153.00</td>
<td>527.69</td>
<td>1.83</td>
<td>14.6</td>
<td>54.37</td>
<td>17.63</td>
</tr>
<tr>
<td>1995-96</td>
<td>138.35</td>
<td>602.42</td>
<td>1.95</td>
<td>7.78</td>
<td>55.09</td>
<td>19.55 @</td>
</tr>
</tbody>
</table>

Source: Economic Review, State Statistical Abstract and State Statistical Handbook, Govt. of West Bengal, various issues. @ Figure for 1993-'94

Perusal of the above table reveals a number of dismaying trends.

The percentage of credit and advances in deposits of scheduled commercial banks in the State has been shrinking continuously over the decades. The budgetary position kept on fluctuating. The volume of export cargo handled by Calcutta port diminished considerably between 1970-'71 and 1980-'81 and during the nineties it has improved only marginally. The per capita development expenditure represents somewhat brighter side but the actual situation cannot be assessed exactly from the available figures because the values are not given in real terms. Besides, reports from N.G.O.s and printed media are replete with incidences of incomplete and slow-moving projects intended for providing public utilities at district level (viz., potable water, rural health centres and hospitals, rural housing, domestic power connection and the like). Advancement of technical education also appears to be throttled in the State. The tempo of urbanisation has been stagnating in the State (growth rate of estimated urban population kept on the thresholds of 2% to 2.5%) during the decades of eighties and
nineties.

Trends observed in these indicators thus, suggest that the government of West Bengal is having a tough time while groping unsatisfactorily with its myriads of problems of multifarious nature. With the budgetary position fluctuating, the fund allotment for technical education may have to be reduced drastically. The state government could not do justice to its pursuit in mobilising domestic resources (which may be a fall-out of an incompetent administrative machinery). Operation and viability of scheduled commercial banks have suffered a set back, possibly due to high rate of defaults (particularly in the rural areas). Ultimately, it remains an uphill task for the State government to bear with its essential responsibilities with such limited financial capacity and a cumbersome administrative set up. Moreover, gross misappropriation and non-utilisation valuable funds (provided by premier bodies like Asian Development Bank and World Bank) due to administrative negligence remained rampant which thwarted the tempo of development plans and programmes sponsored by the central government. And consequently, the state government could not perform well enough during the past decades to earn a good name as a credit-worthy and competent politico-administrative unit. To tackle such difficult situation, vigorous and co-ordinated action on different social and economic fronts should be considered imperative for promoting higher level of industrialisation.

Now, the state-level hypotheses (outlined in Chapter Two) are to be examined to substantiate the statistical validity of these aforesaid relationships.

**H.1 : Industrial income is expected to be significantly and positively determined by changes in agricultural production and by incremental changes in expenditure under development programmes, by increasing propagation of technical education and by better utilisation of credits and advances availed from the deposits of scheduled commercial banks.**

Y (the dependent variable) in this case is the State Domestic Product (at constant prices) contributed by the organised manufacturing sector of the State. This (i.e., \( Y \)) can be considered a measure of industrialisation as it relates the progress of the secondary sector in the State. Rationale for selecting the independent variables and their respective statistical significance (that is, their relative importance in influencing the level of industrialisation in the State) has been discussed in detail in the following sections.

The first of these independent variables relates to total agricultural production in the State, the derived indicator being per capita agricultural production (in thousand tonnes). The primary sector or agriculture is the resource base of the economy which supplies raw material to the industrial sector. Also, the agricultural sector generates demand for industrial products because a large chunk of population belongs to it. As it has been demonstrated in Punjab, higher agricultural productivity has an enormous chain effect on industrial growth due to creation of demand for all kinds of consumer, chemical and engineering goods. The use of new agricultural technology (based on high-yielding seeds, water control and fertilisers) offers the possibility of bringing improvement in the level of living of the rural masses because gain in agricultural productivity can realise considerable amount of disposable income which means greater purchasing power for the people depending on this sector.

The second variable is percentage share of credit and advances to the deposits of scheduled commercial banks in the State. The network of business banks can be considered
an important economic infrastructure facilitating industrial development because term loans disbursed by these bodies are of great help (in a capital-starved economy) for setting up new industries and for modernisation of the existing ones. The state government can thus, direct credit to priority industry in priority areas (viz., cottage industry in remote rural areas) by inducing financial distributors (like banks) to make credit available on a preferential basis. The other indicator in the same direction is represented by the total fund disbursed by premier financial institutions of India (viz., IDBI, IFCI) and by State Financial Corporation in the State.

The indicator next in importance is per capita development expenditure in the State (the indicator being index of per capita development expenditure keeping 1970-'71 as base). The actual expenditure in various government projects (meant for providing essential infrastructure and other public utilities) should have a positive effect on industrialisation because the quality and quantity of infrastructure and other services can crucially determine the tempo of industrialisation. Another alternative indicator (representing government's initiative in developing industries) is the actual annual expenditure by the government on industries and power (as a percentage of total expenditure) during the respective 5-year plans.

The fourth indicator is expenditure on technical education as a percentage of total expenditure on education. One of the most important gains of industrialisation (although somewhat intangible) is the development of a precious pool of skilled personnels in the areas of technology, management, finance, organisation and marketing. It has been reiterated that the main cause of productivity increase in industries is not capital investment as such but intangible aspect of the human factor as better management technique and better organisation. In fact, investment in technical education (i.e., for training of engineers, scientists, administrators and technologists) is a more fruitful factor-input than that of simple capital equipment. This indicator is thus, considered to be representative of the State government's endeavour in this regard.

It has been reiterated in different publications that politically motivated harmful trade unionism had depressed the industrial productivity in the State and caused irreparable damage to the work culture and investment climate of the State. Indeed, from the 1960's, the trade unions, led by left parties gained dominance over others. Labourers were made conscious of their rights but sense of duty was not instilled among them. A new sect of vested interest emerged, comprising the union leaders - who were mostly outsiders and their vicious nexus and power grabbing attitude did much harm to the working community. Labourers were deliberately misinformed and misguided. Strikes, go-slow, cease work, work to rule, gherao - all sorts of pressurising tactics were followed which only proved to be counter-productive. The environment of indiscipline and the self-destructive approach retarded the overall economic growth and the State became infamous for militant trade unionism.19

Economic theory on negotiations and strikes predicts that in a real world negotiation, disputes may become unavoidable because each side might have different information about the gains from bargaining. Yet the duration of disputes can (and should) be reduced through appropriate regulatory and legal mechanisms because maintaining industrial peace is as important for a worker as it is for an employer. Otherwise, disputes tend to reduce the size of the organisational rent and inflict damage on both sides. From a dynamic point of view, disputes pose problem for rationalising labour and capital. Such problems are indeed becoming

visible in West Bengal in the context of exit of sick units. Thus, collective bargaining which is a way of distributing economic profits among workers and employees became solely politically motivated mechanism, divorced from their real function - the persuasion of the workers' welfare. In 1986, mandays lost by industrial disputes in West Bengal (14,835 thousand) and men involved in the disputes (146 thousand) were the highest in the country (ibid. p. 18).

The incidence of industrial dispute includes both strikes and lock-outs which causes wastage of precious working days, ultimately undermining the potential industrial productivity. For West Bengal, the decades of 70's has been infamous for militant trade unionism, abetted and fuelled by extremist development in the political atmosphere. The high frequency of industrial disturbance could be restrained somewhat at the start of the '80s but throughout the decade (1980 to 1990), the loss of mandays followed an increasing trend. This, in spite of the 20-years'-old Left Front ruling in the State. It seems that, the severity of militant trade unionism could be tamed to some extent, thereby averting a strike-led closure. But greater incidence of lock-outs in the industrial unit remained a difficult challenge to encounter.

The following table testifies to the aforesaid discussion.

Table 4.20
Mandays lost by industrial dispute (strikes and lock outs) in West Bengal - 1960-'96.

<table>
<thead>
<tr>
<th>Year</th>
<th>'60-'61</th>
<th>'65-'66</th>
<th>'70-'71</th>
<th>'75-'76</th>
<th>'80-'81</th>
<th>'85-'86</th>
<th>'90-'91</th>
<th>'95-'96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandays lost (In lakh)</td>
<td>20.51</td>
<td>13.63</td>
<td>94.34</td>
<td>135.8</td>
<td>61.8</td>
<td>153.1</td>
<td>210.0</td>
<td>65.0</td>
</tr>
<tr>
<td>Per cent all India share</td>
<td>41.7</td>
<td>9.84</td>
<td>45.88</td>
<td>62.01</td>
<td>28.19</td>
<td>52.36</td>
<td>87.19</td>
<td>N.A.</td>
</tr>
</tbody>
</table>


To assess the impact of disturbance in industrial climate upon industrial income, the second hypothesis at state-level had been formulated:

H.2: Increasing frequency of industrial disputes, amounting to greater number of mandays lost out of the total mandays worked will depress the magnitude of S.D.P. generation by the manufacturing sector. Or, in other words, with an increase in the number of cases of industrial disputes, the size of S.D.P. generated by the manufacturing sector will register a significant fall.

Indeed, the past happenings in the State associated with prolonged workers' unrest had raised a big question mark regarding the future of industries in the State, especially for those funded by private capital. So much so that, a substantial volume of private capital went to other states where situation was less turbulent. And consequently, retaining/inviting an unobtrusive inflow of private capital into the State (or in other words mobilisation of domestic resources) was rendered a difficult task.

It is here that the importance of institutional finance makes its existence felt. Credit extended by the premier financial institutions (like IDBI, IFCI, WBFC etc.) of India and financial corporation of the State can be considered to be one of the catalytic factors in boosting the tempo of industrialisation. Volume of fund disbursed by these institutions in a state over the years, indicates the competence of that state in handling and utilising this much-sought-after finance properly. The following table intends to provide an idea on this aspect.
Table 4.21
Disbursement of funds by IDBI, IFCI and WBFC in West Bengal—quinquennial growth rate
1960-'61 to '94-'95 (per cent)

<table>
<thead>
<tr>
<th>Period</th>
<th>'60-'65</th>
<th>'65-'70</th>
<th>'70-'75</th>
<th>'75-'80</th>
<th>'80-'85</th>
<th>'85-'90</th>
<th>'90-'95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average annual growth rate</td>
<td>45.82</td>
<td>-5.41</td>
<td>71.62</td>
<td>43.08</td>
<td>23.67</td>
<td>34.31</td>
<td>19.85</td>
</tr>
</tbody>
</table>


It becomes evident from the above-quoted figures that the quinquennial growth rate of institutional finance disbursed in the State had been fluctuating violently during the last three decades. The situation was particularly bad during the 1965-'70 period when the State experienced a fall in its financial disbursement at an annual rate of 5.4 per cent. Incidentally, these were the years when the State started observing its worst-ever industrial slump. However, the growth rate improved appreciably during the following quinquennium of 1970-'75 and this annual rate of gain by 71.62 per cent in these years happened to be the highest among all the growth rates registered during the entire reference period of the study. But this impressive pace could not be sustained for long and at the turn of the eighties (i.e. in 1975-'80) the rate dropped down to the 60's situation. And throughout the years of 80's the State continually observed fall in its efficacy of utilising institutional finance. It seems that the scope for proper perusal of precious fund became rather constricted in the registered manufacturing sector of the State.

This standpoint gets corroborated by the findings of other studies as well. In a detailed study of West Bengal's economy, it had been elaborated by the author that:

"...If the relative amount of investment disbursed by the four major credit providing institutions is considered, it will be found that West Bengal is at the bottom of seven states. Out of the total disbursement by IFCI (till 1986), West Bengal received 5%, Maharashtra 13.78%, Gujarat 14.8% and U.P. 19%.

Similarly, disproportionate disbursement of credit can also be found in the records of ICICI. Out of the total fund released by this institution till 1985-'86, West Bengal bagged only 5% against 27% by Maharashtra, 13% by Gujarat and 9.6% by Tamil Nadu.

LIC's aggregate investment in West Bengal till 1986 was 7.69 per cent of the total sum. This institution released nearly 25 per cent of its total funds in the three western states of Goa, Gujarat and Maharashtra while for the 10 eastern zone states, LIC's investment was only 19 per cent of the total."

Even during the initial period of country-wide economic liberalisation that is, in early nineties when the other industrially advanced states, were seen to be in the fray for winning their share of requisite industrial finance, the State of West Bengal seemed to have been lost in the oblivion. Apparently it seems that reasons associated with strategic planning, human resource factor and technological element may have pushed the State to the sideline.

Considering the decisive role played by institutional finance in promoting industries, the following hypothesis has been formulated to bring out the gravity of this indicator.

**H.3**: A positive relationship is expected between S.D.P generated by the manufacturing sector and institutional finance disbursed by IDBI, IFCI and WBFC in West Bengal during the last three decades.

To assess the validity of this hypothesis, the measure of 'per cent finance disbursed out of total finance sanctioned' had been opted for. However, owing to serious non-conformity in the time-series data available for the selected reference period (particularly, regarding financial

disbursement from IDBI and IFCI), the scope of this indicator got somewhat curtailed. Thus, financial disbursement (out of the total sanctioned amount) by West Bengal Financial Development Corporation remained the only suitable indicator to be used in this analysis.

The hypotheses H.1, H.2 and H.3 are tested at 1% level of significance and results from the multiple regression equation had been presented in table 4.23

### Table 4.22

*Findings from Regression Analysis carried out for the organised manufacturing sector of West Bengal Hypotheses H.1, H.2 and H.3*

<table>
<thead>
<tr>
<th>Dependent variable (Y)</th>
<th>Independent variable (x)</th>
<th>'t' values</th>
<th>Multiple Regression co-efficient (R²)</th>
<th>F-ratio</th>
<th>DW-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita SDP contributed by the registered manufacturing sector (at '70-'71 prices)</td>
<td>x₁</td>
<td>0.65</td>
<td>2.72*</td>
<td>0.65</td>
<td>to 1.59</td>
</tr>
<tr>
<td></td>
<td>x₂</td>
<td>0.19</td>
<td>2.72*</td>
<td>10.25*</td>
<td>1.69*</td>
</tr>
<tr>
<td></td>
<td>x₃</td>
<td>2.02</td>
<td>2.72</td>
<td>3.56</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>x₄</td>
<td>0.33</td>
<td>2.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>x₅</td>
<td>1.61</td>
<td>2.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>x₆</td>
<td>0.26</td>
<td>2.72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * Significant at 1% level of significance

x₁: Per capita agricultural production (in '000 tonnes)
x₂: Index of per capita development expenditure (1970-'71=100)
x₃: Per cent finance disbursed out of the total finance sanctioned by WBFC
x₄: Per cent mandays lost out of total mandays worked.
x₅: Percentage of credit and advancement to deposits of scheduled commercial banks
x₆: Per cent expenditure for technical education out of total expenditure for education

Results from the above table indicated that the merit of the selected variables (incorporated in H.1, H.2 and H.3) could be realised on the whole. This is because, these six indicators together could explain 65 per cent of the total variation in per capita S.D.P. contributed by the organised manufacturing sector. But it has to be admitted that none of these had evinced an independent significant impact in determining per capita industrial income. That is to say, in spite of the βs being insignificant (as it can be observed from the respective t-values), the F-ratio test remained significant (at 1% level of significance) and thus, the explanatory validity of this exercise had not been defeated. Beside, the problem of multicollinearity had been taken care of by carrying out the Durbin-Watson test and the DWₜ statistics implied that the extent of inter-correlation among this set of independent variables remained within the critical limit.

Among these variables, the indicators relating to institutional finance (i.e., financial disbursement by State Financial Corporation and credit and advances from scheduled commercial banks) seemed to have relatively more weightage in determining industrial income. Direction of relationships derived from the regression equation substantiated the positive influence of increasing agricultural production, development expenditure, utilisation of institutional finance and propagation of technical education on industrial income. The debilitating impact of industrial disturbance, however, appeared to be insignificant in this case.

### 4.5 Employment in relation to Structural Ratios and Technical Co-efficients calculated for Registered Manufacturing Sector:

In the aforesaid discussion, West Bengal's industrial performance has been compared
with that of the national average in terms of broad aggregates like output, employment, value addition etc. Also, the state of the industries in relation to the overall socio-economic well-being of the State has been subjected to intensive investigation.

It has become apparent that against the backdrop of a declining industrial output and employment, West Bengal industry has also been suffering from lack of efficiency and dynamism. It is indeed difficult to quantify industrial efficiency and dynamism at an aggregate level, although there are several indicators for both of these available from various empirical studies (viz., growth of manufacturing net value added, export growth and diversification, total factor productivity, incremental capital-output ratio, profitability etc.).

Presently, the last one (i.e., profitability), defined as profit per unit of output has been drawn upon to indicate the profitability at aggregate level. The profit figures have been reported by the ASI reports since 1979 onwards and if is defined as a residual after subtracting all factor incomes (rents, interest payments and employees, remuneration bills) from net value added. The comparative profitability figures for West Bengal and India have been given by the following table for selected years.

**Table : 4.23**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>West Bengal</td>
<td>3.98</td>
<td>1.82</td>
<td>0.85</td>
<td>0.06</td>
<td>-1.47</td>
<td>-0.38</td>
<td>2.09</td>
<td>-3.91</td>
<td>1.29</td>
<td>2.67</td>
</tr>
<tr>
<td>India</td>
<td>5.61</td>
<td>5.9</td>
<td>4.63</td>
<td>4.67</td>
<td>5.11</td>
<td>3.48</td>
<td>2.14</td>
<td>3.84</td>
<td>3.22</td>
<td>6.67</td>
</tr>
</tbody>
</table>

*Source : Annual Survey of Industries Reports*

*(a) Figures for 1975 and 1977 are derived from respective net income figures.*

It can be observed that West Bengal industry has not only been suffering from low profitability compared to the national total, but it has been often registering negative profits throughout the major part of the 1980s. There is however, no obvious trend that is visible. Random year to year fluctuations in profitability may be due to a high share of primary resource-based products in West Bengal’s total industrial output, products that are subject to more violent price and therefore, profit fluctuations. Continued negative profitability, at the aggregate level may be a product of the dominance of loss-making public sector units over profit-making firms in West Bengal (assuming that private sector firms cannot continue to exist as loss making units in the long run).

Alternatively, negative profitability may simply be a reflection of inefficiency pervading the entire industrial sector of West Bengal. The obvious economic consequence would be exit of all inefficient industrial units. But perhaps, the exit process occurs in a phased manner rather than all at the same time, leading to a gradual but systematic decline in aggregate industrial output and employment.

Against this backdrop of gradual but steady process of de-industrialisation, a fundamental question can be raised: has there been a major structural shift in favour of West Bengal’s comparative advantage over the reference period of this study? Any structural change in West Bengal’s dynamic comparative advantage (the advantage being enjoyed in a changing global environment characterised by rapid technological progress) could very well imply a changing pattern of resource allocation and production. The process of de-industrialisation may thereby, merely become a manifestation of a structural change in the pattern of production and resource allocation in West Bengal.

All these developments will have obvious implication for employment.
the available ASI information on West Bengal's industrial production, the technical characteristics of production (like factor intensities and factor productivities) can be ascertained. This will reflect to some extent, the changing face of strength and weakness in industrial production of the State.

Moreover, detailed analysis of the registered manufacturing sector of the State will focus upon the changing direction and magnitude of input intensity and input productivity. Two major productive factors have been identified here as stock of machines and employment volume. Though this identification is only simplistic, it serves the purpose of arriving at a first hand approximation of industrial performance quite efficiently.

To calculate capital intensity of production, the conventional stock measure of fixed capital per employee (FCAP/Empl) has been taken as the indicator.

For measuring factor productivity, the simple indices of average productivity of labour and capital, defined as net value added per employee (NVAE) and net value added per unit of fixed capital (NVAFC) have been adopted. These two indicators will help to study the effectiveness and influence of technological orientation on factor productivity, i.e. whether and to what extent the production is tilting in favour of fixed capital.

The time-series trend for some other major indicators of industrial performance have been considered for the entire reference period. These are gross output per factory (GF), net value added per factory (NVAF), net income per factory (NIF), profit per unit of fixed capital (PFCAP).

Apart from the role played by the physical capital, the human capital intensity of production and the input cost accrued therein, have also been considered for the study purpose. To study the impact of labourisation on profitability of the industrial sector, the rate of profit has been calculated (taking the ratio of profit to fixed capital). When this rate of profit calculation for any industry is compared and contrasted with the corresponding figures of net income per factory (NIF), the effect of the rate of wage bill on profit prospect can be gauged. Similarly, to gather an idea about the employees' remuneration, total emolument per factory (TEMF) and total emolument per employee (TEEEm) have also been calculated. To capture the impact of technology on size dimension, two befitting measures, fixed capital per factory (FCF) and employment per factory (EmF) have been calculated.

It is expected that two or three or four of these above mentioned performance indicators, when considered in combination for a particular time period, will suitably project the extent of industrial decline in West Bengal. For example, the information on 'total emolument per employee' and 'total emolument per factory' can be placed side by side and if it is denoted by the time series trend that per factory emolument is increasing but per employee emolument is either decreasing or is being nearly constant, it would be implicit that more people are employed per factory with lesser average emolument. Or in other words, a bias towards excess labour employment.

Similarly, decreasing average emolument per employee, coupled with lower labour productivity (i.e., NVA per employee) and lower gross output per factory, are enough to project a deteriorating profit scenario.

Therefore, these ratios when supplemented with other information, is expected to provide valuables clues about the phenomenal structural shift experienced by the industries.

Information about these ratios are tabulated and reported for the entire reference period.
FIG. 4.1 : SHARE OF MANUFACTURING SECTOR IN TOTAL N.D.P. AND N.S.D.P. (AT 1970-'71 PRICES)

FIG. 4.4 : PROFITABILITY (PROFIT-OUTPUT RATIO)
FIG. 4.2: PER CENT SHARE IN INDUSTRIAL OUTPUT, VALUE ADDITION AND EMPLOYMENT IN REGISTERED FACTORIES

FIG. 4.3: MANDAYS LOST IN INDUSTRIAL DISPUTES
(from 1961 to 1993) for the state of West Bengal vis-a-vis India (supplemented by suitable diagrams). For the earlier years of sixties (from 1961 to 1968) when the information for factory sector was not available, the respective figures for the census sector had been produced and hence, the figures and information for 1961 to 1968 and 1969 to 1993 periods are not exactly comparable.

4.5.1 To gauge the extent of de-industrialisation in West Bengal, the States industrial performance is compared with that of national average in terms of broad aggregates like output, unit size, employment, value addition (or profitability) etc. This exercise has been attempted to detect whether there has been a major structural shift in West Bengals comparative advantage against the general backdrop of industrial decline.

The statistical evidence presented here (in the form of line graphs) is based entirely on published secondary data compiled from the Annual Survey of Industries, C.S.O. The reference period has been spread over a span of 32 years from 1961 to 1993. Two disclaimers must be stated at the very outset. First, the data available for the decade of 60's relate to the census sector only whereas for the remaining time period the statistical evidence encompasses the entire factory sector. Hence, the representations for these two periods are not exactly comparable but the general temporal trend can certainly be ascertained. Secondly, the data expressed in value terms are nominal values and therefore, long run movement in these series should not be interpreted as changes in real terms. However, legitimate comparisons can be made between the intertemporal movement of two or more nominal variables which are subject to the same price deflector. In other words, since the figures are reported in current prices, the implication of the direction of changes should be considered with due importance rather than the magnitude of changes.

This analysis is divided in two sections. The first one examines the overall industrial performance during this period under study in terms of broad aggregates like output, employment, value addition, profitability and frequency of industrial disputes in the organised sector. The second section analyses structural change in the technical characteristics (viewed in terms of selected structural ratios and technical co-efficients) of West Bengal industry, again in aggregate terms.

It can be clearly appraised from figure 4.2 that West Bengal's share in India's total industrial output, measured in terms of value of output as well as net value added, has consistently been declining over the entire period under study.

The picture is equally grim for industrial employment in the State. Throughout the entire period of observation, from 1961 to 1993, share of employment in the organised industrial sector has fallen by 13.8 per cent. But total employment in the organised industrial sector of India has registered a growth of 71 per cent during the same period. The conclusion is therefore, unambiguous. West Bengal has witnessed a major setback in its industrial output and employment in comparison with the rest of the country.

Also, it can be followed from figure 3 that the number of mandays lost by industrial disputes (e.g., strikes, lock-outs etc.) has registered an alarming increase of 181 lakh in West Bengal from 1961 to 1991. Although there remains intermittent yearly spans of lesser disturbed periods (which occurred after every 4 to 7 years), a phenomenal escalation in frequency of industrial disputes over time can be ostensibly traced for the State. Moreover, the corresponding time-series trend for India maintains a nearly synchronous course (although
FIG. 4.5(A) : GROSS OUTPUT PER FACTORY (CENSUS SECTOR)

FIG. 4.5(B) : GROSS OUTPUT PER FACTORY (FACTORY SECTOR)
FIG. 4.6(A) : NET VALUE ADDED PER FACTORY (CENSUS SECTOR)

FIG. 4.6(B) : NET VALUE ADDED PER FACTORY (FACTORY SECTOR)
the aggregate no. of mandays lost for the whole country is justifiably much higher than that for the State). Thus, it becomes apparent that during this time period West Bengal has accounted for a sizable proportion of mandays lost in the country (ranging from 21 to 85 per cent).

The regime of declining industrial output and employment in West Bengal is further aggravated by nosediving profitability. Not withstanding the problem of measuring profits, particularly at aggregate level, the overall profitability of the Industrial sector in West Bengal as well as India are calculated as per the profit figures reported in ASI. It is defined as a residual after subtracting all factor incomes (i.e. rents, interest payments and employees' remuneration bills) from net value added. This figure for profit is available from 1975 onwards and the trend for factory sector (portrayed by figure 4) affirms that West Bengal industry has not only been suffering from low profitability compared to the national average but it has been consistently registering negative profits throughout the major part of the 1980s. However, no obvious trend is visible, rather, random year to year fluctuation in profitability can be traced (this phenomenon has been discussed in table 4.22).

This negative profitability for a prolonged period implies that industry in West Bengal has also been suffering from lack of efficiency and dynamism. This, in spite of the fact that gross output per factory (figures 4.5 A and 4.5 B) and net value added per factory (figures 4.6A and 4.6B) in West Bengal have been registering a continually increasing trend throughout the reference period. Moreover, these two time-series trends (i.e. gross output per factory and net value added per factory) for West Bengal have maintained a more or less impressive profile in comparison to the respective national averages. The rate of increase in gross output and net value addition for West Bengal also maintained a comparable and regular position when examined against the national average.

One implication of such an observation may be that the average size of factories have increased in both the State and in the country as well. This probably suggests a move towards large scale production organisation or alternatively, it may be a manifestation of higher factor productivity.

From the available ASI information, technical characteristics like factor intensities and factor productivities are examined. For measuring factor productivity, the simple indices of average productivity of labour and capital, defined as net value added per employee and per unit of fixed capital are calculated and presented in figure 4.7 (A and B) and 4.8 (A and B). Capital intensity of production has been assessed by the measure of productive capital or fixed capital per employee which is presented by the figure 4.9 (A and B). For the 60's decade, capital intensity of production (for census sector) has been represented in terms of productive capital per employee (the disaggregated value of fixed capital being non-available).

The above-mentioned figures show that West Bengal started off with a higher capital intensity during the early 60's but throughout the entire period of the study, West Bengal witnessed a fall in capital intensity when compared to India and this gap has widened during the decades of 80's and 90's. Also, bigger enterprises in the census sector of India exhibited greater prosperity to become more capital intensive from the late sixties (65 onwards) and start of the seventies but in comparison, West Bengal could not keep pace with it.

The trend of labour productivity delineated for West Bengal evinces that situation was not that bad during the early sixties (1961 to 1965), at least for bigger factories, since labour
FIG. 4.7(A) : NET VALUE ADDED PER EMPLOYEE (CENSUS SECTOR)

RS. THOUSAND

YEAR

'61 '62 '63 '64 '65 '66 '67 '68

INDIA
WEST BENGAL

6
5
4
3
2
1

FIG. 4.7(B) : NET VALUE ADDED PER EMPLOYEE (FACTORY SECTOR)

RS. THOUSAND

YEAR

'69 '71 '73 '75 '77 '79 '81 '83 '85 '87 '89 '91 '95

INDIA
WEST BENGAL

105
100
90
80
70
60
50
40
30
20
10

FIG. 4.8(A): NET VALUE ADDED PER UNIT OF PRODUCTIVE CAPITAL (CENSUS SECTOR)

Indiain
West Bengal

FIG. 4.8(B): NET VALUE ADDED PER UNIT OF FIXED CAPITAL (FACTORY SECTOR)

India
West Bengal
FIG. 4.9(A) : PRODUCTIVE CAPITAL PER EMPLOYEE (CENSUS SECTOR)

INDIA
WEST BENGAL

RS. THOUSAND

YEAR

FIG. 4.9(B) : FIXED CAPITAL PER EMPLOYEE (FACTORY SECTOR)

INDIA
WEST BENGAL

RS. THOUSAND

YEAR
productivity during this period either exceeded the national average or it maintained the same level. But clearly discernable sign of deterioration can be detected since '65-'66 which continued unabated throughout the seventies. However, labour productivity in West Bengal remained more or less at par with that of India till mid-eighties (i.e. 1985) and it has increased continually in nominal terms during this entire period. But after 1985 it has been trailing behind the national average with a visibly increasing margin.

Productivity of capital (i.e. net value added per unit of productive capital/fixed capital) on the other hand was much higher in West Bengal, at least since 1962-'63 (figure 4.8A). But it declined steadily and dramatically during the entire reference period, especially since the mid-eighties. The years of nineties witnessed much wider gap of capital productivity in West Bengal in comparison to the national average.

The size element (i.e., size of a production unit) clearly visualises that West Bengal started off with a much larger capital base as during the sixties, the State average remained well above the national average (fig. 4.10 A and B). A similar course is observed during the remaining study period till the nineties (fig. 4.10 B) which indubitably substantiates that an average production unit in West Bengal is increasingly moving towards large scale production organisation at a faster pace.

Time-series trends obtained for this measure of average employment size per factory (fig. 4.11 A and 4.11 B) and compared for West Bengal and India denotes that number of employees for a factory in census sector remained nearly 34 to 39 per cent higher than the national average during the sixties. The trend observable for the factory sector during the seventies and eighties exhibit the same characteristic and in 1993, employment size of an average production unit in West Bengal remained 75 per cent higher than the national average. Broadly speaking, employment size per factory for both India and West Bengal witnessed a phenomenal fall over the time. For West Bengal, it has declined from 140 to 126 working heads (an annual average rate of decline by 0.4 per cent).

It can be thus, inferred that industrial production in West Bengal has not only been characterised by lower capital intensity (i.e., less quantity of capital) as observed above but also by inferior quality of capital manifested in backward technologies. Such diminutive tendencies have been responsible for the declining productivity of industrial capital as also, for the failure of labour productivity to catch up with the national average. The situation has been further complicated by the generally bigger size of production units and the large scale of production and thus, dimension of the problem has reached a nearly unmanageable proportion.

The measure of average remuneration in the organised sector can be perceived as the rightful share of value addition being reimbursed to the workers to maintain the human capital. A comparison of average emolument per factory and per employee in West Bengal vis-a-vis India for the factory sector (figures 4.12 and 4.13) reveal that the average remuneration per employee and per factory in West Bengal remained much above their national counterpart throughout 1969 to 1993. The relevant data base being non-available for the census sector, the period from 1961 to 1968 has to be left unattended. This higher remuneration for workers in West Bengal can very well be acknowledged as a manifestation of more organised labour unions commanding greater wage bargaining power.

When the information on emolument per factory and emolument per employee for West
FIG. 4.10(A) : PRODUCTIVE CAPITAL PER FACTORY (CENSUS SECTOR)

FIG. 4.10(B) : FIXED CAPITAL PER FACTORY (FACTORY SECTOR)
FIG. 4.11(A) : EMPLOYMENT PER FACTORY (CENSUS SECTOR)

FIG. 4.11(B) : EMPLOYMENT PER FACTORY (FACTORY SECTOR)
FIG. 4.12 : EMOLUMENT PER FACTORY (FACTORY SECTOR)

FIG. 4.13 : EMOLUMENT PER EMPLOYEE (FACTORY SECTOR)
Bengal and India are placed side by side, it shows that the former (i.e., total emolument per factory) has increased at a much faster pace for West Bengal than that for India. The primary reason for such a structural difference in industrial scenario of West Bengal probably lie in the relative dominance of public sector units in the State. Public sector undertakings generally operate under the social obligation of employment generation and therefore, the overhead burden of emoluments come to be relatively larger.

Regarding emolument per employee, it can be inferred from the present analysis that commitment towards workers is growing for both the cases and not much difference can be noted between these two trends, although the time-series trend for West Bengal remains marginally higher. This observation completes the surmise of labourisation bias in West Bengal. Simultaneous comparison of these two temporal trends further indicates that in West Bengal, more people are employed per factory at lesser average emolument and at a lower labour productivity (figures 4.7A and 4.7B)

Hence, it can be concluded that in terms of the major indicators of industrial performance, the magnitude of change reveals a sluggish tendency for West Bengal but the general direction of movement for the time-series trends remains more or less at per with the national average.

Now, a brief discussion about some of the aforesaid determinants has been produced below.

4.5.2 These explanations have been produced here to instill a proper understanding of the guiding rationales adopted for formulating another set of State-level hypothesis (numbered from H.4 to H.11, p.10 Chapter Two). Relevant structural ratios and technical co-efficients (deduced from the ASI reports), placed in a suitable statistical framework, have been utilised for the analytical purpose.

- **Capital - labour ratio (K/L)**: This is one of the most commonly used indicators of labour intensity or in other words, capital intensity in the industry which relates to employment indication of size choices. It reflects the degree of mechanisation and is closely related to the capital co-efficient. Higher K/L stands for more capital intensity and lower K/L generally stands for greater labour intensity.

Hypothetically,

**H. 4**: Increasing capital intensity will have dampening effect on size of employment.

- **Capital - output ratio (K/O)**: This measure of capital requirement indicates the amount of capital invested for producing one unit of output. The size of production has pronounced technological bias determined by the scale of operation of an unit. Usually, the larger the size of an unit, the higher will be the capital requirement for producing technology-intensive, sophisticated products. Conversely, smaller units being labour intensive will display rather stagnant pattern of change in this ratio over the years.

An alternative indicator of capital productivity has been put into use in this study, it being more refined in nature. This indicator, i.e., net value added per unit of fixed capital invested, reflects the generative value of capital in more accurate terms. It can be presupposed that greater value addition accrues from the most proficient use of capital which in turn will encourage further propensity to invest. The essence of such a standing is emulated in the following hypothesis:

**H. 5**: An increase in net value added per unit of capital invested will have positive
effect on employment generation.

- **Output - labour ratio (O/L)** - This ratio measures labour productivity and defines a functional relationship between the input of labour and the output of a product. Hypothetically, technologically advanced, better organised, large-scale units should have higher O/L ratios than that for SSIs. But for practical reasons, this ratio gets influenced by host of other factors (e.g., industrial relationship climate, fiscal and infrastructural bottlenecks affecting production, existence of unutilised capacity and the like) which are not necessarily decided by technology and size alone.

To avoid this lack of specification in variable nature, another indicator has been counted upon for satisfying the analytical purpose. The ratio of **net value added per employee** is expected to serve the purpose better because value added by manufacturing can be considered a measure of output net of materials consumed and hence, it is observed in relation to the productive role of employees. Usually, a part of the surplus income generated in industry is ploughed back for the upkeep of labour and for reimbursement of fixed assets. Any fall registered in this surplus income denotes impending threat of deceleration in industrial productivity with its enervating effect on employment generation. However, due to a sudden fall in employment size (owing to retrenchment or some other reason) this ratio may get inflated and in that case, it may not succeed to project the true picture. In essence, it can be hypothetically that,

**H. 6** : Increasing labour productivity and/or net value added per employee will bear a positive impact on employment.

- **Average annual wage per worker** : The overall progress of an industry, taking cognizance of the factor productivity, can be assessed by the prevailing wage structure in that industry. This is because, the minimum wage rate negotiated by the working community is usually concomitant upon a mutual agreement between the management and labourers. The purpose of such a settlement is to ensure that the workers are not deprived of their legitimate share of surplus profit and at the same time, such a process of collective bargain must not put undue strain on the financial capability of the unit.

Hypothetically, an economically competent unit should be able to strike a balance between its business interest and its obligation of fulfilling the responsibility towards workers. At least, it should be capable enough of satisfying those financial criteria which can provide the workers with the bare minimum. In other words,

**H. 7** : A favourable wage structure will accelerate employment generation.

The total stock of production machinery available with a particular industrial unit does have long-term beneficial effect in generating employment, if used proficiently. Thus, **H. 8** : Increase in average factory size (fixed capital per industrial unit) will have a positive impact on absolute employment volume.

Validity of these hypothetiated statements has been tested rigorously by carrying out step-wise regression analysis involving these variables and regressing them on the variable of annual average per cent growth rate in employment in the organised sector of the State. Multiple regression analysis was not attempted initially because of the high degree of interdependence among these performance-related variables. Besides, an exercise of step-wise regression had been expected to lend an advantage in assessing the distinctive impact of each of these variables considered.

[60]
Contrary to expectation, the merit of hypotheses number 4, 5, 6, 7 and 8 could not be substantiated at the aggregate industry level. That is to say, the anticipated impact of capital intensity, capital productivity, labour productivity, wage level and unit size, in deciding on the extent of variation in the volume of total employment in organised manufacturing sector had been found out to be inconclusive. Even delving with another attempt of step-wise regression by using alternative variables (for example, regressing total volume of output, emolument-value added ratio, gross output per factory, net value added per factory and emolument per factory on per cent annual change in total volume of industrial employment) could not add any significant insight to the investigation.

H.9 Capital investment and value addition in the registered manufacturing sector have a significant positive relationship with industrial employment.

In place of aggregated volume of capital investment, the indicator of 'net fixed capital formation' would have been a better substitute, being more specific in nature. But data gap in the ASI reports prevented the selection of this otherwise viable option. The merit of this hypothesis, therefore, gets undermined to some extent. This hypothesis (H.9) while tested for industries in aggregate could not substantiate the assumptions.

The profile of industrial economy in West Bengal cannot be properly investigated only in sum total. For an exact understanding of strength and weakness of the industrial economy of the State, inter-sectoral difference in growth pattern has to be keenly observed. So, an effort has been pursued here to analyse the differential nature of relationship expected between growth rate of capital employed and income generated on one hand and growth rate of employment on the other in these four use-based sectors. Hypothetically speaking,

H.10 Employment variation in consumer and basic goods sectors are supposed to be determined more by an incremental change in value added whereas for capital goods and intermediate goods sectors, it is the changing size of capital investment which matters because of the difference in product nature. Also, employment growth rate in all the sectors will hold an inverse relationship with the growth rate of capital investment and this restricting effect of mechanisation on employment will become particularly pronounced for capital goods sector owing to the same reason.

For testing hypothesis H.10, regression equations are run separately for each of these four sectors (sectors categorised according to end-use of the products) and the results are presented in table 4.24. Y, the dependent variable in this analysis, had been represented by the indicator of 'per cent annual average change in industrial employment'.

Indeed, it had been a difficult task to tackle the exercise of delineating these use-based categories (or sectors). This is because isolating a particular product from the entire range of product grouping, clubbed under the broad industry type, solicits careful, objective selection. The chemical industry for example, has both consumer goods and capital goods comprising its manufactured items, all mentioned under the 2-digit level of NIC but without much specification. Hence, for judicious categorisation, product groupings available at three-digit level of industrial classification (of NIC) had to be considered. Consulting the product groupings that corresponds to 4-digit level of classification (of NIC) would have been a preferable alternative but regarding the complexity of the job, such an exercise has been spared for other detailed studies. The probity of this analysis thus, may have been affected to some
extent due to this approximation involved.

**Table 4.24**

*Findings from Regression Equations relating Industrial Employment with Capital Investment and Value Addition, Sector-wise*

<table>
<thead>
<tr>
<th>Dependent variable (Y)</th>
<th>Independent variable (X)</th>
<th>t-values</th>
<th>F-ratio</th>
<th>DW statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per cent growth rate in employment (SECTOR WISE)</td>
<td>Per cent growth rate IN</td>
<td>$R^2$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital goods</td>
<td>Value addition</td>
<td>0.36</td>
<td>4.1*</td>
<td>2.76</td>
</tr>
<tr>
<td>Basic goods</td>
<td>Capital investment</td>
<td>0.38</td>
<td>4.09*</td>
<td>2.76</td>
</tr>
<tr>
<td>Intermediate goods</td>
<td>Value addition</td>
<td>0.30</td>
<td>3.21*</td>
<td>2.76</td>
</tr>
</tbody>
</table>

Note: *Significant at 1% level of significance

Results from table 4.24 portrayed that for all the three sectors, either value added or capital investment could explain only 30 to 38 per cent of the total variation in employment growth rate. Hence, it can be possible that some other factor (not considered in the framework) must have contributed for the residual variation in employment growth rate remaining largely unexplained.

Further, contrary to the hypothetical expectation delineated in H.10, changing size of capital investment (instead of value addition) had been proved to be the positive significant determinant in explaining employment growth rate for the basic goods sector. In other words, the capital deepening process had seemingly facilitated employment generation in this sector. For the remaining two sectors also, the phenomenal employment-restrictive effect of mechanisation had been evinced to be less than significant, again negating the hypotheticated assumption that this limiting phenomenon will be the most manifested for the capital goods sector.

The other important finding from this analysis revealed that incremental change in value added had been a more potent factor in furthering employment growth rate for capital goods and intermediate goods sectors. For basic goods sector also, the nature of this relationship remained direct but insignificant. Hence, it can be surmised that impressive increment in (large-scale mechanisation reduced) value addition will most probably abide as the pressing priority for sustained employment generation in all the three sectors (irrespective of the difference in product nature).

**4.6 Determinants of Employment Identified for Major Industries in the State**:

After identifying the strengths and weaknesses of the West Bengal industrial sector in terms of the overall technical characteristics, it will be worthwhile to examine the employment prospect and product composition of West Bengal industries at the 2-digit level of National Industrial Classification (NIC). The objective is to explore the nature and direction of the evolving employment pattern in relation to their respective performance indicators for these 18 major industry groups.

The technology embodied by a particular industry closely follows its differential product mix. Capacity creation and utilisation in an industry is primarily decided by prevailing demand for a product and consequently, the income generation by an industry, quite reasonably, corresponds to the market behaviour.

Now the market itself is perceivably dependent upon a host of interplaying factors and is characteristically conditioned by the historical circumstances of that industry. In a way, each of the industries in the State is associated with an unique story of evolution to be told.
It is apparent that this shift of focus from the aggregative to the disaggregated level will serve to find out those areas where the prospect of industrialisation in West Bengal may lie. To comprehend the relative performance of the major industries, many a criteria can be chosen as unit of comparison. An empirical attempt for example,\(^{21}\) had viably used the profitability (i.e., the rate of profit for specific industries) criterion whereby a comparison had been made between the rate of profit of specific industries with that of industries in aggregate for West Bengal over 1980-81 to 1990-91. The following sectors had been observed to have experienced higher rate of profit than the state average in almost every year during 1980-81 to 1990-91:

- wood and wood products, furniture and fixture (27)
- metal products and parts except machinery and transport (32)
- rubber, plastic, petroleum and coal product (30 & 32)
- transport equipment and parts (37)

According to the author of this study, profitability in large scale industries like manufacture of cotton textile (23), manufacture of jute, hemp and mesta textile (25) appeared to be unsatisfactory. These industries had posted negative profit during the later half of the eighties. Profitability condition in some of the industries like manufacture of leather and fur products except repair (29), non-metallic mineral products (32), chemicals (31), machinery, machine tools and parts except electrical machineries (35), industries classified as others (38), had been designated as moderate in this study. The rate of profit in manufacture of food products (20-21 & 22) remained unstable during this time period.

Spectacular turnaround of electronic industry in West Bengal earned special mention in this study and the prospect of this sector in the State had been regarded with much hope and enthusiasm. The conclusion of this study brought out the bright possibility lying relatively in non-traditional industrial sectors of West Bengal where the production is not that much intensive in natural resources but more in human resources and the comparative advantage existing in small and medium scale sectors had been emphasized upon.\(^{22}\)

Another intriguing study deserves special attention.\(^{23}\) A normalised index of relative performance had been introduced to assess the performance of industries in West Bengal and thus, to reveal the strength and weakness of these industries. Two such performance index had been formulated using ‘net value addition’ and ‘value of industrial output’ as criteria. These indices are then regressed upon variables representing industrial characteristics like, skill-capital-and fuel-intensity. The intention was to seek to explain variation in the performance index and to detect whether there exists any systematic influence exerted by any of these variables (viz., manual-non-manual employment ratios, average wage per worker, fixed capital per employee, fuel consumption per unit of output) on the performance index.

The analysis indicated that the sectors which are coming up as the leading industrial sectors in West Bengal are the ones which are more skill intensive, more fuel (power) intensive and perhaps, less capital intensive. To be more specific about the characteristics of the emerging sectors, a list of industries dominating the West Bengal manufacturing sector has


\(^{22}\) Ibid, p.271

been prepared by this author. The four criteria considered for arriving at such a listing were as following:

i) Better performing industries as per the first index of relative performance (based on net value addition)  
ii) Better performers as per the second index of relative performance (based on value of output).  
iii) Top eight industrial sectors (in terms of value of output) as reported by ASI in '90-'91  

The conclusive list of industries identified by this study as emerging ones in West Bengal, were as following:

- Manufacture of metals, alloys and metal products (33-34)  
- Manufacture of electrical machinery (36)  
- Manufacture of rubber, plastics and products (30)  
- Manufacture of food products (20-21 & 22)  
- Manufacture of transport equipment (37)  

According to the author, these emerging sectors are perhaps the most capable ones in capitalising on the sources of inherent strength of West Bengal's industrial economy, although a process of severe de-industrialisation has been evident in the State. Moreover, the author added upon the single-most valuable conclusion like this: "Capital and technology appear to be the major sources of constraint which must be removed through concerted efforts at all levels. There is absolutely no indication that West Bengal labour force suffers from low productivity syndrome."

Besides, it had been suggested by the author that with a bit of support provided for overcoming the major weakness on the capital and technology fronts, the problematic situation in the State can be eased out considerably.

Now, after giving a look at the value addition and profitability condition in the major industries of West Bengal, a worthy effort can be spared to inspect whether and how the industrial employment has been responding to the changes in value addition and other indicators of performance. Or in other words, the objective of such a statistical exercise is to discern the nature and direction of relationship existing between industrial employment and structural ratios and technical co-efficients. The intention is to determine, how far the employment variation in these emerging sectors of major industries (as enlisted in the previous two studies) can be significantly linked to and explained by the systematic influence (if any) of performance indicators. In short, whether the better performers in terms of industrial output and value addition are performing well enough in enhancing industrial employment.

An identical framework consisting of a single dependent variable (viz., growth rate of industrial employment) and selected independent variables had been adopted for analysing the trend in the major 18 industrial groups, over the time period from 1961 to 1993. The data had been collected from the ASI reports and the necessary adjustment had been carried out in accordance with the changes in industrial classification system as far as possible, to impart statistical uniformity. An eye has been kept on the modification in standard norms, and definition followed by ASI surveys and the discrepancies had been corrected accordingly (wherever the scope permitted). However, this period had not been left out from the perview of the study for rendering better comparability to the analysis.

[64]
Another difficulty had cropped up while carrying out necessary adjustments of the industrial classification system. The NIC had been subjected to major changes twice during the entire reference period (once in the year of 1973 and the other in 1989). Although this cumbersome exercise had been made somewhat convenient by the conversion tables being available with the ASI report of 1973, yet over-estimation or under-estimation (especially, at the four-digit level of classification) could not be averted entirely. This lacuna persisted due to the clubbing of (factory-wise) detailed information (i.e., data) for various states at 4-digit level. This is because, the number of responding units for individual states, under a particular product type, were very few and in such cases, segregation of data might have caused undue complication. In spite of such in-built handicaps, regression analysis had been attempted for each of the 18 groups of industries. An identical framework adopted for each of these regression equations considered the following performance indicators as independent variables:

a) Size of the unit (Indicator: fixed capital per factory)
b) Labour productivity (Indicator: NVA per employee)
c) Wage structure (Indicator: average annual wage per worker)
d) Capital productivity (Indicator: NVA per unit of fixed capital)
e) Emolument - value added ratio
f) Capital intensity (Indicator: Fixed capital per worker)

Out of the better performing and emerging industrial sectors (enlisted by the previously mentioned studies), only two featured in this analysis (viz., wood, wood products, furniture and fixtures-NIC 27 and rubber, plastic, petroleum, coal and products-NIC 30).

The industries handling and producing rubber and rubber products, plastic petroleum and coal (i.e., NIC-30), employs highly capital intensive production technology which restricts the scope for employment, especially at lower skill level. But these modern, expanding and strongly emerging industrial sectors have crucial national bearing with their tremendous range of products for diverse use. Consequently, such an industry have been considered to be a great vehicle of growth in value addition. The strength of this industry perhaps lie in its large-scale production base which is skill-intensive and fuel-intensive. But this industry being comparatively new in the State, may be still unable to realise its full beneficial impact on employment generation (as it had been indicated by a very modest value of multiple regression estimate for NIC-30).

Basic metals and alloys and metallic products (except machinery) industry has been a traditional industrial sector in West Bengal which has maintained its leading role in the State. The strength of this sector in West Bengal lies in the strong metal production base of the eastern region combined with a pool of skilled manpower and a long standing experience of the State in this industry cluster (particularly in manufacturing of foundry products). However, it is pointed out in one of the previous studies\(^{26}\) that 'profitability of this sector in West Bengal had been remarkably lower than that of national average which could be due to lack of streamlined production organisation and advanced technologies'. These may have been the handicaps which possibly interfered with the strong forward linkage in these industries to become active. This unimpressive performance may have sent a wrong signal to the employment prospect in this industry and it may be a probable reason for these observations (i.e., NIC-33 and NIC-34) being dropped from the analytical network of this study. No systematic pattern could be ascertained from the 'employment-performance indicator' relationship for at

least three other cases in the analysis. These industries were leather and leather products except repair (NIC-29), wool, silk and synthetic textile (NIC-24) and non-metallic minerals (NIC-32). Most probably some other factors, not properly represented by the available secondary source data has been responsible for such a development. Moreover, at least in the first two industries mentioned above (NIC-29 and NIC-24), West Bengal does not enjoy much locational advantage.

Characteristic trend for the industries in engineering sector (i.e., industries producing capital goods) remained undefined in this analysis. The phenomenal reason leading to such an occurrence had already been cited — that is to say, due to lack of streamlined production organisation and technological modernisation, the product-mix of these industries might have suffered a market setback and the employment prospect might have been jeopardised consequently.

The other two industries having immense potential (i.e., manufacture of food products, NIC-20-21 and NIC-22) were also dropped from this analysis, may be because of the existing performance indicators falling short in revealing the inherent strength and weakness of such industries.

Thereafter, the present framework of regression analysis handled 7 industries in total and the significance level of the results had been tested at 1% and in some cases, at 5% level of significance.

**Table : 4.25**

*Findings from Regression Analysis carried out for the Major Industries in West Bengal (at two-digit level of NIC)*

<table>
<thead>
<tr>
<th>NIC Code</th>
<th>Description</th>
<th>Multiple regression co-efficient $R^2$</th>
<th>Independent variable(s)</th>
<th>Direction of relationship</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Cotton textile</td>
<td>0.51</td>
<td>NVA per employee</td>
<td>Negative</td>
<td>S**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emolument/NVA</td>
<td>- do -</td>
<td>S*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Average wage per worker</td>
<td>Positive</td>
<td>S**</td>
</tr>
<tr>
<td>25</td>
<td>Jute, hemp and mesta textile</td>
<td>0.59</td>
<td>Average size of unit</td>
<td>Positive</td>
<td>S**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NVA per employee</td>
<td>Negative</td>
<td>S**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emolument/NVA</td>
<td>- do -</td>
<td>S*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Average wage per worker</td>
<td>Positive</td>
<td>S**</td>
</tr>
<tr>
<td>26</td>
<td>Cotton textile products (except footwear)</td>
<td>0.44</td>
<td>Capital intensity</td>
<td>Positive</td>
<td>S*</td>
</tr>
<tr>
<td>27</td>
<td>Wood and wood products, furniture and fixture</td>
<td>0.43</td>
<td>Capital productivity</td>
<td>Positive</td>
<td>S*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NVA per employee</td>
<td>Negative</td>
<td>S**</td>
</tr>
<tr>
<td>28</td>
<td>Paper and products, printing and publishing</td>
<td>0.34</td>
<td>Average size of unit</td>
<td>Positive</td>
<td>S**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emolument/NVA</td>
<td>Negative</td>
<td>S**</td>
</tr>
<tr>
<td>30</td>
<td>Rubber, plastic, petroleum, coal and products</td>
<td>0.11</td>
<td>Average size of unit</td>
<td>Negative</td>
<td>S**</td>
</tr>
<tr>
<td>31</td>
<td>Chemical and products (excluding petroleum &amp; coal)</td>
<td>0.46</td>
<td>Capital intensity</td>
<td>Positive</td>
<td>S*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Capital productivity</td>
<td>- do -</td>
<td>S**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NVA per employee</td>
<td>Negative</td>
<td>S**</td>
</tr>
</tbody>
</table>

S* : Significant at 1% level of significance  
S** : Significant at 5% level of significance

[66]
Industries considered by this analysis belonged mainly to the intermediate goods sector (for example, manufacturing of cotton textile, jute, hemp and mesta textile, chemical and chemical products excluding petroleum and coal, paper and paper products, wood and wood products), barring only two exceptions, that is, cotton textile products (NIC-26, consumer goods sector) and rubber, plastic, petroleum, coal and products (NIC-30, basic goods sector).

Among the six explanatory variables, net value added per employee had been proved to be the most important one since it appeared in explaining the employment factor significantly for four industries. The variables next in importance were average size of unit and emolument-value added ratio whereas capital productivity (i.e., NVA per unit of fixed capital) and capital intensity (fixed capital per worker) and the wage factor each could explain employment variation significantly only in two cases.

The implicit sway of capital deepening process on production and on employment had been manifested by at least two main findings from this analysis —

1) Regression co-efficients for the variable NVA per employee had been observed to be appropriating an inverse direction with employment growth rate in all the cases. That is to say, a gain in marginal productivity of labour (i.e., in NVA per employee) has been made possible by taking widespread recourse to mechanised means of production process.

2) The variable of emolument-value added ratio also, conformed to a similar trend — the direction of relationship being negative in all the three cases. For jute industry for example, these two above-mentioned variables held an inverse relationship with growth rate of employment whereas for the variable average wage per worker, a positive direction of relationship was obtained. Such a finding clearly manifested a characteristic tendency of this industry.

Production process in the large sized jute mills in the State is mainly labour-intensive and naturally, the relative dominance of fixed capital remains somewhat underplayed. But the inverse relationship prevailing between emolument-value added ratio and volume of employment possibly indicates an increasing tendency towards excessive labourisation of these enterprises. May be, owing to this burden of excess labour in these enterprises, the rate of wage bill has brought about a degenerating impact on the prospect of value addition in this industry. Findings from an empirical study on jute industry of India\(^27\) can be cited in this context. This study attempted to examine the production structure of jute industry in India. Factor productivity indices had been estimated by employing Kendrick, Solow and Divisia methods. Other aspects of structure, i.e., production elasticity, return to scale and elasticity of substitution had been estimated, employing production function of Cobb-Douglas and Constant Elasticity of Substitution forms.

The principal features of production structure of jute industry which emerged from this study are as follows:

a) Growth of factor productivity in jute industry is very little
b) Jute industry seems to be operating under constant returns to scale and
c) Elasticity of substitution between labour and capital in jute industry is small.

3) For industries considered in this analysis, size of a factory (i.e., fixed capital per industrial unit) assumed a more important role in determining the employment

\(^{27}\) Verma, P.C. (1992), 'Production Structure of Jute Industry in India' in Industrial Sector Development (Planning and Development of Key Sectors in India-4), ed. by Devendra Thakur, Deep and Deep Publications, New Delhi, pp. 627 to 635
growth rate, when compared to the variable of capital intensity which had been proved to have a direct significant impact in only two cases (i.e., for NIC-26 and NIC-31). Interestingly enough, employment growth rate responded positively to incremental increase in fixed capital investment (per factory and per worker alike) in all the occasions. Hence, it seems that owing to large-scale mechanisation, workers in these industries are working with more capital and the marginal productivity of labour has increased because of the skill-intensive nature of production process. Even for an industry which has been traditionally following a labour-intensive production process (the mechanised device of production being costlier), an access to greater stock of modern production machinery remains an important priority for long standing gain in employment.

4) Sustained employment growth would have been made possible by taking intensive support from mechanised means of production process, apparently by improving upon the marginal productivity of capital. But relevant findings from this analysis did not justify this proverbial long-term beneficial impact of large-scale mechanisation on employment at random for all the industries. This is because, explanatory merit of the indicator 'net value added per unit of fixed capital' could be realised only in two cases. The nature of relationship remain direct in both the cases.

5) The other important variable of average wage per worker, hypothetically, should determine the employment significantly. A favourable wage structure should presumably be inviting enough to lure considerable number of workers. Emoluments and other benefits are believed to be powerful incentive for mobilising the human resource in an enterprise, both quality-wise and quantitatively. The present analysis corroborated this phenomenon, although partially.

Behaviour of this relationship in the analysis presumably signified that wage structure has still been a direct, deciding factor for explaining employment variation for those industries which are less capital intensive, less skill-intensive and may be more traditional and/or specialised in nature (viz., cotton textile and jute industry). But for those industries, where men can be suitably replaced by machines and where automation of the production process remains the only way-out to cope with dominant market forces, cost consideration for human resource has become subsidiary to the factor cost of other physical inputs.

In other words, for the sophisticated, mechanised, non-traditional industrial sectors producing high value added products, productivity of physical inputs possibly needs greater emphasis for generating employment than a direct, absolute indicator like wage. Machines are quite reasonably pursued as the most reliable vehicle for fast growth in value addition but the goal of concomitant employment generation still remains unrealised and elusive. It may be maintained that under the present set-up, efficacy of machines is undoubtedly in tune with the time but the perceived adequacy or usefulness of mechanised production (in generating employment), has belied popular expectation. And subsequently, a blind bargain for the regime of mechanisation, if betokened for solving the unemployment problem, may turn out to be debatable or irresolute.

On the whole, improvement in marginal labour productivity should be attributed (in most of the cases) to mechanical efficiency rather than to the instrumentality of the human resource involved. But the ultimate impact of such development on the volume of employment is still not very clear because for most of the above mentioned industries, the said ratios remain open to further verification in ascertaining their significant worth.