CHAPTER VII

CONCLUSIONS AND SUGGESTIONS

Chapter-I deals with the Growth of Public Sector in India. Growth of Public Sector in India is an integral part of Socialistic objectives to be attained through planned economic growth. Public Sector Undertakings have been assigned a significant role in industrial growth and development of India. History of India amply bears it out that the colonial rule crippled the Indian economy, as it was merely a primitive agricultural economy supplying raw materials to the British Industries in exchange for manufactures from England. The bourgeois and labour class were exploited by the handful capitalists. It resulted in economic disparity. It was then the intellectuals were seized with the concept of "public ownership" and "Socialism" as a means to emancipating the working class from the dreadful clutches of the capitalists. The concept of Socialism was looked upon as a means to balanced economic development.

Various Industrial policy resolutions were introduced in the years 1945, 1948 and 1956. All policies had almost the similar aim of adopting socialistic pattern of society. Industries were classified according to their importance. It was resolved that alongwith the Government, the State and
private sectors would also actively participate in the task of speedy and steady industrial growth.

In the beginning, Public Sector was assigned to serve the social cause through public utility services, viz. Railways, Post and Telegraphs etc. Afterwards, certain industries of strategic significance were earmarked to public sector. However, the public sector has been extended to comprise of commercial activities with the aim of attaining control over the commanding heights of the economy, promotion of critical development in terms of social gains or strategic value and generation of surplus for further financing economic development.

Public Enterprises have been contributing considerably towards national income. Production of coal, lignites and petroleum is almost hundred percent in Public Sector. The growth of Public Enterprises has also been phenomenal in terms of number and investment during the years 1951 to 1984. Number of Public Enterprises has risen from 5 in 1951 to 214 in 1984 and the investment from Rs. 29 crores to Rs. 90,262 crores. In all the Public Enterprises, SAIL, CIL, NTPC, ONGC, RECC, FCI, RIN and HPC have claimed lion's share in total investment, viz., Rs. 19,252 crores as on 31st March, 1984. It is obvious that the Government adopted a policy of developing heavy industries".
Public Enterprises have largely been financed by the Government—Foreign participation in capital of Public Enterprises is quite limited. Public Enterprises have witnessed progressive increase in generation of internal resources. During 1981-82 and 1983-84, the public sector generated internal resources to the tune of Rs. 922.87 crores and 2,830.80 crores respectively after providing for repayments of loans. The resource so generated has been utilized through investment on land, buildings, Roads and installation of plants and machinaries etc. The net investment in operating enterprises came to Rs. 33,542.70 crores in 1984.

Growth of Public Enterprises can be measured in terms of its shares in domestic products and savings. The Public Sector Undertakings has contributed substantially to the national economy. The gross domestic product has increased from Rs. 316.17 crores in 1970-71 to Rs. 1,45,328 crores in 1983-84 registering the net increase of 25% during the period under review. The domestic product at market price went up from Rs. 5,456 crores in 1970-71 to Rs. 34,588 crores in 1982-83, an increase of 44% per annum. Thus it is discernable that the public sector's gross domestic product has followed an upward trend. The overall growth in savings during 1970-71 and 1983-84 was 46% in contrast with
the growth in Public Sector's savings of 45% on average.
Public Sector provided 20% of the total gross savings.
On the whole it registered 48% growth in net savings.

One of the significant aims of public sector is generation of employment. The study reveals that Public Enterprises has generated more employment than the whole economy. The growth rate for employment in Public Enterprises during the preceding one and a half decades was 3.7% as compared with 2.4% for the whole economy.

Public Sector Undertakings contributed significantly to the national exchequer in the form of dividends and taxes. The total contribution of Public Sector to Central Exchequer was Rs. 1196 crores in 1975-76 of which Rs. 198 crores were in the form of dividend and corporate taxes. 84% of it was by way of excise duty. In 1983-84 contribution of Public Sector Undertakings to national exchequer was Rs. 6,566 crores of it, Public Enterprises paid dividend of Rs. 133 crores and corporate taxes of Rs. 1,339 crore 21% of the total payment by way of excise duty and 79% of Custom duties to the total sizable contribution of Public Sectors to the national exchequer speaks of its tremendous achievements in developmental programmes.
Public Enterprises have now come of age to meet the social, economic and financial objectives by providing substantial scope for increased production, ample return on investment, generation of employment galore, balanced economic growth and development of ancillary industries. Public Enterprises assumes significant role in accelerating the process of industrialisation in the country.

The excellence of Iron products in India are associated with ancient history. With the advent of British rule in India, Iron and Steel Industry suffered setback in its development. On the other hand the technological advancement in Europe made the Indian Iron less competitive in international market. Till the end of 19th Century, it was the policy of the British Government to discourage industrialisation. The British Government evinced lack of interest in encouraging modern steel industry in this country. In 1906, TISCO was the first successful Indian Steel Plant. IISCO was the second successful Steel Plant in India established in 1913. The success of the two steel plants is certainly the result of vast natural resources for a steel mill. The expanded domestic production enabled India to sustain higher demand for steel.

India was self-sufficient in steel production till mid 1990's. After 1854, the steel production lagged behind
demand because of significant increase in output. In 1946 a panel set up by the Government presented the report that two mills with the initial capacity of 0.5 M.Ts each should be established under the Control of the Government.

Under the plan period, the steel industry received priority. The second plan was a giant leap forward in steel production in public sector. During this plan, three new steel mills came into existence viz. Rourkela, Bhilai and Durgapur. The first B.P. went on stream in these three plants in 1959. The target for steel capacity was set at 6.8 M.Ts for the third plan with an investment of Rs. 550 crores. The economic recession, however, rendered the capacity idle and forced the country to export 45% of its finished steel in 1976-77. The Fourth Plan considered the capacity of 9 M.T. with finished steel output to reach the capacity level of 8.1 M.T. The Fifth Plan added 17 lakh tonnes to the capacity of Jokaro Steel Plant. The Sixth Plan made provision for the expansion of Salem Steel Plant, Vishakhapatnam and Vijaynagar Steel Plants. The aim of the plan was to attain a consumption level of 8. M.T. in 1979-80. The production of steel including the output of Mini Steel Plant was planned to be raised from 7.4 M.T. in 1979-80 to 11.5 M.T. in 1984-85 and 17.4 M.T. in 1989-90. Seventh Five Year Plan has not made any fresh provision for
addition in capacity either by way of new green-field plants or expansion in the existing capacity. The existing rated capacity of six integrated steel plants by the end of the 7th Plan is expected to increase to 11.6 M.Ts.

Recently SAIL has formulated schemes for technological upgradation of the steel plants at Durgapur, Rourkela and Burnpur (IISCO) at an estimated cost of Rs. 1989 crores. However, performance of steel plants is not satisfactory due to infrastructural constraints including scarce supply of coal, power and bottlenecks in rail transports.

Massive investments in public sector have not yielded higher growth due to the problem of low productivity—it has sagrily remained unattended. The Research Scholar has made an attempt to analyse the problem in succeeding Chapters.

Chapter-II lays down a conceptual framework for scientific study of the problem of productivity in public sector. Productivity is a complex concept, full of problems of definitions and measurements. Even today there are different opinions regarding a suitable concept of productivity. The conservative school favours internal rate of return as a measure of productivity, while the others challenge it as a narrow concept and unsuitable to appraise the performance of public sector undertakings. They support the view that
the concept of value of output and services rendered by public investments are an appropriate guide to the working of Public Sector Enterprises. As a matter of fact the concept of productivity denotes increase in output which are not accountable by increase in the quantity of inputs. It is, therefore, based on the assumption of relationship between inputs and outputs.

The phenomenal development of public enterprises is evident from the rising share in domestic product, net capital formation and total employment in the organised sector. It, therefore, assumes paramount significance to undertake a meaningful analysis of the efficiency and productivity of factors of production employed in the Public Enterprises.

Many studies have appraised the performance of public enterprises in terms of financial return (i.e. Profitability). This criterion of profitability measurement has been severely criticised as it does not conform to the basic objectives of promoting Public Enterprises. The pertinent criterion for assessing the performance of these enterprises have to be examined and analysed from objective and academic points of view. The Research Scholar opines that the performances of Public Enterprises should be measured by drawing a line of demarcation between direct contribution
and indirect contribution. The direct contribution includes the sum of goods and services rendered by an enterprise in the economy, whereas indirect contribution is the impact of production activity of an enterprise through its backward and forward linkages on general level of economic activity in the country. The capital investments mainly provide basic infrastructures whose benefits are received by economy as a whole in the form of higher level of economic activity. Hence financial return (profitability) is not a suitable criterion of productivity appraisal of Public Enterprises.

The broad framework which the present study had adopted for analysing the productivity trends in Public Enterprises has been expressed in the form of following equation:

\[ P = f (S_K, S_L, S_A) \]

where \( P, S_K, S_L \) and \( S_A \) denote that the productivity is the function of capital input, labour input and overall efficiency of factor inputs respectively over a given period of time. Research Scholar is of the opinion that the total factor productivity is appropriate for evaluating the overall performance of Public Enterprises. Therefore, the index of total factor productivity has been prepared as a measure of output per-unit of total input. The index of total factor productivity is a useful device to measure the extent of change
(increase/decrease) in overall efficiency of factor input in any production process.

Steel industry is taken up by me as a case study of productivity for a period spanning over 26 years i.e. from 1960-61 to 1985-86. The analysis of productivity trend in the steel industry has been divided into sections first section deals with the Public Sector steel plants and the second is concerned with the steel Industry as a whole comprising both the public and private sector steel mills. The later part of steel productivity analysis has been made more meaningful and objective for academic purposes by subclassifying the productivity measures in terms of income, value-added, and physical output ratios to capital and labour separately.

The Research Scholar has applied conventional accounting method to measure the operational efficiency in Chapter-III and IV.

Chapter-III examines the efficiency of Public Sector Undertakings into two broad parameters viz. financial and physical. In financial analysis the Research Scholar has examined profitability, growth of sales, capital employed and investment in technology for replacement and modernisation, the
Physical performance includes appraisal of capacity utilisation and trends in the utilisation of capacity in various significant Public Sector Undertakings.

Profitability profile of Public Enterprises during 1974-75 and 1985-86 reveals increase both in the number of units and the capital employed. The number of enterprises during the period under review increased from 120 units to 201. The capital employed also increased from Rs. 6,654 crores to Rs. 29,896 crores. However, large investment of capital in ever-increasing number of units failed to yield a fair return. The profitability of Public Enterprises is the cumulative result, among other things, of higher cost of production. The gross sales vary within a very wide band. It is an indication of the lack of imaginative production and sales policies. The study also reveals that losing concerns largely consist of manufacturing enterprises - 74 the manufacturing enterprises out of 92 were the losing concerns in 1984-85. The total losses of all the units, except petroleum industry amounted to Rs. 15,534.03 crores till 1984-85. It led to the erosion of 39% of the equity capital.

Poor financial performance is verified by the physical appraisal of Public Enterprises which is undertaken by the Research Scholar because capacity utilisation and profitability are inter-connected. The analysis reveals that none
of the Public Enterprises was able to attain normal capacity. Even after decades of their existence, a number of the units have not been able to utilise as much of the capacity as 25%. The highest capacity utilisation is 75% attained by less than 70% of the enterprises. The Research Scholar is of the view that appropriate policies have to be formulated to deal with the problems of low capacity utilisation.

The Research Scholar is aware of his limitations to offer general treatment to the problems. There cannot be one set of reasons of low capacity utilisation in the whole Public Sector Undertakings. Therefore, a group-wise analysis is made of the important sectors in Public Enterprises in a bid to diagnose the disease and suggest the treatment. Analysis of the steel group suggests infrastructural problems undermining the physical performance of steel plants. Plants showing very low capacity utilisation in the steel groups have suffered from inadequate power supply, poor quality of coking coal and paucity of fuel. In the case of coal sector there was a loss of 11 MTS. of production due to technical problems in dealing with the inundated mines, fluctuating power supply and poor industrial relations. Improper maintenance is the cause of low utilisation of capacity in the mineral and metal sector. The fertiliser industry, chemicals and pharmaceutical, heavy engineering, light and medium engineering, transport
Industry also operated below normal capacity because of low inventories of spare parts among other things.

Most of the working capital of Public Enterprises consists of stocks (inventories) of raw material work in process and finished goods. Spare parts for proper maintenance of plants are generally out of stock which crippled the performance of units during unforeseen breakdowns. The Research Scholar has suggested substantial reduction in inventories equal to normal trade cycle of two months production if the efforts to minimise cost of production are to succeed.

It is impossible for a concern to be viable without investment in technology. Investment by Public Enterprises in modernisation and replacement is not adequate. The resources generated by Public Enterprises internally do not allow them to undertake any large programme of modernisation. The Research Scholar has suggested that technological improvement should be given precedence over other allocation.

It has to be a multi-progred approach to deal with the malaise of low capacity utilisation. The Research Scholar has made the following suggestions:

1. An expert team consisting of academicians as well as technicians should be constituted for indepts study of individual enterprises to identify the cause
of low capacity utilisation.

1. Infrastructure facilities should be adequately provided which frequently underminds the performance of Public Enterprises.

2. Management of Public Enterprises should be assigned to important professionalism.

3. Dependence of Public Enterprises on spare parts reduced by from abroad should be establishing ancillary units.

4. The resources of Public Enterprises should be effectively deployed including reduction in inventories to normal trading cycle, to minimise the cost of production.

5. Export activities of Public Enterprises should be promoted for more exchange earnings.

Proceeding with his endeavour, Research Scholar has ventured to undertake appraisal of steel industry in Chapter-IV to identify cause of its unsatisfactory performance.

There are six integrated steel plants in Public Sector operating under the aegis of Steel Authority of India Limited (SAIL) viz. Durgapur Steel Plant, Bhilai Steel Plant, Rourkela Steel Plant, TISCO, VISP (a new steel plant) and TISCO in the
Private Sector, held over 90% of the installed capacity in the country.

In this Chapter, Research Scholar has made an attempt to assess the performance of six integrated steel plants (including TISCO) in two broad scales, viz. Financial and Social (i.e. physical) returns. Under financial return, the profitability profile of SAIL has been presented for the period 1978-79 and 1983-84. It is observed that SAIL earned profit. The declining rate had persisted during the entire period under study. In 1983-84 a profit of Rs. 86 crores was realised on the capital of Rs. 3,000 crores, yielding 2.9% of return. The SAIL also adopted the policy of free reserves in the form of depreciation and DRE which had accumulated from year to year. In 1983-84, SAIL accumulated a chunk of Rs. 163 crores which is completely inconducive to and against the consumer interest because depreciation is the cost of capital transferred to consumers. The SAIL has also used the free reserves for more loans which have grown by 161.3% since 1978-79 as compared with the growth of 55% in equity.

The study of the SAIL's PBIT shows that every year, from 1978-79 to 1982-83, a substantial amount was added to the free reserves. As a result the profit declined. In 1979-80, Rs. 112 crores were added to free reserves in 1980-81,
Rs. 114 crores were transferred to free reserves out of the total gross margin of Rs. 208 crores. In 1983-84, SAIL, deliberately allowed the gross margin to become net loss due to a transfer of massive amount of Rs. 160 crores, to free reserves. The Research Scholar observes that this policy of enhancing free reserves will have to be dispensed with if the erosion in equity has to be averted.

Analysis of interest and loan shows highly deflated figures. For instance, the interest of Rs. 32 crores on loans of Rs. 2,260 crores constitute unimaginably low rate of interest viz. 1.4%. Instead, the SAIL appears to have paid 8 % interest, as evident from free reserves utilised for the purpose.

The plant-wise analysis of SAIL's working result displays that Durgapur Steel Plant has suffered heavy losses of Rs. 138.78 crores during the period 1979-80 to 1983-84. It incurred, heaviest loss in the year 1983-84, viz. 63.72 crores and the tiniest loss of Rs. 8.44 crores in 1980-81. Kourkela Steel Plant takes the second place with the loss of Rs. 113.69 crores. Then, comes the Alloy Steel Plants with a cumulative loss of Rs. 57.11 crores during the five year period under study. Dokaro Steel Plant also suffered loss of Rs. 52 crores in the initial two years, viz. 1979-80
and 1980-81 and earned profit of Rs. 19 crores in the subsequent two years. Salem, the new Steel Plant accumulates loss of Rs. 32 crores in two years i.e. 1982 and 1984.

In this context, it may be observed that equity is likely to be wiped out if losses are not averted. Measures to tackle the problems must include restructuring of capital and amortization of loans at least to reduce debt-burden.

Steel pricing policy of the Government has also failed SAIL to generate adequate surplus. In fact, price of steel lagged behind the increasing cost. Cost of a tonne of steel increased to 205 points as compared with administered price which was raised to only 171 points, leaving a gap of 14% between selling price and the unit cost. As a consequence, SAIL suffered loss of Rs. 45.6 crores. In 1977, the Government changed the policy to revise price upward in tune with the rising cost, following hike in coal price, freight and power charges. SAIL also reduced the level of inventories and made efforts to normalise its industrial relations. This policy continued only till 1982. With the existence of Salem Steel Plant, again the cost of production lagged behind selling price in 1984. The price was not raised in tune with the rise in cost. As a result thereof, SAIL incurred heavy loss in 1984. The Research Scholar
observes that administered prices are a severe constraints on surplus generation capacity of SAIL.

Profitability ratios for the years i.e. 1982-83 and 1983-84 present a dismal picture of SAIL performance ratio of gross profit to net sales was negative. It is indicative of higher sale and manufacturing costs than the price administered by the Government. Negative return on capital employed resulted in the loss net worth of SAIL. It may be inferred that SAIL is unlikely to generate sufficient resources from its operation to maintain its net worth intact. Two options are available to the management of Steel Plants either they can scrap the idle capacity of the plant or maximise productivity in a bid to reduce the cost to the land of the price administered by the Government. However, the first programme involving scoping of this idle capacity would be undesirable both from social and economical points of view. Therefore, every attempt should be made to reduce unit cost through higher productivity.

The Research Scholar has estimated the physical performance to examine as to whether the social capital is used by the industry efficiently. Appraisal of production performance of steel industry vindicates the view that performance would have been far better, had there been efficient utilisation of capacity. It is observed from the
statistical analysis that the steel plants under SAIL have failed to reach optimum output level of 90% of the rated capacity. JSW (private) is the only steel plant which had utilised about 95% of its rated capacity during the period 1975-76 to 1984-85 while the SAIL had utilised only 76% of its rated capacity during the same period."

The wavering performance of SAIL may be partly accounted by the difference in the size of blast furnace and ore-charges. Most of the steel plants in public sector are lacking modern sintering, burdening and blending facilities. This ultimately affects the productivity of blast furnaces.

The production performance has also suffered from poor quality of coal and frequent fluctuations in power supply. The steel industry has to use coal with 29% of dust content as against the safe limit of 16%.

Equally responsible for poor performance of SAIL has been the inefficient manpower recruitment policy and planning. Excessive labour force depressed labour productivity. The strained industrial relations, top heavy organisation, technological difficulties, initial production, bottlenecks and investment planning for large capacities act as severe constraints on the proper functioning of Public Sector Steel Plants. Also unduly large inventories, lack of co-ordinated market research and development
programmes and low production targets match add to idle capacity and low productivity in the Steel Plants of the Public Sector.

The Chapter-V examines productivity trend in Public Sector Enterprises in an attempt to reveal as to whether Public Sector has optimum use of its resources. Public Sector registered growth in its contribution to net domestic product at the rate of 8.53% during the period under study. The study reveals that commodity producing enterprises are major segments of Public Sector, contributing 55% of the real net domestic product of the Public Sector as a whole. Substantial growth in Public Sector's share in net domestic product has followed rapid capital formation and more employment of labour force. For instance, the net capital stock increased from Rs. 6,233 crores in 1960-61 to Rs. 40,262 crores in 1985-86 during the period of study. It is discernible from the study that there has been deceleration in capital formation when the same is analysed for sub-periods 11% during 1960-61 to 1967-68 which declined to 8.6% during 1975-76 to 1985-86. The commodity producing enterprises had 60% of the total capital stock in 1985-86.

Of the two sectors, non departmental enterprises employed more workers than the departmental 57 lakhs in 1985-86 in
non-departmental enterprises as against 35 lakhs in departmental enterprises. It is worth citing that additional employment is provided by commodity producing enterprises 63% by commodity producing enterprises and 37% by the tertiary sector. In broad terms, 62% of the labour force of the Public Sector is employed in non-departmental enterprises.

It may be observed that the non-departmental enterprises are the leading Public Enterprises, holding most of the capital employing most of the workers. Share of labour and capital both in domestic product increased at current prices as well as in real terms. The labour income increased from 60% of the net domestic product in 1960-61 to 77% in 1985-86. The real labour earnings increased from Rs. 1,408 per annum in 1960-61 to Rs. 9,555 in 1985-86.

Measured as a ratio of output to labour, the labour productivity revealed rising trend. However, the trend in labour productivity varied from tertiary sector to commodity producing sector, and from departmental enterprises to non-departmental enterprises during the period of study. The labour productivity increased from Rs. 2,234 in 1960-61 to Rs. 12,027 in 1985-86.
It is worth noting that the capital labour ratio registered rapid growth during the period of study from Rs. 20,559 in 1960-61 to Rs. 46,891 in 1985-86, because high degree of technology is used in public enterprises.

The capital productivity, as a ratio of output to capital is marked by two distinct trends initially rising till 1975-76 and later on it declined. It shows inadequate regard to the creation of additional capacity which remained idle due to infrastructural bottlenecks, labour troubles etc.

The total factor productivity is affected because of divergent trends in capital and labour productivities. The total factor productivity as a ratio of net product to total factor input registered rising trend in the case of non-departmental enterprises and declining trend in the case of departmental. However, performance of commodity producing sector is better than that of the tertiary sector.

Comparing the trend in total factor inputs with that of the net product, it is found that the total factor input takes on "U" shape and the total factor productivity takes on inverted "Ω" form. Initial increase in the total factor productivity is the result of more than proportionate increase
in net product than in factor input, and vice-versa when the total factor productivity declined.

It may be inferred that the public sector has not been efficiently utilising its resources.

Chapter-VI examines the productivity trend in Iron and Steel Industry. Public Sector Industry comprises the steel plants of SAIL, IISCO and Sponge Iron Steel. The productivity of Iron and Steel has been measured in terms of capital productivity labour productivity and the total factor productivity both.

Value-added has been estimated for 26 years (from 1960-61 to 1985-86). In order to find out the trend, the entire period of study has been divided into five sub-periods (from 1960-61 to 1964-65, 1964-65 to 1969-70, 1969-70 to 1974-75, 1974-75 to 1979-80, 1979-80 to 1985-86 and 1960-61 to 1985-86). It is worth citing that the value-added increased from Rs. 9 crores in 1960-61 to Rs. 751 crores in 1985-86 yielding an annual growth of 33%. In 'value-added' Steel Industries rank first among Public Enterprises which registered 89% of growth.

The growth of 'value-added' is the function of capital stock and the capital formation. In 1960-61 the capital
Stock was Rs. 1,060 crore; with capital formation of Rs. 10 crores which substantially increased to Rs. 3,512 crores and Rs. 176 crores in 1985-86 respectively. The trend in the growth of capital stock and capital formation reveals significant rise in every subsequent sub-period. The average growth rate for the whole period of study i.e. from 1960-61 to 1985-86 was 6.27% per annum. It has been observed by the Research Scholar that steel group, though heavily capital intensive industry, has, indeed, expanded at a lower rate than all the public enterprises.

The labour is an important input in the steel production process. Study has been made by the Research Scholar regarding the number of workers, value-added and value-added per-workers for the period under study. In 1960-61, the number of workers was 91,008 which increased to 2,48,443 in 1985-86. Labour productivity in terms of value-added per worker reveals an increasing trend, that is, in 1960-61 the value added per worker was Rs. 1000 which increased to Rs. 30,040 in 1985-86. The increase in value-added per worker has been made possible because of greater increase in value-added than in employment. The estimates of annual growth rates of employment in steel group for the whole period i.e. 1960-61 to 1985-86 was 5.02% per annum, while that for Public Enterprises as a whole it was 4.6% per annum.
The overall efficiency of steel group in public sector has been estimated. It is accepted that the overall efficiency of inputs depends on technological improvement and the capital intensity is a comprehensive indicator of the extent of technology used in production process of an enterprise. The analysis of capital intensity reveals that in 1960-61, when steel plants were newly established with minimum work force, the capital per worker was highest (Rs. 1,17,773). Analysis reveals steady increase in capital intensity from Rs. 1,17,773 in 1960-61 to Rs. 1,78,733, though it declined to Rs. 1,40,480 in 1985-86. The latter nine year period (1978-86) is marked by decelerated capital formation.

The trends in capital productivity have been lack lustre but steady in its upward movement. If capital productivity is measured in terms of value-added, it increased from 0.8% in 1960-61 to 21% in 1985-86. It may be deduced that the value-added increased at a faster rate than the capital stock.

Total factor productivity has also been estimated with the help of indices for value-added, labour input and capital input. The total factor productivity increased 28 times over the past during 1960-61 and 1985-86. However, the Research Scholar discerns disparate trends in the growth rates of
inputs total factor productivity and value-added.

The Steel industry, as a whole has been examined for a further probe into productivity trend. It is observed by the Research Scholar that there has been a sharp increase in the growth of capital per worker employed in the industry. The capital productivity has declined in terms of income and value-added per unit of capital. On the other hand, capital requirements per-tonne of ingot steel have shot up sharply due to high capital cost, and long gestation period.

The labour productivity both in terms of income per worker and value-added per worker increased in public sector steel industry. However, TISCO registered a higher productivity due to judicious combination of factor inputs and product-mix a policy which cannot be practised in public steel plants if they were to fulfil social obligations, viz. creation of more jobs and to act as model employers.