ABSTRACT

Public Sector Undertakings (PSU) have been assigned a significant role in Industrial growth and development of India. They incur responsibility to social, economic and financial objectives by providing substantial scope for increased production, return on investment, generation of employment opportunities, balanced economic growth and development of ancillary industries. Public Sector Enterprises assumes significant role in accelerating the process of industrialisation in the country.

Though India possessed skill in Iron-making even in Vedic days, the Industry vanished during British rule. In pre-independent days, there were barely two private steel plants — TISCO and IISCO. After Independence, it became crystal clear that accelerated transformation of Indian economy can be attained unless Steel Industry is vastly expanded in the Public Sector. As a result, over more than three decades, there are six integrated Public Steel Plants, producing 90% of the steel. Yet these plants are not able to attain the targeted output and economize their operation. Recently SAIL has formulated schemes for technological upgradation of the steel plants at Durgapur, Rourkela and Burnpur (IISCO).
at an estimated cost of Rs. 1,989 crores. However, performance of steel plants is not satisfactory due to infrastructural constraints including scarce supply of coal, power and bottlenecks in rail transport.

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 is a narrow concept and unsuitable to appraise the performance of Public Sector undertakings (PSUs). They support the view that the concept of value of output and services rendered by public investments are 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 the 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 Sector Enterprises.

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

\[ P = F(G_K, G_L, G_A) \]

where \( P \), \( G_K \), \( G_L \), and \( G_A \) denote that productivity is the function of capital input, labour input and overall efficiency of factor inputs respectively over a given period of time. The Research Scholar is of the opinion that the total factor productivity is appropriate for evaluating the overall performance of Public Sector 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 the Research Scholar 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, the 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 sub-classifying 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, and sufficiency of Public Sector Undertakings is, therefore, examined in 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 utilisation of capacity in various significant public sector undertakings.

Poor financial performance is verified by the physical appraisal of public sector enterprises which is undertaken by Research Scholar because capacity utilisation and profitability are inter-connected. The analysis reveals that none of the Public Sector Enterprises was able to
attain normal capacity. Even after decades of their existence, a number of 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 can not be one of reasons of low capacity utilisation in the whole Public Sector Undertakings. Therefore, a group-wise analysis is made of the important sector in a bid to diagnose the disease and suggest the treatment. The Research Scholar has made the following suggestions:–

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

2. Infrastructural facilities should be adequately provided which frequently undermines the performance of Public Sector Enterprises.

3. Management of Public Enterprises should be so changed as to impart professionalism.
4. Dependence of Public Enterprises on spare parts from abroad should be reduced by establishing ancillary units.

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

6. Financial sources of public enterprises have to be delinked from national exchequer if they are to be financially disciplined.

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

Under financial return, the Research Scholar found that, besides 1978-79 to 1982-83, SAIL has incurred losses due to idle capacity and low productivity, both of capital and labour. In this context, it is recommended to economise overload cost and take measures, including upgradation of technology.

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 work 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 the steel plants either they can scrap the idle capacity of the plant or maximise productivity in a bid to reduce the cost to the level of the price administered by the Government. However, the first programme involving scoping of the idle capacity would be undesirable both from social and economic 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. 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. TISCO (in private) is the only steel plant which had utilised about 90% of the 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.

Productivity trend in public sector enterprises is examined to find out as to whether public sector has made 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. But it is discernible from the study that there has been deceleration in capital formation when the same is analysed for sub-periods —— 11% during 1975-76 to 1985-86. The commodity producing sector had 69% 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 also observed that the non-departmental enterprises are the leading Public Sector Enterprises, holding most of the capital and employing most of the workers. The share of labour and capital both in domestic product increased at current prices as well as in real terms.

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 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 trouble, 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 "U" shape and the total factor productivity takes on inverted "∩" 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.

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 (i.e. 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 showed increasing trend during the period under study yielding an annual growth of 33%.

The overall efficiency of steel group in public sector has been estimated. It is accepted that the overall efficiency of inputs depends on technological improvements, and the capital intensity is a comprehensive indicator of the extend of technology used in production process of an enterprise. Analysis reveals steady increase in capital intensity from Rs. 1,17,778 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-luster 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, RISCO 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 are to fulfil social obligations, viz; creation of more jobs and to act as model employers.

In conclusion, public sector has failed to give an impressive account of itself both in financial and physical terms. The detailed analysis of productivity has brought to fore problems arising from over-capatalisation, injudicious capital labour mix, high inventory level and low investment in upgradation of technology. Profitability and productivity are also partly accounted by top heavy management. Research Scholar has made suggestions to deal with the problems effectively.