CONCLUSION AND SUGGESTIONS

The record of the industry during the period under study paints a mixed picture, in Labour Productivity, there was a considerable improvement in Public Sector Steel Unit SAIL, and also in Private Sector Steel Unit TISCO from 1990-91, in the period of our study there was an upward movement in Labour Productivity (excluding 1996-97, 1998-99 and 2001-02) of SAIL. While in TISCO there was also an upward movement in Labour Productivity (excluding 1992-93, 1993-94). In SAIL from 1990-91 to 1995-96, there was an improvement in the Labour Productivity. In 1990-91, Labour Productivity of SAIL was 1.559 while in 1995-96 it became 2.126, but again showed a downward move in next year i.e. 1996-97, in this year it became 2.002.

In TISCO the picture was not same in the previous year's of our study in 1991-92 the L.P. of TISCO was 5.405, but it was fell down to 5.231 in next two year's (1992-93, 1993-94).

In SAIL after 1996-97, the growth of Labour Productivity became positive and the Labour Productivity became 2.101 for the period 1997-98. However, it again became 1.814 with a decrease of 13.647 percent. The next
two years, 1999-00, 2000-01, was good for the Labour Productivity. It became 2.532 in 2000-01. However, in 2001-02 there was again a downfall, the Labour Productivity of SAIL became 2.254 from 2.532 in 2000-01. In the last two years of our study the growth rate of our Labour Productivity was good. In 2002-03, the Labour Productivity of SAIL was 3.050 and in 2003-04, it became 4.553 with a growth rate of 49.267 percent.

While in TISCO there was a continuous improvement in the Labour Productivity after 1993-94, it was 6.229 in 1994-95, but in 2003-04, it became 26.207. Therefore, we can say that the performance of Labour Productivity is much more better in TISCO than SAIL.

In the field of Capital Productivity, there was not any continuity in the percentage growth of Capital Productivity in SAIL and TISCO. In SAIL in 1990-91, it was positive but in 1991-92, it became negative by 13.85 percent. While in the same period the capital productivity in TISCO became 33.6284 in 1991-92 from 37.466 in 1990-91 after 1991-92. The growth rate of Capital Productivity of both the companies SAIL and TISCO were negative the next few years.
In SAIL, the percentage change in Capital Productivity was negative from 1991-92 to 1999-00, while in TISCO it was negative to 2001-02 (excluding 1995-96). Only in 1995-96, it was 4.80. In SAIL, the percentage change in Capital Productivity for the period 2000-01 became positive. However, again it became negative in 2001-02.

In the last two years 2002-03, 2003-04 the growth of Capital Productivity of both the companies was positive.

In the field of Total Factor Productivity, there was no continuity in SAIL and TISCO.

In SAIL, the growth of TFP was negative from the period 1990-91 to 1999-2000. In SAIL, it was 93.443 in 1991-92 but it became 85.184 with a decrease of 8.83 percent and it was continued to 1999-2000, in the year 2000-01, there was an improvement in the growth rate of TFP of SAIL, it became 9.03 percent. However, in the year 2001-02 it became negative again.

In the last two years of our study 2002-03, 2003-04, the growth rate of TFP of SAIL was 16.43 percent, 31.99 percent respectively.
On the other hand, the picture was totally different for TISCO. It was positive in 1991-92 by 6.76 percent. However, it's become negative for the coming two years (1992-93 and 1993-94). But again there was a reform in the TFP of TISCO, in the year 1994-95, it became 83.391 with a growth of 16.54 percent and it was continued to 120.03 with a growth of 43.93 percent in the year 1995-96. But again there was a downfall for three year's from 1996-97 to 1998-99.

1999-2000, was a golden year for TISCO, in this year the Total Factor Productivity became 106.43 with a growth rate of 39.66 percent in the last three years of our study 2001-02 to 2003-04 the growth of Total Factor Productivity became positive.

Economics growth is not a figure but an indicator of greater socio-economic justice. The emphasis is on the mutual trust and commitment. The nation can, however, take legitimate pride in having assembled large amount of capital, technical know-how and manpower and established an industrial based and system capable of meeting the countries need and priorities. If this vast apparatus is to yield satisfactory results, the key and catalytic factor lies in productivity.
Productivity has two main aspects. The first is the technical aspect covering techniques improved organizations, better management, better inventory control, better handling of resources, the avoidance of waste, etc. The second and important aspect pertains to psychological and human factors and involves better motivation, better industrial relations and more imaginative work education. Therefore, the program for improving the atmosphere for productivity may have to take into consideration economic, legal, administrative, technological, managerial, social, and psychological factors affecting productivity.

Cost reduction is probably the most important driver for improving productivity. To ensure a competitive advantage, steel makers have to concentrate on the following areas:-

1) Reducing operating costs.
2) Reduction in working capital costs.
3) Reduction in product inventory (unsold stock).
4) Improving techno-economic parameters.
5) Substitution of raw material.
6) Differentiated sourcing.
7) Effective supply chain management.
8) Social infrastructure costs.

Operating and working capital costs need to be brought down through a combination of benchmarking and strict cost control; potential for improvement in techno-economic parameters like energy consumption, yield etc. need to be identified through benchmarking and implemented through in-house research and technological expertise. A major cost in steel manufacturing relates to the cost of raw material. There is a need to selectively focus on purchase of high-value items. This can be achieved through focusing on the 'Total Cost of Ownership' instead of just the purchase price and identifying critical levers that can be used to reduce the ultimate cost. Cost of raw material like imported coal is to be analysed with respect to its productivity and for the optimum purchase pattern. Efforts should also be made to develop product-specific and differentiated sourcing strategies instead of current practice of a single strategy for all purchases. The other opportunities for cost reduction lie in reducing internal business, costs like inventory holding, transportation and purchasing processing costs. Plants should also identify on a continuous basis the measures to increase revenue by reducing freight costs, cost of arising, demurrage and non-confirmed orders. The social
infrastructure costs may also be looked into for its effectiveness and brought down in a phased manner.

To improve productivity, the main objective should be improving R & D's role in overall business scenario both through incremental and major improvements. This can be achieved by maximum possible exploitation and utilisation of existing technology to minimize investment in new technology. The development process must cover all improvement aspects of process/ product/ service-both internal (steel industry) and external (customers). A few such areas are:-

1) Optimisation of existing process technologies for maximization of productivity at minimum cost, (eg, through simulation models and data-base management).

2) Maximum existing steel quality (even beyond specifications) to attract and retain customers.

3) Recommend remedial measures for cost saving through energy conservation, elimination of law value steps of operations, minimising losses, (eg., yield of liquid steel).
4) Intense focus on product development activities, specifically developing difficult-to-make and high value steel grades to meet global challenges with continuously modified strategies, (e.g., win back the auto-sector customers from aluminium, composite materials, back to alloy steels).

5) Devote on application engineering areas including design and use, such that the 'product development to marketing' cycle is as short as possible.

6) Maximum possible reduction in the specific consumption rates of raw materials through quality up gradation and improvement of yield.

7) Improvement of physico-chemical properties of raw materials for iron making through improved techniques of beneficiation, sizing, agglomeration and process control.

8) Improvement of blast furnace productivity and reduction in the coke requirement by burden preparation including increasing use of agglomerates, improved design of blast furnaces and stoves to increase the top pressure, blast temperature and stoves to increase the top pressure, blast
temperature and control of burden distribution and auxiliary fuel injection.

9) Introduction of technologies of pre-treatment of hot metal to reduce the metallurgical load on the steel melting units.

10) Reduction of energy requirement and improvement of yield in rolling processes and improvement of quality of products.

11) Reduction in the heat duration in steel making.

12) Making the plant pollution-free through various technological measures including novel waste utilisation efforts, (eg., EAF dust treatment to recover costly alloy elements).

13) Skill transfer and technology transfer.

Besides, by involving customers in the various stages of research steel industry can provide them a better opportunity to offer suggestions and recommendations on various key aspects of the product.

What is really important regarding improvement of productivity is that the total per unit cost of output should be reduced to the minimum? In fact, it is not only conceivable but has some sometimes actually happened that while labour
productivity has improved total productivity has gone down, as measured by the total cost per unit of output, therefore, while discussing the role of productivity in economic growth we should always bear in mind total productivity rather than labour productivity alone. It is hardly necessary to put labour to the point that not all improvements in productivity are the result of the effort of the workers alone. Productivity can be improved by the judicious injection of capital, from the adoption of improved technology and better management performance. On the other side of labour, neither the exercise of labour organized strength in industrial conflicts nor laws and the intervention of the state can help the workers much in realizing their aspiration. Their gains can arise only out of the strength and dynamism of the economics, the only enduring emphasis of which is rising level of productivity.