

# THE ETHIOPIAN MANUFACTURING SECTOR: STRUCTURE, GROWTH AND EFFICIENCY

**Swamy P. G & Padma\***

## **Abstract**

*As human development is end in itself, achievement and maintenance of full employment are considered as ideals world over. Admittedly, faster growth of economy is a necessary but not sufficient condition to accomplish the task. With regard to the issue of accelerating the growth process, importance of industrialization is well recognized, which is invariably the outcome or accompaniment of economic development. <sup>1</sup> The studies of Smith,<sup>2</sup> Fisher,<sup>3</sup> Clark,<sup>4</sup> Kuznets,<sup>5</sup> Hoffmann<sup>6</sup> and Chenery<sup>7</sup> inform that during the course of development certain structural changes occur both at sectoral and sub-sectoral levels. One of these is related to rise in the share of manufacturing in the Gross Domestic Product as well as in total employment. Further, within the manufacturing sector, changes in the composition of output, employment and gross fixed capital are also interesting to analyze. In addition to this, growth and efficiency in the manufacturing sector, over a period of time and sub periods are also significant to analyze and discuss, especially when this sector is in teething troubles. Ethiopian manufacturing sector is no exception to this situation.*

*With this backdrop, we would like to analyze some of the issues of Ethiopian manufacturing sector such as structure, growth, and productivity over a period of time and particularly after 1993 onwards to understand the post-reform effects.*

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<sup>1</sup> R.B.Sutcliffe, Industry and Under development, addison wesley, London, 1971, p2.

<sup>2</sup> A. Smith, An Enquire into the Nations of Causes of Wealth of Nations, Penguin, Harmondsworth, 1776, (reprinted 1973)

<sup>3</sup> A.g.B.Fisher, The Clash of Progress and Society, Macmillon, London, 1936.

<sup>4</sup> C.Clark, Conditions of Economic Progress, Macmillon, London, 1957.

<sup>5</sup> S.Kuznets, "Quantitative aspect of Economic Growth – Industrial Distribution of National Production and Labour Force", Economic Development and Cultural Change, 5(4), 1957.

<sup>6</sup> H.G.Hoffmann, The Growth of Industrial Economics, Oxford University Press, London, 1958.

<sup>7</sup> H.G.Chenery, "Patterns of Industrial Growth", American Economic Review, September, 1960.

## **1. STRUCTURE AND DIVERSIFICATION OF THE MANUFACTURING SECTOR**

### **1.1 Structure of the manufacturing sector is discussed in terms of employment, gross fixed capital, and gross value of output.**

In the present section, structure and diversification of the manufacturing sector is presented in three ways. 1. Structure of the manufacturing sector in terms of Industry Classification 2. Structure in terms of size-wise distribution of manufacturing establishments. 3. Structure of the manufacturing sector in terms of public and private manufacturing establishments.

\* **Dr. Swamy P.G & Dr. Padma** are the faculty, Department of Economics, Debub University.

### **1.2 Structure of the Manufacturing Sector in Terms of Industry Classification**

To understand the structure of manufacturing sector in terms of industry classification is very interesting and useful in policy matters. This classification would also give a clearer picture about diversification of this sector, over a period of time. For this purpose, we have made the total manufacturing sector into three groups, I. Consumer Goods Industries II. Basic Goods Industries and III. Capital Goods Industries. The various manufacturing industries falling under these different industry groups are mentioned in the Table.1 In general, in any economy, it is believed that over a period of time there would a shift from consumer goods industries(traditional industries) to basic and capital goods industries(modern industries). In other words, the same can be said as, structure of the industry has been changing from traditional to modern industry. It could be mentioned in this context, that in the initial stages of industrial development, basic goods industries such as Iron and Steel, Engineering and Metal Works would play a crucial role providing a solid base to the industrial structure and this sector could also boost the overall growth to the total manufacturing sector. Hence, with this perception, we have analyzed the structure of the Ethiopian manufacturing sector in terms of Industry Classification, during the period 1980 to 2001.

It is evident from the table.1 (columns 2 and 5) that during the period 1980-81, the total employment of the manufacturing is distributed as 86.19%, 11.04% and 2.77% among the Consumer Goods, Basic Goods, and Capital Goods Industries,

respectively. On the other hand, over a period of twenty two years, total manufacturing employment has been changed into 77.35%, 16.92% and 5.73%, in respective industries.

Hence, we can declare that there is a change in the structure of the manufacturing sector (based on total employment) from Consumer Goods Industries to Basic and Capital Goods Industries, over a period of time. However, this is not very significant as Consumer Goods Industries are still with loin share. A significant change in the structure is acceptable only when relatively more employment emerges in the Basic and Capital Goods Industries. A change in the structure of the manufacturing sector can also be seen on the basis of Gross Fixed Capital in different industrial groups, during the period 1980 to 2001.

Structure of the Ethiopian Manufacturing Sector based on gross value of output reveals different picture. It is evident from the same table.1 (Columns 4 and 7) that during the period 1980-81, the gross value of output in the manufacturing sector can be seen as 68.61%, 26.38% and 5.01% in Consumer Goods, Basic Goods, and Capital Goods Industries, respectively. On the other hand, after a period of twenty two years, total manufacturing output can be as 68.32%, 19.69% and 11.99%, in respective industries.

Hence, we can state that there is no change in the structure (relating to the total output) of the manufacturing sector based on Consumer Goods Industries to Non Consumer Goods Industries over a period of time. (The latter group consists of Basic and Capital Goods Industries). More importantly, the share of output in case of Basic Goods Industries has been declined from 26.38% to 19.69% during this period. However, an increase (5.01% to 11.99%) can be seen in case of Capital Goods Industries.

- In sum, one can declare that, on the basis of above analysis, that there has been a change (not a significant) in the structure of the manufacturing sector in terms of employment and gross fixed capital during the period 1980-81 to 2001-02. However, it cannot be said so on the basis of gross value of output of the total manufacturing sector.

Naturally, one can ask whether has there been any change in the structure within the group of Consumer Goods Industries? To answer this, three important observations are presented; viz., 1. Food and Beverages Industry has slightly improved its position in terms of fixed capital and output. 2. Textiles Industry has significantly declined in terms of employment, fixed capital and also gross output. Similar situation can be

seen with Tobacco Industry. 3. The other industrial groups such as Leather and Paper have improved their position in terms of all these selected variables.

### **1.3 Structure in Terms of Size-Wise Distribution of Manufacturing Establishments**

Structure of the manufacturing sector based on size-wise distribution of manufacturing establishments would focus some more dimensions to this analysis. Central Statistical Agency is continually publishing size-wise data on number of establishments, employment, and gross value of output.

CSA followed the criteria of the size of the industrial establishments on the basis of employment. The manufacturing units, using 10 – 19 employees, 20 – 49 employees and 50 and above employees are classified as three groups, under size-wise industry. The former two groups, according to CSA, are Medium Manufacturing Establishments and the latter group (50 and above employees) as Large Manufacturing Establishments.

It may be noted that, for our analysis purpose, we have classified all these three size-wise industry groups as Modern Small Scale Manufacturing Establishments, Medium Manufacturing Establishments and Large Manufacturing Establishments. Based on this classification, we would like to know what has happened to the structure of the manufacturing sector, for the last 21 years. For this purpose, we have considered three important variables viz; number of establishments, employment and gross value of output, for the three different time periods i.e. 1980-81, 1990-91 and 2001-02. To understand the change in structure, we have calculated percentage shares of that particular variable (for example employment) in these three industry groups. In each year, we have considered the two years average of that particular variable so as to capture the variations in it. Important observations are as follows.

It is evident from table.2 that the numbers of manufacturing establishments, in the year 1980-81, have been 67, 109 and 232 which represent, according to our own classification, the Modern Small Scale, Medium and Large Manufacturing establishments. The shares of number of manufacturing establishments of these three groups are (by calculating the average of percentage shares of 1980-81 and 1981-82, and they are presented at the bottom of the table.) found to be 18.47%, 27.92% and 53.61%, respectively. The structure of the total manufacturing sector, in term of these industry groups, has changed significantly, during the period 1980-81 to 2000-01. It may be noted that the Large Manufacturing establishments share

declined from 54% to 35% and more importantly, the share of Modern Small establishment has dramatically increased from 18% to 38%, over a period 22 years.

In fact, the number of establishments does not speak much about the actual situation of the structure of the total manufacturing sector. For that, one has to carefully analyze the contribution of Modern Small, Medium and Large establishments in terms of employment and gross value of production. The same has been presented in the table.2, and following are the main findings from it.

- Ethiopian Manufacturing Sector has been mostly dominated by Large Manufacturing establishments in terms of employment and gross value of production during the years 1980-81.
- In other words, Modern Small and Medium Manufacturing establishments had been neglected during this period.
- The situation is somewhat different during the period 2000-01. Modern Small and Medium manufacturing establishments, together, have been able to contribute 11% employment and 7% gross value of production. Of these two groups, Medium Manufacturing establishments have been contributing more.
- It may be noted that Large Manufacturing establishments are still powerful and dominating the show in terms of employment (89%) and production (93%).

We have tried to identify the type of industries which have emerged into these Modern Small and Medium manufacturing establishments. A careful observation on Table.3 would give some clues to this search. The summary of this table follows;

- Even today, in case of food & beverage and textiles, Modern Small and Medium industries have been playing relatively insignificant role in terms of contribution to output and employment.
- In case of leather & footwear, wood & furniture, paper & printing and iron and steel, Modern Small and Medium establishments are relatively in good position in terms of contribution to output and employment.
- It is to be remembered that all these industries (leather & footwear, wood & furniture, paper & printing and iron and steel) put together contributing 20% of employment and 22% of gross output to the total manufacturing sector.

Before we go to another section, we would like to mention two important points. 1. What are the possibilities for intra-industry linkages in terms of Modern Small, Medium and Large manufacturing establishments? One has to explore this area of research by making use of primary and secondary data thoroughly. 2. We like to quote Staley and Morse<sup>8</sup> –“The most productive industrial structure for any country will be a combination of large, medium and small manufacturing units. And the optimum combination will vary from country to country and even from place to place and time to time within the same country.”

#### **1.4 Structure of the Manufacturing Sector in Terms of Public and Private Manufacturing Establishments**

It is well known fact that the Government policies before 1991 severely hampered the potential expansion of private manufacturing sector. Since the establishment of the Transitional Government of Ethiopia in 1991, government sought to rationalize its role in the economy while enhancing the active participation of the private sector. The Government has since then begun to take decisive reform measures such as; a) Public Enterprises Reform Program, b) Privatization of public enterprises, c) Decontrol of prices of goods and services, d) Lifting of restrictions on private sector investment capital and number of business ventures, e) The easing of licensing requirements and regulations, f) The downward revision of taxes and tariffs from an extremely high level before the reform period etc.,

One would certainly expect the impacts of all these new policies on private as well as public sector manufacturing establishments. Hence, in the present section, we analyze the changing structure of manufacturing sector in terms of public and private owned manufacturing units only for the period 1993 to 2001. (See table. 4)

Undoubtedly, there is a clear evidence of structural change in the manufacturing sector in terms of public and private manufacturing establishments. It is clear that during the period 1993-94, private sector was just sharing only 9.45% and 8.43% of employment and gross fixed capital, respectively in the total manufacturing sector. On the other hand, the same variables have been found to be 41.85% and 50.36% during the years 2001-2.

In case of gross value of production, it may be noted that private sector's share has been increased from 11.66% to 37.59%, during the period 1993 to 2001. Further, the

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<sup>8</sup> Staley Eugene and Richard Morse, “Modern Small Industry for Developing Countries, N.Y. Mc Graw-Hill, 1965.

private sector's share relating to gross value added and operating surplus are shown as 25.94% and 21.78%, respectively. These variables could have been under-reported by the private sector, due to tax problems. However, the main findings of the table.4 are presented below.

- The structure of the Ethiopian manufacturing sector, in terms of public and private manufacturing employment and gross fixed capital, has significantly changed during the period 1993 to 2001.
- The structure of the industries such as Food and Beverages, Textiles, Chemicals has also changed significantly in terms of private manufacturing employment and gross fixed capital, during the period 1993 to 2001.

## 2. GROWTH OF THE ETHIOPIAN MANUFACTURING SECTOR

Having analyzed the structure of the manufacturing sector, we now try to present the growth of the manufacturing sector over a period of 22 years, starting from 1980 to 2001. We also present growth in sub periods viz., 1980-1988, 1990-2001 and 1993-2001, so as to understand the trends in growth before 1991 and after 1991 and particularly to understand the reform implications.

So as to understand the growth of the manufacturing sector, we have considered some important variables such as employment, fixed capital, gross value of production and value added and all these variables except employment are in value terms, in current prices.<sup>9</sup> To measure the growth, we have deliberately used average of simple annual growth rate method by using formula  $(X_n - X_{n-1}) / (X_{n-1}) * 100$ , X could be any variable under study.

The advantages in this method are a) in case of simple annual growth rates: they capture all the deviations and may give a clearer account of growth over time. b) the convenience of accepting or rejecting the extreme growth values. (For example, in our study the years 1989, 1990). In addition to this, it may be noted that the trend growths by using any regression method may not be reliable/meaningful, if  $R^2$  is not

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<sup>9</sup> To know a detailed methodology on measuring all these variables, please refer CSA Annual Reports.

best fit. Further, this method which we use in the present work has the support of various studies and reports such as Goldar, Cowing and World Bank Reports.<sup>10</sup>

## **2.1 Growth of Employment, Fixed Capital and Gross Value of Production**

Growth rates of industrial employment, gross fixed capital and gross value of production are presented in Table 5. Summary findings of all these growth rates are as follows.

- Growth in the industrial employment has been found to be 2.14% per annum during the entire period, 1980-2001. There is a clear evidence that growth in employment is relatively lower (1.46%) during post reform period when compared to the earlier period, 1980-88. A negative growth in public sector employment is also a reason for this situation. However, an impressive growth in private sector employment (23.88%) can be seen during the post reform period.
- Growth in employment has lagged far behind when compared to the growth rates in fixed capital and gross value of production, over a period of time and particularly during post reform period.
- Growth rates in fixed capital and gross value of production have been relatively higher during the period 1990-01 when compared to the earlier period. More importantly, they have been much higher in private sector manufacturing when compared to the public sector establishments.
- Analysis of growth during the period 1993 to 2001 also supports the above findings.

## **2.2 Trends in Gross Value Added, Capital Intensity and Wage Rate**

To have more comprehensive and in-depth understanding of the manufacturing sector, trends in gross value added, capital intensity (capital/employee), wage rate (wages/employee) at current and constant prices have been presented in this section. All these results have been presented for the entire period, sub periods and especially for 1993-01. Summary findings are...

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<sup>10</sup> J.G.Cowing & R.E.Stevenson, B.N.Goldar and World Bank Development Reports (1981, 1986 and 1989)

- Growth in gross value added, as it was with gross value of output, has been very impressive (20.17%) during the period 1991-01, when compared the earlier period.
- Growth in gross value added has been relatively higher in private manufacturing sector when compared to public sector, over a period of time and also during post reform period.
- Capital intensity, i.e. fixed capital per employee, has been higher in private manufacturing sector, particularly during post reform period, when compared to public sector manufacturing. Growth capital intensity has been relatively higher during the post reform period when compared to earlier period. Growth in capital intensity is also higher in private sector when compared to public sector manufacturing. Hence, we conclude that private manufacturing sector has been more capital intensive in nature and it is more true for the recent years.
- Wage rate, i.e. wage per employee, is relatively higher in public sector when compared to the private manufacturing sector. A clear difference can be seen during period 1993-2001. Similarly, growth in wage rate has also been higher in public sector units when compared to private sector, over a period of time and also in the sub periods.

### 3. EFFICIENCY OF THE ETHIOPIAN MANUFACTURING SECTOR

In the process of industrialization, in addition to structure and growth, efficiency would also play an important role in achieving certain objectives. One of the methods of measuring efficiency is the measurement of productivity. It could be partial or total. However, the idea behind measuring productivity is how best the inputs such as labor and capital are utilized to produce certain levels of output, or how efficiently these inputs are utilized over a period of time.

#### 3.1 Trends in Labor Productivity and Capital Productivity

Labor productivity is measured as the ratio of value added to employment and capital productivity is as the ratio of value added to gross fixed capital. All the absolute values of these labor and capital productivities are presented in the table.7. Simple average of growth of these productivities, over a period of time and sub periods and particularly during 1993-01, is also mentioned in the same table. Summary findings are...

- Interestingly, the absolute values of labor productivity in public sector establishments have always been higher when compared to private sector, over a period of time and particularly, during 1993-01.
- Growth in labor productivities, in both public and private establishments, is found to be higher during the post reform period when compared to the earlier period.
- There have been improvements in capital productivities in both public and private sectors when compared to earlier period i.e. 1980-88. And again, public sector has shown relatively better performance in terms of capital productivity during the post reform period.

Naturally, doubts arise regarding productivity performance of public sector establishments especially when employment growth is low. In other words, when public sector employment is declining drastically, the simple ratios of value added to employment would boost up, and hence growth in productivity could be over estimated. To solve this problem, one can get solution in the measurement of total inputs efficiency i.e. Total factor productivity.

### **3.2 Trends in Total Factor Productivity**

We have used Kendrick method of measuring the total factor productivity, by using an expression:  $A = Q / (a L + b K)$ , where A = total factor productivity, Q is the value added at factor cost, L = number of employees, K=capital input (net fixed assets) and a and b are labor and capital income shares, respectively. The Kendrick Indices, relating to the public, private and total manufacturing sectors, are presented in the table.7, and the following are the conclusions.

- It is evident from the table. 7 that TFP Index, in case of public sector manufacturing, declined during the period 1980 to 1988 (The index declined from 100 to the extent of 59). During the period 1993 to 2001, the same index has increased from 65 to 132.
- In terms of productivity growth, TFP growth in public sector was negative to the extent of -3.42 during the years 1980-88. However, TFP growth was positive to the extent of 36.86 during the post reform period. On the other hand, in case of private sector, TFP growth has slightly improved by 8.62% during post reform period, when compared to 6.73% during 1980-88.

- It may also be interesting to note (as it was in case of labor productivity) that TFP growth relating to public sector has shown comparatively good performance during the entire period and particularly during post reform period.

What can we conclude based on the above findings? Can we conclude anything in the light of public sector reforms? Or from the view of free participation of private sector in the economy at large? Keeping in view these questions and the above findings, we make some important following conclusions.

- **Public enterprise establishments have very well responded to the “Public Enterprises Reform Program – 1992” in terms of enhancing efficiency, productivity and competitiveness.**
- **Private sector, which was almost minimal, earlier to economic reforms, emerged as equally powerful sector compared to public sector. However, its efficiency in terms of labor productivity, capital productivity or TFP is not very satisfactory.**

#### 4. MEASUREMENT ISSUES IN ESTIMATING TFP

In the context of measuring TFP, researchers take various precautions to achieve the meaningful and accurate productivity growth rates. Some of those precautions are; a) a good and satisfactory approach in measuring fixed capital assets b) adjustments in fixed capital according to capacity utilization (it is the major issue in Ethiopian manufacturing sector) c) measuring output or value added at constant prices d) using appropriate deflators e) Adjustments in labor component in terms of production and non production workers etc., All these are possible only when there is a sound and systematic data base available on time series basis.

Among all, most important is using the proper price indices to adjust output, fixed capital at aggregate as well as industry levels. However, unfortunately, research scholars and interested groups have been measuring growth and productivities of manufacturing sector with less due attention to the above measurement issues. We would like to quote Admit Zerihun<sup>11</sup> in the context of using deflators... “...inflation is not taken into account because of strong convictions that proxy-deflating mechanisms distort results worse than price movements in the context of the Ethiopian manufacturing sector” However, this is a very serious limitation of industrial research

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<sup>11</sup> Zerihun Admit – “Is Technical Progress Labour or Capital Saviang? The Case of the Ethiopian Manufacturing Sector”, EJE, Vol. VIII, Number 2, October, 1999.

in this country. And we strongly believe that there is an urgent need to build solid data base information which is very much useful in this area as well as in policy making.

Hence, it is interesting to measure TFP by making two improvements in this method. 1. Adjustments in fixed capital series over a period of time. 2. Deflating the value added series by using price index. Further, these improved TFP results are then compared with earlier TFP (without adjustments) to know the difference. More importantly, we take up this job for the years 1993-01, so as to know what has exactly happened during that time in public and private sectors of the manufacturing sector.

For this purpose, we have General Price Index from The Annual Report of National Bank of Ethiopia and from the same source, we have also taken time series data on Machinery and Aircraft (value of imports and volume of imports, ratio) and developed a price index, and finally, it is used to deflate fixed capital series adjustments. In this procedure, only the additional fixed capital is deflated and added to the base year's capital. The TFP results, along with unadjusted results, are presented in the table 8.

According to table.8, the improved TFP growth in total manufacturing sector is found to be 1.68% per annum during the period 1993-01, and on the other hand, the unimproved TFP growth can be observed as 1.48% per annum. Further, there are also slight improvements in the growth rates of TFP, relating to public and private sectors. More importantly, these improved estimates would give good results in measuring the determinants of productivity growth by regression method. Before we end this section, we like to make to important conclusions.

- It is evident from the table.8 that the TFP growth in the total manufacturing sector is found to be 1.68% per annum, during the period 1993-01. It shows that there has been an improvement in using labor and capital inputs efficiently during this period.
- It is evident, once again, based on the improved TFP results that the public sector has performed very well in improving productivity during this period. However, growth in private sector's productivity has been negative during the same time period.

### **A Comment on Manufacturing Employment**

One worrying factor in the total manufacturing sector, particularly during post reform period, is slow growth in industrial employment. It may be recollected from the

table.5 that the overall growth in industrial employment has been 1.46% per annum and it is further lowered by 1.41% during 1993-01. One reason for this situation is negative growth (2.79%) of employment in public sector establishments during this period. Among the other reasons, one could be privatization or public sector reforms. However, private sector played a tremendous role in creating industrial employment to the extent of 24% per annum. On the other hand, we can also mention two more points in the context of private sector. 1. There has been a remarkable growth in fixed capital (54.60%) and capital intensity (23.36%) during this period. 2. The nature of production technology in the Ethiopian manufacturing sector is capital consuming and labor saving, contrary to the theory of initial factor endowments of the country.<sup>12</sup> Further, a question also arises, i.e. is there any impact of changing composition of output in the total manufacturing sector? If so, what is its impact on industrial employment? To answer these questions, we need a small clarification.

The changing composition of output will have implications for employment generation over a period. This concept was originally developed by R.S. Eckaus in his article "The Factor Proportions Problems in Underdeveloped Areas"<sup>13</sup> He suggested that unemployment in under developed countries can be blamed not only on limited substitutability between labor and capital but also on the structure of the demand. The maximum value output may be different from full-employment output because there is insufficient demand for labor intensive commodities. This situation is applicable to the Ethiopian manufacturing sector where demand for manufacturing products is insufficient. We have tried to explore this aspect of employment by considering data for the years 1993 and 2001. However, we frankly admit the limitation of this method that the present analysis is based on fixed labor-output coefficients over a period of time.

The procedure, calculation part-of measuring the changing composition of output and its impact on employment are clearly mentioned in the table.9. We observe the following points from the table.

- The aggregate effect of changing composition of output is positive and negligible (0.002%) on the total manufacturing employment. Perhaps, the reason for this could be the negative growth rates in employment in certain industries may have got offset by the positive the growths in employment of some other industries.

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<sup>12</sup> Zerihum Admit – Ibid pg. 18.

<sup>13</sup> Eckus.R.S. – "The Factor Proportions Problem in Underdeveloped Areas," the American Economic Review, Vol 45, pp.539-565, reprinted in Agarwala A.N. and Singh S, (eds) 1965; The Economics of Underdevelopment, Oxford University Press, New York, pp. 348-78.

- Inter industry analysis shows that the changing composition of output has resulted in negative growth in employment to the extent of -51.28% in case of textiles, 16.58% in case of wood and furniture and -7.36% in case of Metal and electrical industries. It may be noted that these industries were sharing 39%, 5%, 4% of the total employment in the beginning year i.e. 1993.
- The positive impact of the changing composition of output can be seen in case of Food and Beverages, Leather, Chemicals and Non metallic industries that together shared 50% of the total industrial employment.

### **Can We Really Neglect 'Public Sector'?**

As we have already mentioned that in the initial stages of industrial development, basic goods industries such as Iron and Steel, Large Scale Engineering and Metal Works would play a crucial role providing a solid base to the industrial structure, and this sector could also boost the overall growth of the total manufacturing sector.

Based on the available data, we can show that Capital Goods Industries have not performed very well in terms of growth. Can private sector come forward to take up this job? If it is not so, why cannot we seriously think to give this challenge to public sector? We have the following logical and empirical evidences to support this argument.

1. During the post reform period, public sector has very well responded to the given assignments in terms of efficiency and performance.
2. Some other developing countries experiences, for example in case of Indian manufacturing sector, show that even today some crucial public sector units are still playing significant role.
3. Huge investments in selective public sector units, e.g. Iron and Steel and Engineering, would establish and develop forward and backward linkages and finally the scope for Medium and Small Industries could be expanded.
4. Important among others is employment in private sector cannot be expected to grow at faster levels. This task can also be fulfilled with the public sector investments.
5. As we know, industrial development in case of Ethiopian Manufacturing Sector has created huge regional imbalances. This could be minimized with huge investments in public sector units at other regions.

Hence, we strongly believe that public sector has again to come back, and should take up responsible job in the crucial areas which certainly encourages the whole manufacturing sector in many aspects.

## 5. CONCLUSIONS

### 5.1 Structure and diversification of the manufacturing sector

There has been a change in the structure of the manufacturing sector (not a significant) in terms of employment and gross fixed capital during the period 1980-81 to 2001-02. However, it cannot be said so on the basis of gross value of output of the total manufacturing sector.

Changes within the structure of the Consumer Goods Industries reveal three points; 1. Food and Beverages Industry has slightly improved its position in terms of fixed capital and output. 2. Textiles Industry has significantly declined in terms of employment, fixed capital and also gross output. Similar situation can be seen with Tobacco Industry. 3. The other industrial groups such as Leather and Paper have improved their position in terms of all these selected variables.

The structure of the total manufacturing sector, in term Modern Small, Medium and Large establishments, has changed significantly, during the period 1980-81 to 2000-01. It may be noted that the Large Manufacturing establishments share declined from 54% to 35% and more importantly, the share of Modern Small establishment has dramatically increased from 18% to 38%, over a period 22 years.

Ethiopian Manufacturing Sector has been mostly dominated by Large Manufacturing establishments in terms of employment and gross value of production during the years 1980-81 to 1990-91. It may be noted that Large Manufacturing establishments are still powerful and dominating the show in terms of employment (89%) and production (93%).

The situation is somewhat different during the period 2000-01. Modern Small and Medium manufacturing establishments, together, have been able to contribute 11% employment and 7% gross value of production. Of these two groups, Medium Manufacturing establishments have been contributing more.

Even today, in case of food & beverage and textiles, Modern Small and Medium industries have been playing relatively insignificant role in terms of contribution to output and employment. In case of leather & footwear, wood & furniture, paper &

printing and iron and steel, Modern Small and Medium establishments are have been relatively in good position in terms of contribution to output and employment.

The most productive industrial structure for any country will be a combination of large, medium and small manufacturing units. And the optimum combination will vary from country to country and even from place to place and time to time within the same country.

The structure of the Ethiopian manufacturing sector, in terms of public and private manufacturing employment and gross fixed capital, has significantly changed during the period 1993 to 2001. The structure of the industries such as Food and Beverages, Textiles, Chemicals has also changed significantly in terms of private manufacturing employment and gross fixed capital, during the period 1993 to 2001.

## **5.2 Growth of the Ethiopian Manufacturing Sector**

Growth in the industrial employment has been found to be 2.14% per annum during the entire period, 1980-2001. There is a clear evidence that growth in employment is relatively lower (1.46%) during post reform period when compared to the earlier period, 1980-88. A negative growth in public sector employment is also a reason for this situation. However, an impressive growth in private sector employment (23.88%) can be seen during the post reform period.

Growth in employment has lagged far behind when compared to the growth rates in fixed capital and gross value of production, over a period of time and particularly during post reform period.

Growth rates in fixed capital and gross value of production have been relatively higher during the period 1990-01 when compared to the earlier period. More importantly, they have been much higher in private sector manufacturing when compared to the public sector establishments. Analysis of growth during the period 1993 to 2001 also supports the above findings.

Growth in gross value added, as it was with gross value of output, has been very impressive (20.17%) during the period 1991-01, when compared the earlier period. Growth in gross value added has been relatively higher in private manufacturing sector when compared to public sector, over a period of time and also during post reform period.

Capital intensity, i.e. fixed capital per employee, has been higher in private manufacturing sector, particularly during post reform period, when compared to public

sector manufacturing. Growth capital intensity has been relatively higher during the post reform period when compared to earlier period. Growth in capital intensity is also higher in private sector when compared to public sector manufacturing. Hence, we conclude that private sector manufacturing sector has been more capital intensive in nature and it is truer for the recent years.

Wage rate, i.e. wage per employee, is relatively higher in public sector when compared to the private manufacturing sector. A clear difference can be seen during period 1993-2001. Similarly, growth in wage rate has also been higher in public sector units when compared to private sector, over a period of time and also in the sub periods.

### **5.3 Efficiency of the Ethiopian Manufacturing Sector**

Interestingly, the absolute values of labor productivity in public sector establishments have always been higher when compared to private sector, over a period of time and particularly, during 1993-01. Growth in labor productivities, in both public and private establishments, is found to be higher during the post reform period when compared to the earlier period.

There have been improvements in capital productivities in both public and private sectors when compared to earlier period i.e. 1980-88. And again, public sector has shown relatively better performance in terms of capital productivity during the post reform period.

In terms of productivity growth, TFP growth in public sector was negative to the extent of -3.42 during the years 1980-88. However, TFP growth was positive to the extent of 36.86 during the post reform period. On the other hand, in case with private sector, TFP growth has been slightly improved by 8.62% during post reform period, when compared to 6.73% during 1980-88.

It may also be interesting to note (as it was in case of labor productivity) that TFP growth relating to public sector has shown comparatively good performance during the entire period and particularly during post reform period.

Public enterprise establishments have very well responded to the “Public Enterprises Reform Program – 1992” in terms of enhancing efficiency, productivity and competitiveness.

Private sector, which was almost minimal earlier to economic reforms, emerged as equally powerful sector compared to public sector. However, its efficiency in terms of labor productivity, capital productivity or TFP is not very satisfactory.

### **Manufacturing employment**

The aggregate effect of changing composition of output is positive and negligible (0.002%) on the total manufacturing employment. Perhaps, the reason for this could be the negative growth rates in employment in certain industries may have got offset by the positive the growths in employment of some other industries.

Inter industry analysis shows that the changing composition of output has resulted in negative growth in employment to the extent of -51.28% in case of textiles, 16.58% in case of wood and furniture and -7.36% in case of Metal and electrical industries. It may be noted that these industries were sharing 39%, 5%, 4% of the total employment in the beginning year i.e. 1993.

The positive impact of the changing composition of output can be seen in case of Food and Beverages, Leather, Chemicals and Non metallic industries that together shared 50% of the total industrial employment.

### **Can we really neglect public sector?**

We strongly believe that public sector has again to come back, and should take up responsible job in the crucial areas which certainly encourages the whole manufacturing sector in many aspects.

**Table 1**  
**Structural Change in the Ethiopian Manufacturing Sector**

Industry Name & Classification	1980-81			2001-02		
	Employment	Fixed Capital	Gross value of output	Employment	Fixed Capital	Gross value of output
	In %	In %	In %	In %	In %	In %
<b>I. Consumer Goods Industries</b>	<b>86.19</b>	<b>82.57</b>	<b>68.61</b>	<b>77.35</b>	<b>73.63</b>	<b>68.32</b>
1. Food and Beverages	28.63	40.24	35.29	29.28	44.32	39.19
2. Textiles	41.00	27.95	18.47	28.21	15.04	9.01
3. Leather	5.68	5.64	4.89	7.19	8.50	10.08
4. Wood & Furniture	5.13	2.75	1.77	5.75	1.81	2.06
5. Paper & Printing	4.43	3.81	3.20	6.08	2.53	4.91
2. Tobacco	1.12	2.18	5	0.84	1.07	3.07
<b>II. Basic Goods Industries</b>	<b>11.04</b>	<b>14.62</b>	<b>26.38</b>	<b>16.92</b>	<b>19.08</b>	<b>19.69</b>
1. Chemicals, Rubber, Glass and Fertilizers etc.,	7.02	9.31	24.21	8.80	12.44	11.64
2. Manufacture of Other Non-Metallic Products such as Cement, Clay etc.,	4.02	5.31	2.17	8.12	6.64	8.05
<b>III. Capital Goods Industries</b>	<b>2.77</b>	<b>2.81</b>	<b>5.01</b>	<b>5.73</b>	<b>7.29</b>	<b>11.99</b>
1. Manufacturing of Basic Iron and Steel	0.87	-	4.65	1.39	-	5.20
2. Fabricated Metal Products	1.90	-	0.28	2.98	-	1.90
3. Assembly of Motor Vehicles M& E N.E.C		-	0.08	1.36	-	4.89
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Table 2

**Structure of the Total Manufacturing Sector in terms of Size-wise Distribution  
of No. of Units, Employment and Gross Value of Production, 1980 to 2001**

Years	No. of Units			Employment			Gross Value of Production		
	10-19	20-49	50 & Over	10-19	20-49	50 & Over	10-19	20-49	50 & Over
1980-81	67	109	232	953	3489	74928	12923	52427	2223548
1981-82	86	122	211	1174	4446	76545	19004	55243	2448958
1982-83	87	124	204	1239	4070	78423	19704	66309	2545695
1983-84	81	107	211	1156	3494	85420	17094	54962	2698633
1984-85	74	108	223	1053	3480	83878	13479	59494	2774598
1985-86	75	103	224	1093	3198	86850	14284	51445	2843548
1986-87	79	100	230	1116	3149	91051	15353	51099	3142800
1987-88	73	102	239	1055	3129	94811	14346	49772	3292534
1988-89	75	102	234	1073	3112	96682	16307	51932	3405681
1989-90	80	66	187	879	2053	79684	14704	40170	2431248
1990-91	52	54	182	754	1739	81692	12894	41673	2137786
1991-92	55	52	176	791	1704	80327	13116	35471	1713743
1992-93	61	53	175	846	1709	79761	18399	37746	2618021
1993-94	191	101	207	2517	2962	82975	60198	74842	3838727
1994-95	171	120	210	2363	3536	84780	61644	116283	4752560
1995-96	275	143	224	3602	4096	83501	92282	150323	5556499
1996-97	301	185	254	3979	5168	84019	97386	226147	5672667
1997-98	321	186	255	4346	5537	84140	114388	392861	5885959
1998-99	322	184	273	4176	5468	84770	121458	336627	6814233
1999-00	311	191	285	4111	5805	85790	139452	357576	7631626
2000-01	281	219	292	3703	6567	83770	113839	464779	7840235
2001-02	375	230	304	4907	6843	86304	154189	495242	7442306
<b>Structure in % to the total value</b>									
1980-81	<b>18.47</b>	<b>27.92</b>	<b>53.61</b>	<b>1.31</b>	<b>4.90</b>	<b>93.78</b>	<b>0.66</b>	<b>2.24</b>	<b>97.10</b>
1990-91	<b>18.75</b>	<b>18.56</b>	<b>62.69</b>	<b>0.93</b>	<b>2.06</b>	<b>97.01</b>	<b>0.67</b>	<b>1.96</b>	<b>97.38</b>
2000-01	<b>38.37</b>	<b>26.48</b>	<b>35.16</b>	<b>4.47</b>	<b>6.98</b>	<b>88.55</b>	<b>1.63</b>	<b>5.82</b>	<b>92.55</b>

Table 3

**Structure of some important industries in terms of Size-wise Distribution of No. of Units, Employment and Gross Value of Production, 1980 to 2001**

Years	No. of Units			Employment			Gross Value of Production		
	10-19	20-49	50 & Over	10-19	20-49	50 & Over	10-19	20-49	50 & Over
<b>Food and Beverages (Structure in % to the total value)</b>									
1980-81	15.32	38.37	46.31	1.43	7.63	90.94	0.68	3.43	95.89
1990-91	20.81	17.55	61.64	1.61	2.87	95.52	0.81	2.18	97.01
2000-01	40.38	23.79	35.83	4.91	6.38	88.71	1.33	2.64	96.03
<b>Textiles Products (Structure in % to the total value)</b>									
1980-81	31.83	13.76	54.41	0.73	0.75	98.52	0.49	0.50	99.01
1990-91	14.35	6.35	79.30	0.15	0.17	99.67	0.26	0.35	99.39
2000-01	14.05	14.13	71.83	0.30	0.65	99.05	0.20	0.47	99.33
<b>Manufacture of Leather &amp; Footwear (Structure in % to the total value)</b>									
1980-81	18.18	15.91	65.91	1.53	3.16	95.31	0.73	0.85	98.43
1990-91	19.05	26.19	54.76	0.93	3.38	95.68	0.80	1.40	97.80
2000-01	20.75	33.96	45.28	2.08	8.51	89.42	0.92	34.74	64.33
<b>Wood and Furniture (Structure in % to the total value)</b>									
1980-81	21.43	26.79	51.79	4.08	11.12	84.80	3.01	7.89	89.10
1990-91	18.75	31.25	50.00	38.94	14.21	46.85	3.23	9.36	87.41
2000-01	56.62	23.84	19.54	19.84	16.49	63.67	10.96	10.30	78.74

<b>Paper and Printing (Structure in % to the total value)</b>									
1980-81	21.05	31.58	47.37	2.77	9.46	87.77	0.92	3.71	95.36
1990-91	26.67	22.22	51.11	1.89	3.16	94.95	1.17	1.51	97.32
2000-01	6.82	43.18	50.00	32.24	17.76	50.00	2.84	5.69	91.47
<b>Chemicals and Chemical Products (Structure in % to the total value)</b>									
1980-81	13.33	20.83	65.83	1.24	4.41	94.35	0.62	1.06	98.32
1990-91	20.00	16.00	64.00	1.56	2.81	95.63	0.60	2.80	96.60
2000-01	33.53	27.89	38.58	4.35	8.95	86.70	1.29	5.84	92.87
<b>Iron and Steel (Structure in % to the total value)</b>									
1980-81	22.22	42.59	35.19	3.57	31.76	64.67	1.07	7.31	91.62
1990-91	2.50	30.00	67.50	0.16	12.08	87.76	0.21	5.08	94.71
2000-01	36.75	32.53	30.72	7.28	14.93	77.79	2.59	18.08	79.33

**Table 4**  
**Structure of the Manufacturing Sector in terms of Public and Private Owned**  
**Establishments 1993 to 2001**

<b>Total Manufacturing Sector</b>									
Years	No of units % share			Employment % share			Gross Fixed Capital % share		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1993-94	34.30	65.70	100.00	90.55	9.45	100.00	91.57	8.43	100.00
2001-02	16.60	83.40	100.00	58.15	41.85	100.00	49.64	50.36	100.00
Years	Gross Value of Production % share			Gross Value Added % share			Operating Surplus % share		
1993-94	88.34	11.66	100.00	92.63	7.37	100.00	92.58	7.42	100.00
2001-02	62.41	37.59	100.00	74.06	25.94	100.00	78.22	21.78	100.00
<b>Food and Beverages</b>									
Years	No of units % share			Employment % share			Gross Fixed Capital % share		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1993-94	41.51	58.49	100.00	91.92	8.08	100.00	93.98	6.02	100.00
2001-02	16.19	83.81	100.00	57.61	42.39	100.00	58.59	41.41	100.00
Years	Gross Value of Production % share			Gross Value Added % share			Operating Surplus % share		
1993-94	82.49	17.51	100.00	96.79	3.21	100.00	97.23	2.77	100.00
2001-02	66.09	33.91	100.00	82.07	17.93	100.00	86.95	13.05	100.00
<b>Textiles &amp; Textiles Products</b>									
Years	No of units % share			Employment % share			Gross Fixed Capital % share		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1993-94	55.75	44.25	100.00	97.37	2.63	100.00	97.98	2.02	100.00
2001-02	52.78	45.83	100.00	69.38	30.62	100.00	33.80	66.20	100.00
Years	Gross Value of Production % share			Gross Value Added % share			Operating Surplus		
1993-94	96.83	3.17	100.00	97.86	2.14	100.00	96.88	3.12	100.00
2001-02	68.50	31.50	100.00	69.06	30.94	100.00	-66.52	-33.48	-100.00
<b>Chemical and Chemical Products</b>									
Years	No of units % share			Employment % share			Gross Fixed Capital % share		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1993-94	28.75	71.25	100.00	80.45	19.55	100.00	89.31	10.69	100.00
2001-02	21.03	78.97	100.00	47.95	52.05	100.00	35.65	64.35	100.00
Years	Gross Value of Production % share			Gross Value Added % share			Operating Surplus		
1993-94	81.56	18.44	100.00	81.80	18.20	100.00	90.97	9.03	100.00
2001-02	53.79	46.21	100.00	67.09	32.91	100.00	64.97	35.03	100.00

**Table 5**  
**Growth of Employment, Fixed Capital and Gross Value of Output in the**  
**Manufacturing Sector, 1980 to 2001**

Years	Employment			Fixed Capital			Gross Value of Production		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1980-81	71240	7851	79091	397662	21139	418801	2197336	91562	2288898
1981-82	74650	7168	81818	404985	22345	427330	2421046	102157	2523203
1982-83	76333	7044	83377	430123	20326	450445	2524990	106718	2631708
1983-84	83079	6643	89722	462590	19645	482235	2668405	102284	2770689
1984-85	81430	6684	88114	711592	24221	735813	2725602	121969	2847571
1985-86	84783	6062	90845	681433	22163	703596	2782263	127014	2909277
1986-87	88854	6163	95017	797698	23584	821282	3061772	147480	3209252
1987-88	91963	6710	98673	783122	24996	808118	3198060	158597	3356657
1988-89	94135	6546	100681	759888	26544	786432	3334137	139783	3473920
1989-90	77793	4586	82379	822558	16564	839122	2398068	88034	2486102
1990-91	78188	5812	84000	975862	25728	1001590	2070648	121700	2192348
1991-92	78650	3994	82644	970411	24584	994995	1663785	98549	1762334
1992-93	78090	3992	82082	1300433	26479	1326912	2505565	168604	2674169
1993-94	79936	7898	87834	1678444	127775	1806219	3594676	379091	3973767
1994-95	81281	8932	90213	1598824	173236	1772060	4251006	679483	4930489
1995-96	77960	12370	90330	1885280	369221	2254501	5008192	790911	5799103
1996-97	71657	20708	92365	1913950	814539	2728489	4740585	1255616	5996201
1997-98	67995	25221	93216	1867334	1252792	3120126	4742853	1650354	6393207
1998-99	64767	28913	93680	2082050	2128534	4210584	4668548	2603769	7272317
1999-00	56882	38133	95015	2759379	2432410	5191789	4802970	3325881	8128851
2000-01	54387	38678	93515	3025067	2916712	5941779	5364463	3058536	8422999
2001-02	56585	41551	98136	2994085	3195685	6189772	4946950	3144786	8091736
<b>Average of Annual Growth Rates</b>									
1980-88	3.58	-2.09	3.09	9.68	3.34	9.39	5.39	5.88	5.39
1990-01	-2.79	23.88	1.46	11.58	74.78	18.76	10.04	40.27	14.33
1980-01	-0.08	13.64	2.14	11.18	45.23	15.05	6.99	26.42	9.45
1993-01	-4.12	24.52	1.41	8.11	54.60	17.20	4.50	33.26	9.62

**Table 6**  
**Trends in Gross Value Added, Capital Intensity and Wage Rate in the**  
**Manufacturing Sector, 1980 to 2001**

Years	Gross Value Added			Capital Intensity			Wage Rate		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1980-81	882346	39539	921885	5.58	2.69	5.30	2.32	2.14	2.30
1981-82	975588	41830	1017418	5.43	3.12	5.22	2.36	2.37	2.36
1982-83	1026177	44984	1071161	5.63	2.89	5.40	2.55	2.49	2.54
1983-84	1151404	44882	1196286	5.57	2.96	5.37	2.55	2.57	2.55
1984-85	1159523	48708	1208231	8.74	3.62	8.35	2.74	2.96	2.75
1985-86	1271179	54925	1326104	8.04	3.66	7.75	2.76	3.34	2.80
1986-87	1518954	56436	1575390	8.98	3.83	8.64	2.97	3.41	3.00
1987-88	974965	56652	1031617	8.52	3.73	8.19	3.09	3.37	3.11
1988-89	1004581	49072	1053653	8.07	4.05	7.81	3.16	3.23	3.17
1989-90	515056	15914	530970	10.57	3.61	10.19	3.31	3.26	3.30
1990-91	432358	27808	460166	12.48	4.43	11.92	3.15	3.53	3.17
1991-92	316406	20415	336821	12.34	6.16	12.04	3.35	4.02	3.38
1992-93	684132	28712	712844	16.65	6.63	16.17	4.11	4.09	4.11
1993-94	1097230	81518	1178748	21.00	16.18	20.56	4.59	3.62	4.50
1994-95	1238917	105088	1344005	19.67	19.39	19.64	4.86	3.46	4.73
1995-96	1470589	193257	1663846	24.18	29.85	24.96	5.29	3.63	5.06
1996-97	1357546	324325	1681871	26.71	39.33	29.54	5.65	4.10	5.30
1997-98	1211252	323783	1535035	27.46	49.67	33.47	5.91	4.31	5.47
1998-99	1450485	480970	1931456	32.15	73.62	44.95	6.16	5.29	5.89
1999-00	1689721	638156	2327877	48.51	63.79	54.64	6.86	5.55	6.34
2000-01	1796016	570445	2366461	55.16	75.41	63.54	7.77	5.97	7.03
2001-02	1598809	614881	2213690	52.91	76.91	63.07	8.43	6.41	7.57
<b>Average of Annual Growth Rates</b>									
1980-88	3.13	3.02	3.06	6.27	5.64	6.43	4.01	5.47	4.13
1990-01	17.68	41.53	20.17	15.22	34.33	17.10	9.49	5.95	8.33
1980-01	10.17	27.79	11.65	11.78	22.27	12.83	6.58	5.87	6.03
1993-01	5.59	32.36	8.97	13.44	23.36	15.71	7.94	7.64	6.74
<b>Average of Annual Growth Rates (at Constant(1980) Prices</b>									
1980-88	-0.48	-0.90	-0.56	2.49	4.04	2.75	0.11	1.30	0.20
1990-01	13.06	37.27	15.54	5.86	14.11	5.87	5.37	1.99	4.22
1980-01	5.48	22.40	6.92	5.22	9.10	5.24	1.95	1.11	1.39
1993-01	3.59	30.17	6.89	6.98	13.03	6.93	6.18	6.00	4.98

**Table 7**  
**Growth Rates of Labor Productivity, Capital Productivity and Index of Total**  
**Factor Productivity in the Manufacturing Sector, 1980 to 2001**

Years	Labour Productivity			Capital Productivity			TFP(Kendrick) Index		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
1980-81	12.39	5.04	11.66	2.22	1.87	2.20	100	100	100
1981-82	13.07	5.84	12.44	2.42	1.90	2.40	109	126	110
1982-83	13.44	6.39	12.85	2.43	2.19	2.42	108	140	110
1983-84	13.86	6.76	13.33	2.59	2.24	2.58	114	170	118
1984-85	14.24	7.29	13.71	2.21	2.18	2.21	109	160	113
1985-86	14.99	9.06	14.60	1.97	2.49	1.99	114	210	120
1986-87	17.09	9.16	16.58	1.78	2.36	1.80	127	243	134
1987-88	10.60	8.44	10.45	1.46	2.37	1.49	58	136	61
1988-89	10.67	7.50	10.47	1.76	2.07	1.77	59	133	245
1989-90	6.62	3.47	6.45	0.93	0.82	0.93	23	47	25
1990-91	5.53	4.78	5.48	0.65	1.19	0.67	17	39	18
1991-92	4.02	5.11	4.08	0.52	0.91	0.53	9	39	10
1992-93	8.76	7.19	8.68	1.01	1.26	1.02	32	113	35
1993-94	13.73	10.32	13.42	1.49	1.66	1.50	65	139	68
1994-95	15.24	11.77	14.90	1.84	1.87	1.84	76	160	79
1995-96	18.86	15.62	18.42	2.09	2.09	2.09	103	161	103
1996-97	18.95	15.66	18.21	2.00	1.94	1.99	97	80	89
1997-98	17.81	12.84	16.47	1.92	1.49	1.81	85	48	71
1998-99	22.40	16.64	20.62	1.96	1.07	1.63	117	46	88
1999-00	29.71	16.74	24.50	1.99	1.32	1.75	161	42	105
2000-01	32.75	14.75	25.31	1.97	0.97	1.57	169	37	105
2001-02	28.25	14.80	22.56	1.92	1.11	1.59	132	30	81
<b>Average of Annual Growth Rates in Current Prices</b>									
1980-88	-0.47	5.67	-0.02	-2.08	1.65	-1.98	-3.42	6.73	34.52
1990-01	21.03	12.61	18.40	13.73	2.11	11.78	36.86	8.62	30.76
1980-01	10.55	11.10	9.36	5.20	4.12	4.28	17.59	7.43	30.73
<b>Average of Annual Growth Rates at Constant (1980) Prices</b>									
1980-87	-4.09	1.58	-3.66	-5.88	-2.19	-5.78			
1993-01	16.42	8.03	13.80	9.14	-2.02	7.17			
1980-01	5.86	5.77	4.66	0.56	-0.92	-0.38			

**Table 8**  
**Index of Total Factor Productivity in the Manufacturing Sector,**  
**1993 to 2001**

TFP Index (Without Price and Capital Adjustments)						
Years	Public	Private	Total	Public	Private	Total
1993	0.29	0.23	0.28	100	100	100
1994	0.34	0.27	0.33	116	121	116
1995	0.42	0.34	0.40	143	150	142
1996	0.39	0.28	0.36	135	125	128
1997	0.35	0.19	0.30	119	85	104
1998	0.44	0.20	0.34	152	90	120
1990	0.49	0.22	0.37	170	98	130
2000	0.50	0.17	0.34	172	76	121
2001	0.42	0.17	0.30	146	75	105
Growth in TFP Index						
1993-01				5.91	-1.60	1.68
TFP Index (Without Price and Capital Adjustments)						
Years	Public	Private	Total	Public	Private	Total
1993	0.29	0.23	0.28	100	100	100
1994	0.30	0.24	0.29	103	108	103
1995	0.37	0.32	0.36	127	141	127
1996	0.37	0.31	0.36	128	135	125
1997	0.32	0.21	0.29	110	94	102
1998	0.39	0.21	0.32	136	91	113
1990	0.44	0.21	0.34	151	95	121
2000	0.48	0.18	0.35	167	79	122
2001	0.40	0.18	0.30	138	79	106
Growth in TFP Index						
1993-01				5.10	-1.51	1.49

**Table 9**  
**Calculations of Changing Composition of Output in Different Industry Groups**  
**And its impact on Employment – Total Manufacturing Sector (1993 – 2001)**

INDUSTRY GROUP	Empt in 1993	Empt Share	Output in 1993	Output share	Output in 2001	(D) D= $\sum C*B$	Empt in 2001		Ee	Difference in Empt	% Change in Employment
			(A)	B = $A/\sum A$	(C)		(E)	P=E/C	Ee= P*D	Ee-E	
FOOD BEVERAGES	23490	26.71	1282455	0.33020	3136320	2671897	28860	0.0092	24586	4274	17.38
TOBACCO	993	1.13	191227	0.04924	256768	398407	792	0.0031	1229	-437	-35.55
TEXTILES	34449	39.17	722131	0.18593	733012	1504505	26054	0.0355	53476	-27422	-51.28
LEATHER AND FOOTWEAR	7189	8.18	376970	0.09706	825312	785388	6740	0.0082	6414	326	5.08
WOOD AND FURNITURE	4823	5.48	104690	0.02696	181947	218114	6458	0.0355	7742	-1284	-16.58
PAPER	4604	5.24	118497	0.03051	431230	246879	26569	0.0616	15211	11358	74.67
CHEMICALS	4093	4.65	422880	0.10888	980630	881038	36918	0.0376	33169	3749	11.30
NON METALLIC MINERALS	4606	5.24	223418	0.05752	694410	465474	22547	0.0325	15114	7433	49.18
METAL AND ELECTRICAL	3591	4.08	441499	0.11368	852107	919829	20998	0.0246	22667	-1669	-7.36250
	87938		3883865	0.99997	8091736	8091531.8	8091736	1.0000	8091532	204	0.00252