Chapter VI

Summary, Findings and Conclusions of the Study
6.1 INTRODUCTION

This chapter presents a brief summary of the discussions of the preceding chapters and the major findings and conclusions that emerge from the study. So far the study had analyzed the sources of output growth, factor substitution, technical progress, factors determining the employment growth, total factor productivity, trends in price cost margin, and the factors determining the profitability in the Indian textile and wearing apparels industries at three-digit level desegregation for the period of 1980-81 to 1997-98.

The following section attempts to provide a summary and the broadly emerging conclusions of the study viz, growth, employment, productivity, and profitability, of the Indian textile and wearing apparels industries during 1980-81 to 1997-98.

6.2 FACTOR PRODUCTIVITY, SCALE OF RETURNS, ELASTICITY OF FACTOR SUBSTITUTION AND TECHNICAL PROGRESS IN THE TEXTILE AND WEARING APPARELS INDUSTRIES IN INDIA.

In this section, the study presented an analysis focusing the sources of output growth, the nature and characteristics of factor substitution and technical progress that characterized the 15 three-digit textile and wearing apparels industries in India for the study period of 1980-81 to 1997-98. Production function models developed within the framework of neo-classical theory were employed to discern the above economic characteristics.
6.2.1 FACTOR PRODUCTIVITY

6.2.1.1 COBB-DOUGLAS PRODUCTION FUNCTION WITHOUT HICK'S NEUTRAL TECHNICAL PROGRESS.

The empirical results of the fit unrestricted Cobb-Douglas production function without time trend emerged statistically significant in all the 15 industry categories. The $\beta_1$ coefficient (capital productivity) was statistically significant in these industries, except one industry category, i.e. manufactures of knitted or crocheted textile products (260). The productive contribution of labour to output growth was greater than one in that particular industry category. The study shows that the relative contribution of capital has been more than labour in most of the industry.

6.2.1.2 COBB-DOUGLAS PRODUCTION FUNCTION WITH HICK'S NEUTRAL TECHNICAL PROGRESS

The regression estimates of the Cobb-Douglas production function incorporating Hick's neutral technical progress, the model has yielded statistically significant fit in all the industries in reference. The $\beta_1$ coefficient measuring the elasticity of output growth on account of capital productivity obtained theoretically specified positive sign in all the 15 industry categories. Of these 15, in, 10 industry categories, the elasticity of capital productivity on output growth has emerged statistically significant. The regression coefficient $\beta_2$ measuring the elasticity of output growth due to labour productivity has yielded theoretically specified positive sign in 11 industries. The productive contribution of coefficient of labour $\beta_2$ has emerged statistically significant in eight industry categories. Out of 15 industries in five industries, both $\beta_1$ (capital) and $\beta_2$ (labour) coefficients have emerged statistically significant.

The estimates of Cobb-Douglas production function incorporated Hick's neutral technical progress suggests that during the reference period the productivity of labour more favorably contributing to output growth in the Indian textile industries than the capital in output growth.
6.2.2 SCALE OF RETURNS

The sum of the exponents of the capital ($\beta_1$) and labour ($\beta_2$) in the Cobb-Douglas production function without time trend implied increasing returns to scale in five out of the 15 industry categories. Of these, the estimates were slightly upward biased in the case of the following two industries viz, manufacture of knitted and crotched textile products (260) and manufacture of waterproof textile fabrics (268). The $\beta_2$ coefficient shows better productivity in these two industry categories. The scale coefficient with value around 1.00 portrays constant returns to scale, in three industry categories. We find diminishing returns to scale in the remaining 10 industries.

From Cobb-Douglas production function fit with time trend it can be found that the sum of the exponents of capital and labour measuring the scale coefficient in five industries characterizing increasing returns to scale. In the remaining 10 industries diminishing returns to scale, was observed.

Similar to the estimates of CDPF the fit unrestricted CESPF model without time trend, increasing returns to scale has characterized two industries. Among them manufacture of all types of textile garments & clothing accessories n.e.c (except by purely tailoring establishments) from not self produced material (265) the estimates were marginally upward biased. We find diminishing returns to scale in seven industry categories. In six industry categories the scale coefficient assumed theoretically implausible negative values.

The fit CES production function fit with time trend, has implied increasing returns to scale in six industry categories, among them, in four industry categories, the capital productivity shows higher values. Diminishing returns to scale was found in two industry categories.

The fit VES Production Function model without time trend, yielded high coefficient of determination $R^2$ and emerged statistically significant in all 15 industry categories. We find, increasing returns to scale characterizing three industries, and diminishing returns to scale in six industries.
In the VES Production Function model fit with time trend, we could observe increasing returns to scale was observed in one industry viz, cotton ginning, cleaning and bailing (230), and we find diminishing returns characterizing eight industry categories.

6.2.3 ELASTICITY OF FACTOR SUBSTITUTION

An empirical examination of the elasticity of factor substitution (\(\sigma\)) is has been done using two major types of production functions viz, CES and VES. Apart from the typical forms of CES and VES production functions the elasticity of factor substitution also were estimated by incorporating the time variable (t) in the functions. The estimates of elasticity of factor substitution denoted as \(\sigma_1\) and \(\sigma_3\) in CESPF without and with time trend. The VESPF without and with time trend the estimates of the substitution coefficients are denoted as \(\sigma_2\) and \(\sigma_4\) respectively.

6.2.3.1 FACTOR SUBSTITUTION USING CES PRODUCTION FUNCTION

The estimated magnitude of the elasticity of the factor substitution (\(\sigma_1\)), tended to be greater than one in seven industries, The magnitude of \(\sigma_1\) was around unity, closely associated with Cobb- Douglas production function specification in the industry engaged in, weaving & finishing of cotton textiles on handlooms (233). In two industries, cotton spinning, weaving and processing in mills (235), manufacture of water proof textiles fabrics (268), the \(\sigma_1\) was greater than 0.50 implying capital augmenting type of factor substitution.

The empirical estimates of CES Production Function incorporating with Hicks neutral technical change), shows that the introduction of time as an additional variable to detect exogenous technical progress has generally resulted in lowering the magnitude of factor substitution. In the following three industries, viz., cotton spinning, weaving and processing in mills (235), manufacture of knitted and crotched textile products (260), manufacture of textile/textile products n.e.c like linoleum, padding wadding upholstering and filling etc. (269), the estimated value of factor substitution (\(\sigma_3\)) was greater than 0.50.
6.2.3.2 FACTOR SUBSTITUTION USING VES PRODUCTION FUNCTION

In this modal we take into consideration the effect of capital-labour ratio, in addition to real wage rate in estimating the coefficient of factor substitution $\sigma_2$. The magnitude of the elasticity of substitution $\sigma_2$ was greater than unity in nine industries. The $\sigma_2$ was greater than 0.5 and characterized the factor substitution offering a proximate explanation of capital using in the place of labour in the following industries viz., cotton ginning, cleaning and bailing (230), weaving & finishing of cotton textiles on handlooms (233), manufacture of rain coats, hats, caps & school bags etc. from waterproof textile (266). The $\sigma_2$ estimates of factor substitution by assuming values, lower than 0.5 in cotton spinning other than in mills (charkha) (231), weaving & finishing of cotton textiles on power looms (234), manufacture of floor covering of jute, mesta, sannahemp, and other kinderd fibers and coir (264), tended to support the argument that in these industries output growth was accompanied by labour rather than capital augmentation.

In the VESPF estimates incorporated with Hicks neutral technical change for the 15 textile industries at three digit desegregation, the magnitude of $\sigma_4$ was above unity for four industries implying higher degree of substitutability between capital and labour. In the following industries, cotton ginning, cleaning and bailing (230), cotton spinning, weaving and processing in mills (235), manufacture of knitted and crotched textile products (260), manufacture of all types of threads, cordage, ropes, twines & nets etc. (261), embroidery work, zari work and making ornamental trimmings (262), the $\sigma_4$ estimates assumed magnitudes greater than 0.5 implying a high degree of capital augmenting factor substitution, during the reference period. The $\sigma_4$ estimates was less than 0.5 in two industry categories implying a low degree of capital augmenting factor substituting characterizing the reference period.
6.2.4 HICKS' NEUTRAL TECHNICAL PROGRESS IN THE INDIAN TEXTILE AND WEARING APPRALS INDUSTRIES

To ascertain the contribution of exogenous technical progress to output growth we have incorporated the time trend as an additional variable in all the three production function models viz, Cobb-Douglas, CES and VES production functions. We symbolically represents these estimates of Hicks neutral technical progress as $\beta_3$, $\lambda_2$ and $\lambda_3$.

6.2.4.1 ESTIMATES OF TECHNICAL PROGRESS USING COBB-DOUGLAS PRODUCTION FUNCTION ($\beta_3$)

The $\beta_3$ coefficient, measures the contribution made by the Hicks neutral technical change to output growth. The $\beta_3$ has obtained positive sign in 11 out of 15 industries. Theoretically implausible negative values were seen in four industries. A close examination of the magnitude of $\beta_3$, indicates that in the following five industries, engaged in, cotton spinning, weaving and processing in mills (235), manufacture of all types of threads, cordage, ropes, twines & nets etc. (261), embroidery work, zari work and making ornamental trimmings (262), making of blankets, shawls, carpets, rugs and other similar textiles products (263), manufacture of rain coats, hats, caps & school bags etc. from water proof textile (266), the output growth having increased due to exogenous technical progress.

6.2.4.2 ESTIMATES OF TECHNICAL PROGRESS USING CES PRODUCTION FUNCTION ($\lambda_2$)

The estimated coefficient of Hicks neutral technical change $\lambda_2$ is found assuming a negative characteristics in the industries engaged in, weaving & finishing of cotton textiles on handlooms (233), embroidery work, zari work and making ornamental trimmings (262), making of blankets, shawls, carpets, rugs and other similar textiles products (263), The Hicks neutral technical change $\lambda_2$ being a source of output growth in the cotton ginning, cleaning and bailing (230). The $\lambda_2$ estimates were biased with high magnitudes around 49.78.
We observed $\lambda_2$ magnitude assuming theoretically positive contribution to output growth in the remaining industry categories.

**6.2.4.3 ESTIMATES OF TECHNICAL PROGRESS USING VES PRODUCTION FUNCTION ($\lambda_3$)**

The magnitude of Hicks neutral technical progress $\lambda_3$ shows a positive contribution to output growth 13 out of 15 industries. We observe upward biased $\lambda_3$ in the industries engaged in manufacture of all types of threads, cordage, ropes, twines & nets etc. (261) with magnitude of 29.01 and in manufacture of knitted and crotched textile products (260), with magnitude of 26.09. In the remaining three industries, the output growth on account of exogenous technical progress has ranged between a high of 16.82% in the case of, embroidery work, zari work and making ornamental trimmings (262), and a low of 0.096% in the case of cotton ginning, cleaning and bailing (230). The $\lambda_3$ assumed theoretically implausible negative sign in the following industries, making of blankets, shawls, carpets, rugs and other similar textiles products (263), manufacture of textile/textile products n.e.c like linoleum, padding wadding upholstering and filling etc. (269).

**6.3 LABOUR DEMAND IN THE TEXTILE AND WEARING APPRALS INDUSTRIES IN INDIA**

In chapter III, we have examined the nature and characteristics of the factors determining employment growth in the Indian textile industries by deriving two labour demand function models from the CES production function methodology. From the estimated coefficient of model-II we have estimated the short-run and long-run elasticities with respect to real wages and output for the Indian textile industries for the reference period. A brief summary of the discussion and the emerging conclusions from the analysis are presented in this section.
6.3.1 REGRESSION ESTIMATES OF LABOUR DEMAND FUNCTIONS

Theoretically the $\beta_1$ coefficient is expected to be negative, since it measures the elasticity of labour demand with respect to growth in wage rates. The $\beta_2$ measuring the elasticity of labour demand with respect to output growth is expected to be positive. The assumption about the lag structure underlying this model requires $\beta_3$ to be positive.

The wage rate coefficient $\beta_1$ has assumed the specified negative sign in 11 out of 15 industries, and has emerged statistically significant in six industries. The coefficient $\beta_1$ has assumed the specified positive sign in four industries.

The output coefficient $\beta_2$ has obtained positive sign in all the 15 industry categories and was statistically significant in 11 industry categories, viz, Cotton ginning, cleaning and bailing (230), Weaving and finishing of cotton textiles in handlooms (233), Weaving and finishing of cotton textiles on power loom (234), Cotton Spinning, Weaving and processing in mills (235), Manufacture of knitted or crocheted textile products (260), Manufacture of all types of threads, cordage, ropes, twines, and nets etc. (261), Embroidery work, zari work and making ornamental trimmings (262), Manufacture of all types of textile garments and clothing accessories n.e.c. (expect by purely tailoring establishments) from not self-produced material (265), Fabrics or plastic sheetings, manufacture of made up textile article; expect apparel (267), Manufacture of waterproof textiles fabrics (268), Manufacture of textile/textile products n.e.c. like linoleum, padding, wadding upholstery and filling etc. (269). This shows that the employment growth is a positive function of output growth.

The coefficient $\beta_3$ which measures, the elasticity of change in the current year employment due to the lagged-effect of the employment in the previous year has in 10 out of 15 industries, satisfied the theoretical specification by assuming positive magnitudes, among them, in four industry was statistically significant.
6.3.2 SHORT-RUN AND LONG-RUN EMPLOYMENT ELASTICITIES

In the present study, the mean value of the short run employment elasticity with respect to real wages has shown a positive relationship of the order of 0.8063, while in the long run the mean value has assumed the higher magnitude of 0.8263. From the results, it can be concluded, when the real wages are increasing the employment tends to reduce in the short run and when the real wages increasing, the employment tend to increase in the long run.

The empirical estimates clearly shows, that employment growth in Indian textile industries has been quite sensitive to changes in real wages over the study period,

A similar analysis of employment elasticity with respect to output shows that on an average in the textile industries, we find the mean value of the long run elasticities are greater than the short run elasticity. The mean value of the long run elasticities are greater with the magnitude of 0.3133 than the short run elasticity with the magnitude of 0.3131. The short run employment elasticity of output magnitude less than their long run elasticities, in 10 industry categories.

In the remaining five industries, the short run elasticity of employment due to output growth is greater than the long run increase in output growth on employment.

The empirical estimation of employment function explained above has been immensely useful in showing that the level of real wages and the growth of output are the two most important determinants of the rate of change in the employment in the Indian textile industries.

6.4 TOTAL FACTOR PRODUCTIVITY GROWTH

An analysis of the behavioral characteristics of TFP across industries provides useful scope to understand how efficient use of technology has led to growth in output in the Indian textile industries. In chapter IV of the present study we have provided an elaborate analytical discussion as to the contribution
of total factor productivity to output expansion in the 15 three-digit level Indian textile industries. For the purpose of empirical estimation, we have used, Kendrick, Solow, and Divisia index of total factor productivity indexes. A summary of the important conclusions emerging from the analysis is presented in the next section.

6.4.1 KENDRICK INDEX OF TOTAL FACTOR PRODUCTIVITY GROWTH

The empirical estimates of Kendrick index of TFPG for the 15 Indian textile and wearing apparels industries in reference broadly indicate the following features. The average contribution of Kendrick index of total factor productivity to output growth during the 1980’s was found to be greater than the base year value of 100.00 in 12 of the 15 industries in reference, i.e in 80 percent of the industries. 11 industries continued to have TFPG rates greater than 100.00 in the 1990’s as well. The industries engaged in cotton spinning, weaving and processing in mills (235), bleaching, dyeing and printing of cotton textiles (236), manufacture of knitted and crotched textile products (260), manufacture of all types of threads, cordage, ropes, twines & nets etc. (261), embroidery work, zari work and making ornamental trimmings (262), manufacture of water proof textiles fabrics (268), manufacture of textile/textile products n.e.c like linoleum, padding wadding upholstering and filling etc. (269), industries exhibited negative total factor productivity growth(TFPG) during the reference period of 1980-81 to 1997-98. This shows that improvement in augmenting technical efficiency did not act as a source of output growth in these industrial categories. In general the present study finds a positive TFP trend characterizing the Indian textile industries, with magnitude of 1.19 percent.

6.4.2 SOLOW INDEX OF TOTAL FACTOR PRODUCTIVITY GROWTH

In this study, analysis of total factor productivity is attempted by employing Solow’s measure to trace nature and characteristics of output growth at the three digit disaggregation for the 15 Indian textile industries. The average contribution of TFPG to output growth during the 1980’s was greater
than the base year value of 100.00 in six of the 15 industries in reference. The cross section characteristics of Solow index of TFPG for the period 1980-81 to 1997-98 reveals the following, the periods average TFPG is estimated from the periods average rates of TFPG was more than the base year value of 100.00 only in three of the 18 years in the study period. In specific terms, in the 1990's, that is in 1989-90, 1990-91 and in 1997-98 only, were associated with TFP rates greater than 100.00. The present study finds a positive TFP trend characterizing the magnitude of 0.06 present in the textile industries in India.

6.4.3 DIVISA INDEX OF TOTAL FACTOR PRODUCTIVITY GROWTH

The average contribution of Divisia index of total factor productivity to output growth during the 1980's was found to be greater than the base year value of 100.00 in five of the 15 industries in reference. All the 15 industry categories exhibited a negative average compounded total factor productivity growth during the reference period. This shows that improvement in augmenting technical efficiency did not act as a source of output growth in these industries.

The cross section characteristics of Divisia index of TFPG for the period 1980-81 to 1997-98 reveals the following. The period’s average mean of TFP growth is estimated from the period’s mean of the individual industries. The periods average rate of TFP was found greater than the base year value of 100.00 in the years 198-82, 1990-91, 1991-92, 1992-93, 1993-94, and 1994-95. Compared to 1980’s, the TFP growth marked slightly higher rates of growth in the 1990’s, In general the study finds a negative TFP trend characterizing the Indian textile industries with magnitude of -0.8 percent.

6.5 PRICE-COST MARGIN IN THE INDIAN TEXTILE AND WEARING APPRALS INDUSTRIES

In chapter V of the study, we have presented an outline of the theoretical significance and the empirical researches carried out on the principle of price-cost margin as an economic indicator of the profitability. An attempt was made to examine empirically the behavioral trends in the price-cost margin estimated for the three-digit industries constituting the Indian textile and wearing apparels
industries. The factors determining the price-cost margin were examined from a neoclassical theoretical perspective and appropriate econometric model was fit for the time series data in the data for the said purpose.

6.5.1 GROSS PRICE-COST MARGIN

The estimate of Gross Price Cost margin used for measuring the short run gross profitability for the 15 three-digit level desegregated industries engaged in the textile products has obtained an aggregated mean magnitude around 15.78 percent for the study period. It is apparent from the study that in general the mean profitability of the period was relatively high in seven industry categories. The textile industries have been associated with a positive annual average growth rate in its Gross-price-cost margin with an estimated magnitude of 2.34 percent in India during the reference period. The cross-sectional mean values estimated for studying the inter-industry variations in the Gross-price-cost margin has characterized better rates in the year 1983-84 and after 1991-92, i.e. after liberalization and new economic policies. The associated measure of coefficient of variation has implied lack of uniformity in the Gross-price-cost margin across the three-digit industries during 1983-84, 1991-92, 1992-93, 1993-94, 1994-95 and in 1997-98.

6.5.2 NET PRICE-COST MARGIN

The aggregate mean of the period has implied the Net Price-Cost Margin i.e. the short term net profitability to be around 9.29 percent in the Indian textile and wearing apparels industries. The period's mean of the individual industries has defined a variation by around 36.96 percent from the grand mean. This magnitude explains the individual industries mean net profitability of the period revealing a high degree of variation from the aggregate mean rate. Viewed from the overall mean value of the Net Price-Cost Margin, we observe a higher mean rate of profitability for the period in seven industries The textile and wearing apparels industries has been associated a positive annual average growth rate in its Net Price-Cost Margin with an estimated magnitude of 2.10 percent in India during 1980-81 to 1997-98.
The cross sectional mean values estimated for studying inter-industry variation in the Net Price-Cost Margin has characterized better rates in 1983-84 and in the post liberalized periods viz, 1991-92 to 1997-98. The co-efficient variation of the Net Price-Cost Margin across the industries from the yearly average rates has indicated a high degree of variation across the industries during 1983-84 in the eighties and in 1997-98 in the nineties.

6.5.3 GROSS RETURN ON CAPITAL

The periods mean long term gross profitability of the industries engaged in the Indian textile and wearing apparels industries for the reference period has defined a rate around 81.46 percent. The estimated magnitude reveals a fair degree of uniformity in the long term profitability of the studied industry category, for the references period. Viewed from this mean value, it was observed that the estimated periods mean Gross Return on Capital was relatively better in five industry categories.

For studying the inter industry variations in the long run profitability of the 15 three-digit level industries in the Indian textile and wearing apparels industries, cross section mean rates and the corresponding measures of coefficient of variations were computed. From the aggregate mean value of Gross Return on Capital, which was around 81.46 percent, the analysis shows the cross section mean values being higher than the aggregate mean value up to the year 1985-86 and from 1988-89 up to 1993-94. The associated measures of coefficient of variation have a certain degree of inter-industry variation during the entire study period.

6.5.4 NET RETURN ON CAPITAL

It can be seen from the estimated value of the Net return on capital, the particular industry as a whole has yielded a mean value around 66.88 percent. The following five industries are characterized with better average rate of long run profitability during 1980-81 to 1997-98 in five industry categories. The trend co efficient of variation has been computed for tracing the yearly movement in the Net return on capital from the periods mean magnitude for the
respective three digit industries so as to examine the stability. The over all mean coefficient of variation was around 56.12 percent. It is associated with an estimated measure of inter-industry variation around 35.83 percent. This magnitude explains the individual industries mean net profitability of the periods, revealing a less degree of variation from the aggregate mean rate. From the estimated annual compound growth rates, retrogression in the Net return on capital in most of the industries i.e. in 12 out of the 15 industries was observed. On the whole the growth of Net return on capital is marked by a general deceleration in a majority of the industries during the period.

The cross sectional mean values estimated for studying inter-industry variations in the Net return on capital has characterized better rates in the maximum years. The coefficient of variation of the Net return on capital across the industries from the yearly average rates has indicated a high degree of variation across the years except for the year 1980-81 and 1986-87 in eighties and in 1996-97 in nineties.

6.5.5 DETERMINENTS OF PRICE-COST MARGIN

The empirical estimates of the multiple regression model fit to the study to find out the factors determining the Price-cost Margin in the textile and wearing apparels industry are captured, and the results shows that the coefficient of multiple determination ($R^2$) has emerged statistically significant in seven out of 15 industries.

The parameter $\beta_1$ associated with variables viz, capital-output ratio ($K/L$) measures the impact of capital productivity on Price-cost Margin. The parameter $\beta_1$ assumed a positive sign in Cotton ginning, cleaning and bailing (230) industries implying an expanding scale of operations in the industry. In the rest of the industries the $\beta_1$ assumes a negative sign.

The parameter $\beta_2$, which is associated with output-labour ratio ($Q/L$) viz, labour productivity has obtained expected positive sign in all industries except in manufacture of knitted and crotched textile products (260), manufacture of all types of threads, cordage, ropes, twines &nets etc. (261) and
in manufacture of water proof textiles fabrics (268), implying productivity of labour positively contributing to the Price-cost Margin. The $\beta_2$ coefficient was statistically significant in six out of 15 industry categories.

The parameter $\beta_3$ coefficient measures the influence on the variables viz, capital-labour ratio on the Price-Cost Margin. The $\beta_3$ coefficient has obtained expected positive sign in all industries except the industry engaged in Cotton ginning, cleaning and bailing (230) and weaving & finishing of cotton textiles on power looms (234) indicating an effective technology effecting Price-cost Margin, during the study period. The $\beta_3$ coefficient was statistically significant in only six industries.

The $\beta_4$ parameter, associated with wage rate has emerged with the predicted negative sign property for 13 out of 15 industries in reference. This has confirmed the theoretical hypothesis that an increase in wage bill causes a downward pressure on the Price-Cost Margin. In the industries engaged in Cotton ginning, cleaning and bailing (230) and in manufacture of rain coats, hats, caps & school bags etc. from water proof textile (266), the $\beta_4$ coefficient obtained a positive value implying both the Price-Cost Margin and the hike in wage rate increasing simultaneously. Despite the negative influence of wage rate on Price –Cost Margin being deducted in a majority of industries, the $\beta_4$ coefficient was statistically significant from zero only in seven of the industries in reference.

The parameter $\beta_5$, measuring the influence of the previous year Price Cost Margin, has obtained positive sign in ten out of 15 industry categories and in five industries obtained a negative sign.

Among the five independent variables included in the model, the empirical finding suggests the price-cost margin being influenced by the labour productivity during the period of 1980-81 to 1997-98.
6.6 SIGNIFICANT FINDINGS AND MAJOR CONCLUSIONS OF THE STUDY

An analysis of sources of output growth using production function models yields following major findings. The fit Cobb-Douglas production function without time trend indicated statistically significant contribution of capital to output growth in 14 industries, i.e., 93.00 percent of the industries during the reference period. In seven industries the contribution of labour productivity to output growth was also positive. The $\beta_1$ coefficient was positive in all the 15 industries and the $\beta_2$ coefficient was positive in 73.00 percent of the industries.

A closer examination reveals that in both the models of Cobb-Douglas production function with and without time trend, the positive contribution of both the capital and labour was found in nine industries. The relative contribution of capital to output growth was higher than labour in both the Cobb-Douglas production function models in most of the industries in reference.

In the case of returns to scale, study founds increasing returns to scale in 33 percent of the industries in Cobb-Douglas production function with and without time trend. Diminishing returns to scale was observed in 67 percent of the industries.

The estimates of unrestricted CES production function with out time trend implied increasing returns to scale in around 13 percent of the industries and when time trend was incorporated, it increased to 47.00 percent. There was diminishing returns to scale observed in CES production function with out time trend in 47.00 percent of the industries. And when time trend added, in 47.00 percent of the industries, diminishing returns to scale was observed.

In VES production function without time trend, increasing returns to scale was observed in only 20.00 percent of the industries. It has decreased to six percent of the industries, when time trend was incorporated. Diminishing returns to scale was observed in 40.00 percent of the industries in the VES
production function with time trend and 53.00 percent in VES production function without time trend. The estimates of factor substitution were obtained by fitting CES and VES production function models. The elasticity of factor substitution in the CES production function with out time was high in almost all the 15 industries. But with inclusion of time trend, we notice technical progress has generally resulted in lowering the magnitude of factor substitution. In the VES production function without time trend, the study finds high degree of elasticity of substitution in nine industries. While it reduced to four industries when the time trend has been incorporated in the model.

To conclude, the study observes from the analysis that in relatively large number of textile and wearing apparels industries, there has been fairly high degree of factor substitution implying capital augmentation taking place in the process of output growth.

The contribution of exogenous technical progress to output growth has been positive in 73.00 percent of the industries in the Cobb-Douglas production function model. The Hicks neutral technical change being sources of output growth in one industry in CES production function. While such a tendency was seen in 86.00 percent of the industries in VES production function.

From the empirical results of the fit two labour demand models, the coefficient $\beta_1$ measuring the elasticity of real wage rate on demand for labour has emerged with a negative impact as per the theoretical specification in 73.00 percent of the industries. Further the relevant coefficient also emerged statistically significant in around 53.00 percent of the industries in model-I while in model- II, the negative influence of wage rate on employment was observed in 67.00 percent and was statistically significant in 46.00 percent of the industries.

The $\beta_2$ coefficient measuring the influence of elasticity of output growth on employment has been positive in all the industries. It has been statistically significant in 73.00 percent of the industries in both the models.
The time rate employment has been positive in 60.00 percent of the industries. Further the associated coefficient was found statistically significant in 47.00 percent of the industries. The rate of current year employment adjustment based on the employment lagged by one year has been found positive in 67.00 percent of the industries. The statistical significance was confirmed only 27.00 percent.

From the estimates of the short run and long run employment elasticites with regard to real wages and output, following conclusions emerges from the study. The impact of an increase in the real wages has tended to reduce the employment rate in both short and long run. The overall results imply that the industries have difficulties to absorb short run market variations which force them to build better operational strategies to face variations in both wage rate and output growth in the long-run.

Measurement of total factor productivity provides the logical framework to understand how efficient exploitation of an existing technology in the process of value addition enables industries to achieve higher rates of income generation from given levels of factor endowments. In the present study, the empirical estimates of Kendrick index of total factor productivity in 53.00 percent of the industries, exhibited positive rates of TFP growth characterizing efficient use of existing technology paving way for higher output growth. The empirical estimates of Solow index exhibited positive rates in three industries. In these industries the improvement in augmenting technical efficiency has been a source of output growth during the study period. But in Divisia index, all the 15 industry categories show negative rates of TFP growth.

Further the estimates of short term profitability reveals better rates in the years after liberalization and new economic policies. Short term profitability was relatively higher in eight industries. Long term profitability shows a fair degree of uniformity. The rates were better in the industries like, manufacture of knitted and crotched textile products (260),embroidery work, zari work and making ornamental trimmings (262), manufacture of all types of textile
garments & clothing accessories n.e.c (except by purely tailoring establishments) from not self produced material (265), manufacture of rain coats, hats, caps & school bags etc. from water proof textile (266), and fabrics of plastic sheetings, manufacture of made up textile articles: except apparels (267).

As for the determinants of profitability, the study has employed five exogenous factors like, capital-output ratio (capital productivity), labour-output ratio (labour productivity), capital-labour ratio, wage rate and the price-cost margin lagged by one year in order to discern what factors have deterministic impact on the price-cost margin in the Indian textile and wearing apparels during the study period. The result provides solid support that among the five explanatory variables, labour productivity having a positive causation.

6.7 MAJOR CONCLUSIONS OF THE STUDY

The emerging conclusions of the study has been arrived at by comprehensively examining the distinctive features of the estimated coefficients of the sources of output, scale of returns, factor substitution technical progress, factors determining labour demand, total factor productivity growth, and the trends in price-cost margin in the Indian textile and wearing apparels industries in India, during the period of 1980-81 to 1997-98. Among the 15 industry categories, the estimate of coefficients of the sources of output growth reveals high contribution of labour than capital in majority of the industries. The estimates of Cobb-Douglas production function incorporated with Hicks neutral technical progress also suggests that the productivity of labour more favorably contributing to output growth.

The estimates of scale coefficient implied increasing returns to scale in CES production function without time trend in two of the industries. Among them, manufacture of all types of textile garments & clothing accessories n.e.c (except by purely tailoring establishments) from not self produced material (265), the estimates were marginally upward biased. The labour productivity in these industry categories shows a better value than that of capital productivity. When the time trend incorporated, it increased to seven industry categories.
And the capital productivity values show some improvement. In the VES production function model, without time trend, the coefficient of determination yielded higher values, and emerged significant statistically in all the 15 industry categories. From this study, we notice that the coefficient of multiple determinations emerging statistically significant in Cobb-Douglas production function and VES production function, and it is not statistically significant in CES production function.

By analyzing the labour demand and the factors determining the labour demand, the result concludes that, when the real wages are increasing, the employment tends to reduce in short-run and when the real wages are increasing, the employment tends to increase in the long run. The employment growth in Indian textile and manufacturing industries has been quite sensitive to the changes in real wages over the periods. The empirical estimation of employment function shows that the real wages and the growth of output are the two most important determinants of changes in the level of employment in the Indian textile and wearing apparels industries.

A detailed analysis of Total Factor Productivity Growth for the industry categories provides empirical insight to understand the efficient use of technology which has led to growth in output. Empirical analysis of Kendrick index shows an average mean of TFPG was found to be greater than the base year value. In Solow index also the study finds a positive trend characterizing the magnitude of 0.06 percent. But in Divisia index, the study finds a negative TFP trend in the textile and wearing apparels industries in India during the reference period.

In a closer examination of the Kendrick index shows that, most of the industries assumed relatively higher rates of TFPG contribution to output growth during 1990’s. while in the Solow index also, the study results show the contribution to output growth has increased in 1990’s as against 1980’s.

The present study attempts to capture the importance and the influence of macro economic performance of the nation on the Price-Cost Margin of the
industries. An attempt is also made to examine the factors determining the behavioral tendencies, using econometric models. The level of coefficient of variation shows a lack of uniformity in the short-run gross profitability. The textile and wearing apparels industries have been associated with a positive annual average growth rate in its Gross Price Cost Margin. To examine the degree of stability, the study estimated the trend coefficient of variation. The yearly deviation of the Gross Price Cost Margin from the respective periods mean magnitude, for individual industry was found registering 31.87 percent on the average. The average annual growth rate in its Gross Price cost Margin was estimated as the magnitude of 2.34 percent in India during the reference period.

The estimated magnitude reveals a fair degree of uniformity in the long term profitability of the studied industrial categories. The periods mean long term gross profitability of the industries engaged has defined a rate around 81.46 percent. While the mean of the trend coefficient as regard to the long term profitability was found around 48.22 percent. An obvious fact in this study is the highly divergent nature of growth in the long term profitability of the industry categories.

To find out the factors determining the Price-Cost Margin, a multiple regression model fit to the study. The coefficient of multiple determinations has emerged statistically significant in seven out of 15 industry categories. Empirical findings suggest the Price-Cost Margin has been influenced by labour productivity during the reference period.
SUGGESTIONS FOR THE FUTURE RESEARCH AND POLICY MAKING

As the main focus of the study has been directed towards empirically examining the vital economic fundamentals of industry categories. An in-depth analysis shows that there is ample scope for a capital augmenting technology in these industry categories, in the process of output growth.

As the textile industry is considered as one of the major industry which employs more number of laborers, the analysis of demand for labour derived from CES Production function has satisfied the well established theoretical implications. We find wage rate having a retrogressive impact in the short run and long run, implying their ability to optimize the use of labour in the long run through a gradual adjustment process. The study also finds that the elasticity of demand for labour on account of output growth, suggest that in the long run, output contributing to employment growth.

The study also shows a better contribution of exogenous technical progress to output growth. i.e. 73.00 percent of the industries. Further estimates of short term profitability reveals better rates in the years after new economic policies and long term profitability shows a fair degree of uniformity.

However the present study did not include exploring the reasons of such a performance of these industries. But it leaves ample scope for further investigation in this field. Further the study reveals labor as an important factor along with capital. Long term profitability shows a fair degree of uniformity. The rates were better in the industries like, manufacture of knitted and crotched textile products (260), embroidery work, zari work and making ornamental trimmings (262), manufacture of all types of textile garments & clothing accessories n.e.c (except by purely tailoring establishments) from not self produced material (265), manufacture of rain coats, hats, caps & school bags etc. from water proof textile (266), and fabrics of plastic sheetings, manufacture of made up textile articles: except apparels (267). Government can have long term policies to strengthen these industries as they shows better performance indicators in the present study.