CHAPTER VII
DETERMINANTS OF COMPETITIVENESS OF MANUFACTURED EXPORTS OF INDIA

In this chapter an attempt has been made to examine the determinants of competitiveness of total exports, manufactured exports and its various sections of India (Chemicals, Textiles, Machinery & Transport Equipment, Non-Metallic Minerals and Other Manufactured Goods).

Determinants of Export Competitiveness

To study effect of different variables on export competitiveness, we have defined export competitiveness as share of exports to output. Various variables which affect the export competitiveness included Export Profitability, Relative Export Prices, Exchange Rate, Real Effective Exchange Rate, Unit Labour Cost, Share of R&D Expenditure to Output and Share of R&D Expenditure to Total Expenditure. Of these variables, certain variables namely Exchange Rate and REER are common for all total exports as well as manufactured exports and its sections (Chemicals, Textiles, Machinery & Transport Equipment, Non-Metallic Minerals and Other Manufactured Goods).

A larger or stronger Real Effective Exchange Rate (REER) indicates that the home country is less competitive, while less or weak Real Effective Exchange Rate (REER) indicates that the home country is more competitive. So, depreciation of REER indicates increase in competitiveness, while appreciation of REER indicates loss in competitiveness. Exchange Rate (ER) appreciation is detrimental to export competitiveness, while depreciation of exchange rate increases competitiveness of exports. Competitiveness of export increases with increase in the value of Export Profitability Index (EPI), while competitiveness decreases with decrease in the value of index. Increase in Relative Export Prices (REP) lead to decrease in capacity of county to export and competitiveness, while decrease in Relative Export Prices (REP) lead to increased capacity of the country to export and hence competitiveness. In terms of Unit Labour Cost (ULC), competitiveness of exports increases with decrease in ULC, while competitiveness of exports decreases with increase in ULC. Competitiveness of exports increase with increase R&D expenditure
as percentage of output and increased percentage of R&D Expenditure to Total Expenditure (R&D/T), while competitiveness decreases with decrease in Share of R&D Expenditure to Total Output (R&D/O) and Total Expenditure (R&D/T).

India’s Total Exports

Table 7.1 shows the determinants of export competitiveness for total exports of India. Table shows that share of India’s exports to output increased from 10.95 percent in 1980-81 to 20.90 percent in 2005-06, indicating increase in competitiveness. Regarding the factors affecting competitiveness, Table shows that the value of Export Profitability Index decreased in most of years after 1993-94, (after reaching the maximum in 1993-94). EPI increased from 65.31 in 1980-81 to 85.93 in 2005-06. Relative Export Prices reached at maximum level to 1.15 in 1988-89 from 0.93 in 1980-81, it decreased to 0.83 in 1996-97 and afterwards it increased with fluctuations and reached at same level as of 1980-81. Exchange Rate in terms of SDRs increased from 10.26 in 1980-81 to 65.17 in 2005-06 indicating depreciation of Indian rupee. Real Effective Exchange Rate (REER) indices adjusted for price differentials has been continuously depreciating with some fluctuations. Unit Labour Cost (ULC) decreased from Rs. 0.79 lakhs in 1980-81 to Rs. 0.31 lakhs in 2005-06. Share of R&D Expenditure to Output decreased from 0.31 percent in 1980-81 to 0.19 percent in 2005-06.

Correlation Matrix

Table 7.2 shows the correlations of share of exports to output (export competitiveness) with its determinants and intercorrelation amongst the determinants. The table shows that export competitiveness was positively and significantly correlated with Export Profitability, and Exchange Rate, while it was negatively and significantly correlated with Relative Export Prices, REER, Unit Labour Cost and Share of R&D Expenditure to Output. Export Profitability was significantly correlated with Exchange Rate, REER and Unit Labour Cost. Relative Export Prices were significantly correlated with Exchange Rate, REER, Unit Labour Cost and Share of R&D Expenditure to Output. Exchange Rate, REER, Unit Labour Cost and R&D/O were significantly correlated among themselves.
## Table 7.1
Competitiveness of India’s Total Exports and its Determinants (1980-81 to 2005-06)

<table>
<thead>
<tr>
<th>Years</th>
<th>Ratio of Export to Output (%)</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange Rate in terms of SDRs</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost (in Lakhs)</th>
<th>Share of R &amp; D Expenditure to Output (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>10.95</td>
<td>1</td>
<td>62.31</td>
<td>0.93</td>
<td>10.26</td>
<td>179.64</td>
<td>0.79</td>
<td>0.32</td>
</tr>
<tr>
<td>1981-82</td>
<td>10.62</td>
<td>2</td>
<td>64.43</td>
<td>0.91</td>
<td>10.24</td>
<td>178.95</td>
<td>0.72</td>
<td>0.32</td>
</tr>
<tr>
<td>1982-83</td>
<td>10.24</td>
<td>3</td>
<td>66.14</td>
<td>1.00</td>
<td>10.48</td>
<td>172.77</td>
<td>0.74</td>
<td>0.34</td>
</tr>
<tr>
<td>1983-84</td>
<td>10.47</td>
<td>4</td>
<td>70.30</td>
<td>1.05</td>
<td>10.83</td>
<td>176.87</td>
<td>0.70</td>
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</tr>
<tr>
<td>1984-85</td>
<td>11.12</td>
<td>5</td>
<td>74.28</td>
<td>1.08</td>
<td>11.65</td>
<td>169.98</td>
<td>0.75</td>
<td>0.41</td>
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<tr>
<td>1985-86</td>
<td>9.12</td>
<td>6</td>
<td>71.14</td>
<td>1.11</td>
<td>12.56</td>
<td>165.59</td>
<td>0.73</td>
<td>0.36</td>
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<tr>
<td>1986-87</td>
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<td>70.96</td>
<td>1.09</td>
<td>14.81</td>
<td>152.51</td>
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</tr>
<tr>
<td>1987-88</td>
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<td>70.80</td>
<td>0.99</td>
<td>16.76</td>
<td>144.51</td>
<td>0.72</td>
<td>0.37</td>
</tr>
<tr>
<td>1988-89</td>
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<td>78.74</td>
<td>1.15</td>
<td>18.70</td>
<td>135.83</td>
<td>0.66</td>
<td>0.40</td>
</tr>
<tr>
<td>1989-90</td>
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<td>10</td>
<td>86.74</td>
<td>1.15</td>
<td>20.79</td>
<td>130.89</td>
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<tr>
<td>1990-91</td>
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<td>84.09</td>
<td>1.03</td>
<td>23.79</td>
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<td>93.01</td>
<td>1.03</td>
<td>31.10</td>
<td>103.84</td>
<td>0.59</td>
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<td>13</td>
<td>96.43</td>
<td>1.02</td>
<td>36.51</td>
<td>92.10</td>
<td>0.57</td>
<td>0.34</td>
</tr>
<tr>
<td>1993-94</td>
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<td>100.00</td>
<td>1.00</td>
<td>42.63</td>
<td>100.00</td>
<td>0.50</td>
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<td>0.99</td>
<td>44.93</td>
<td>103.30</td>
<td>0.50</td>
<td>0.28</td>
</tr>
<tr>
<td>1995-96</td>
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<td>16</td>
<td>83.88</td>
<td>0.85</td>
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<td>101.00</td>
<td>0.51</td>
<td>0.25</td>
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<tr>
<td>1996-97</td>
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<td>17</td>
<td>84.12</td>
<td>0.83</td>
<td>51.44</td>
<td>95.41</td>
<td>0.46</td>
<td>0.30</td>
</tr>
<tr>
<td>1997-98</td>
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<td>93.37</td>
<td>1.01</td>
<td>49.96</td>
<td>100.40</td>
<td>0.49</td>
<td>0.27</td>
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<td>91.68</td>
<td>0.97</td>
<td>56.03</td>
<td>94.52</td>
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<td>80.60</td>
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<td>60.08</td>
<td>100.90</td>
<td>0.50</td>
<td>0.29</td>
</tr>
<tr>
<td>2002-03</td>
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<td>23</td>
<td>78.54</td>
<td>0.90</td>
<td>62.95</td>
<td>98.90</td>
<td>0.46</td>
<td>0.27</td>
</tr>
<tr>
<td>2003-04</td>
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<td>80.73</td>
<td>0.92</td>
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<td>99.04</td>
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<td>0.26</td>
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<td>2004-05</td>
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<td>25</td>
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<td>0.95</td>
<td>67.11</td>
<td>99.68</td>
<td>0.36</td>
<td>0.22</td>
</tr>
<tr>
<td>2005-06</td>
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<td>102.20</td>
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Table 7.2
Correlation Matrix of Determinants of Total Exports

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<thead>
<tr>
<th></th>
<th>E/O</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
<th>Share of R&amp;D Expenditure to Output (R&amp;D/O)</th>
</tr>
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<tbody>
<tr>
<td>E/O</td>
<td>1.000</td>
<td>0.943</td>
<td>0.487 (**))</td>
<td>-0.578 (*)</td>
<td>0.959 (*)</td>
<td>-0.796 (*)</td>
<td>-0.897 (*)</td>
<td>-0.814 (*)</td>
</tr>
<tr>
<td>Time</td>
<td>1.000</td>
<td>0.598</td>
<td>-0.476 (**)</td>
<td>0.981 (*)</td>
<td>-0.885 (*)</td>
<td>-0.961 (*)</td>
<td>-0.785 (*)</td>
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</tr>
<tr>
<td>Export Profitability Index</td>
<td>1.000</td>
<td>-0.035</td>
<td>0.596 (*)</td>
<td>-0.847 (*)</td>
<td>-0.669 (*)</td>
<td>-0.334</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Export Prices</td>
<td>1.000</td>
<td>-0.593</td>
<td>0.401 (**))</td>
<td>0.518 (*)</td>
<td>0.737 (*)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>1.000</td>
<td>-0.889</td>
<td>-0.963 (*)</td>
<td>-0.841 (*)</td>
<td></td>
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<tr>
<td>Real Effective Exchange Rate</td>
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<td>0.887</td>
<td>0.623 (*)</td>
<td></td>
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<td></td>
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<tr>
<td>Unit Labour Cost</td>
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<td>1.000</td>
<td>0.833 (*)</td>
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<td>Share of R&amp;D Expenditure to Output</td>
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<td></td>
<td></td>
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<td>1.000</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.1
*significant at 1 percent level
**Significant at 5 percent level
### Table 7.3
Determinants of Competitiveness of Total Exports: Results of Simple Regression Analysis

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Exchange Rate</th>
<th>Real Effective Exchange Rate</th>
<th>R²</th>
<th>R²</th>
<th>F-Value</th>
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<td>0.196 *</td>
<td></td>
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<td></td>
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<td>0.920</td>
<td>0.913</td>
<td>132.93</td>
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<td></td>
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<td>(0.197)</td>
<td>(2.981)</td>
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Source: Based on Data Given in Table 7.1
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.4
Multiple Step-up Regression Results for Total Exports

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Real Effective Exchange Rate</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>R² (d.f)</th>
<th>R² (F-value)</th>
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<td>(0.197)</td>
<td>(2.981)</td>
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<td>(0.913)</td>
<td>(132.93)</td>
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<td>(75.66)</td>
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<td>(0.167)</td>
<td>(1.700)</td>
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<td>(66.57)</td>
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<td>(1.259)</td>
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<td>(1.673)</td>
<td>(0.260)</td>
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<td></td>
<td>(0.927)</td>
<td>(46.46)</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.1
Note: Figures in parentheses are ‘t’ values
*Significant at 1 percent level
**Significant at 5 percent level
Simple Regression Analysis

The results of regression analysis for total exports are presented in Table 7.3. The results reveal that of 6 variables considered, only two variables namely Relative Export Prices (REP) and Exchange rate (ER) significantly affected the export competitiveness. REP along with time negatively and significantly affected export competitiveness and explained 91 percent variations in it. Exchange Rate along with time positively and significantly affected export competitiveness and explained about 92 percent variations in export competitiveness. Export Profitability and Share of R&D Expenditure to Output individually along with time negatively and non-significantly affected export competitiveness. Unit Labour Cost along with time positively and non-significantly affected export competitiveness and explained about 89 percent variations in it. REER along with time positively and non-significantly affected export competitiveness and explained about 89.7 percent variations.

Multiple Step-up Regression

To identify the determinants of total exports of India, multiple (step-up) regression analysis has been carried out for the period 1980-2005. The results of multiple (step-up) regression analysis are given in Table 7.4.

The results of multiple (step-up) regression analysis reveal that in first step of the regression equation, Exchange rate has been found to be positively and significantly affecting the export competitiveness and explained about 92 percent variations in it. The addition of Unit Labour Cost in the equation in second step improved $R^2$ to 0.931 and adjusted $R^2$ to 0.922. Unit Labour Cost positively and non-significantly affected the export competitiveness.

Share of R&D Expenditure to Output was added in the equation in third step. It resulted in slight improvement in the value of $R^2$ and the value of adjusted $R^2$. 
Share of R&D Expenditure to Output negatively and non-significantly affected the export competitiveness.

The addition of REER in the equation in fourth step improved $R^2$ to 0.943 and adjusted $R^2$ to 0.929. REER positively and non-significantly affected the export competitiveness. Export profitability was added in the equation in the fifth step. It resulted in marginal improvement in the value of $R^2$, while adjusted $R^2$ declined marginally.

Finally, Relative Export Prices were added in the equation. It was found to be positively and non-significantly affecting the export competitiveness. All variables explained about 94.8 percent variations in export competitiveness.

From all the above regression equations, the most important equation has been found to be the combination of Exchange Rate, Unit Labour Cost and R&D/O, when adjusted $R^2$ was the maximum.

**India’s Total Manufactured Exports**

Table 7.5 presents the determinants of the Total Manufactured Exports. The table shows that share of India’s manufactured exports to output increased from 7.03 percent in 1980-81 to 20.63 percent in 2005-06 indicating increase in competitiveness. Regarding the factors affecting competitiveness, the table shows that the value of Export Profitability Index increased from 35.81 in 1980-81 to 97.96 in 2005-06 with some fluctuation in-between. Relative Export Prices increased from 0.32 in 1980-81 to 2.05 in 2005-06 with some fluctuations in-between. R&D Expenditure on manufactures as a percentage of output increased from 0.34 percent in 1980-81 to 0.46 percent in 1984-85 but afterwards followed decreasing trend and declined to 0.27 percent in 2005-06.
Correlation Matrix

Table 7.6 presents the correlations of share of Manufactured Exports to output (export competitiveness) with its determinants and intercorrelation amongst the determinants. The table shows that export competitiveness of manufactures was significantly correlated with all the determinants. Export competitiveness was positively related with Export Profitability, Relative Export Prices and Exchange Rate, while it was negatively related with REER, Unit Labour Cost and Share of R&D Expenditure to Output (R&D/O). Export Profitability was positively and significantly correlated with Relative Export Prices and Exchange Rate, while it was negatively and significantly correlated with REER, Unit Labour Cost and Share of R&D Expenditure to Output. Relative Export Prices were positively and significantly correlated with Exchange Rate, while negatively and significantly correlated with REER and Unit Labour Cost. Exchange Rate, Real Effective Exchange Rate (REER), Unit Labour Cost and R&D/O were significantly correlated among themselves.

Simple Regression Analysis

Table 7.7 presents the results of regression analysis for Manufactured Exports. Table reveals that of 6 variables considered, only two variables namely Share of R&D to Output (R&D/O) and Exchange Rate significantly affected export competitiveness (R&D/O negatively, while Exchange rate positively). Exchange rate alone explained 96.3 percent variations in export competitiveness. Share of R&D to Output (R&D/O) individually explained 96 percent variations in export competitiveness. Export Profitability, REER and Unit labour Cost along with time negatively and non-significantly, while Relative Export Prices positively and non-significantly affected export competitiveness. Value of $R^2$ was found to be in each case 0.95/0.96.

Multiple Step-up Regression

The results of multiple (step-up) regression analysis for Manufactured Exports and its determinants are shown in Table 7.8. The single most important
variable has been found to be Exchange rate. This variable positively and significantly affected the export competitiveness and explained about 96.3 percent variations in export competitiveness. The equation was found to be best with maximum value of adjusted $R^2$ (0.960).

The addition of Relative Export Prices in the equation in second step and Unit Labour Cost in third step, resulted in slight decline in the value of adjusted $R^2$, whereas $R^2$ remained the same (with the addition of Unit Labour Cost). Relative Export Prices positively and non-significantly, while Unit Labour Cost negatively and non-significantly affected the export competitiveness.

REER was added in the equation in fourth step. It resulted improvement in $R^2$, while resulted in slight decline in the value of adjusted $R^2$. REER positively and non-significantly affected the export competitiveness.

The addition of Share of R&D to Output (R&D/O) in fifth step, resulted in decline in the value of $R^2$ and adjusted $R^2$. It negatively and non-significantly affected the export competitiveness.

Finally, Export Profitability was added in the regression equation leading to marginal improvement in $R^2$ and adjusted $R^2$. It was found to be positively and non-significantly affected the export competitiveness of manufactures. All variables explained about 96.6 percent variations in export competitiveness.

Section-wise Analysis

i). India’s Chemicals Exports

Table 7.9 presents the determinants of the exports competitiveness of Chemicals. Table shows that share of export of Chemicals to output increased from 3.84 percent in 1980-81 to 26.07 percent in 2005-06 indicating increase in competitiveness. Regarding factors affecting competitiveness, Table shows that Export Profitability Index (EPI) after reaching maximum of 103.58 in 1992-93, decreased in 2005-06 and reached at same level as in 1980-81. Unit Labour Cost (ULC) decreased from Rs 0.48 lakhs to Rs 0.27 lakhs in 2005-06 with some
fluctuations in-between. Share of R&D Expenditure to Total Expenditure increased from 10.46 percent in 1980-81 to 18.17 percent in 1995-96 but decreased to 7.04 percent in 2005-06. Share of R&D Expenditure to Output also decreased from 0.33 percent in 1980-81 to 0.12 percent in 2005-06 with some fluctuations in-between.

**Correlation Matrix**

Table 7.10 shows the correlations of share of Chemicals exports to output (export competitiveness) with its determinants and intercorrelation amongst the determinants. The table shows that export competitiveness was significantly and positively correlated with Relative Export Prices, Exchange Rate, while significantly and negatively correlated with REER, Unit Labour Cost and Share of R&D Expenditure to Output (R&D/O). Export competitiveness was positively related Export Profitability, while it was negatively related with Share of R&D Expenditure to Total Expenditure (R&D/T). Export Profitability was significantly correlated with Real Effective Exchange Rate (REER). Relative Export Prices were significantly correlated with Exchange Rate, REER and Share of R&D Expenditure to Output. Exchange Rate was negatively and significantly correlated with REER, Unit Labour Cost and Share of R&D Expenditure to Output. Real Effective Exchange Rate (REER) was positively and significantly correlated with Unit Labour Cost and Share of R&D Expenditure to Output. R&D/T was also significantly and positively related with R&D/O.

**Simple Regression Analysis**

Table 7.11 shows the results of regression analysis for Chemicals. The results reveal that of 7 variables considered, only one variable namely Share of R&D Expenditure to Total Expenditure (R&D/T) significantly but negatively affected export competitiveness and explained about 93.3 percent variations in export competitiveness. Exchange Rate, REER, Unit Labour Cost along with time positively and non-significantly affected export competitiveness. Export Profitability, Relative Export Prices and Share of R&D Expenditure to Output (R&D/O) along with time negatively and non-significantly affected export competitiveness.
Multiple Step-up Regression

Table 7.12 shows the results of multiple (step-up) regression analysis for Chemicals. The results show that in the regression equation in first step, Exchange Rate has been found to be positively and non-significantly affecting the export competitiveness and explained about 90.7 percent variations in export competitiveness.

The addition of Relative Export Prices (REP) in the regression equation in second step and REER in third step resulted significant improvement in $R^2$ (i.e. it increased to 0.947) and adjusted $R^2$ (i.e. it increased to 0.937). REP negatively and non-significantly in second step (but negatively and significantly in third step), REER positively and significantly affected export competitiveness.

The addition of Share of R&D Expenditure to Output (R&D/O) in the regression equation in fourth step resulted further improvement in $R^2$ (i.e. it increased to 0.957) and adjusted $R^2$ (i.e. it increased to 0.946). R&D/O negatively and significantly affected export competitiveness.

The addition of Unit Labour Cost in the equation in fifth step resulted in slight improvement in the value in $R^2$, while adjusted $R^2$ remained the same. It positively and non-significantly affected export competitiveness.

Share of R&D Expenditure to Total Expenditure (R&D/T) was added in the equation in sixth step. The value of $R^2$ remained the same, while adjusted $R^2$ declined to 0.943. It negatively and non-significantly affected export competitiveness.

Finally, Export Profitability was added in the equation. It negatively and non-significantly affected the export competitiveness of Chemicals. All variables explained about 95.9 percent variations in export competitiveness.

From all the above equations, the most important equation has been found to be the combination of Exchange rate, Share of R&D Expenditure to Output, REER, Unit Labour Cost and Relative Export Prices (equation 5), when adjusted $R^2$ was the maximum.
Table 7.5
Competitiveness of India’s Total Manufactured Exports and its Determinants (1980-81 to 2005-06)

<table>
<thead>
<tr>
<th>Years</th>
<th>Ratio of Export to Output(%) (E/O)</th>
<th>Time (T)</th>
<th>Export Profitability Index (EP)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate in terms of SDRs (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (in lakhs) (ULC)</th>
<th>Share of R&amp;D Expenditure to Output(%) (R&amp;D/O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>7.03</td>
<td>1</td>
<td>35.81</td>
<td>0.32</td>
<td>10.26</td>
<td>179.64</td>
<td>0.79</td>
<td>0.35</td>
</tr>
<tr>
<td>1981-82</td>
<td>7.53</td>
<td>2</td>
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<td>0.35</td>
<td>10.24</td>
<td>178.95</td>
<td>0.75</td>
<td>0.39</td>
</tr>
<tr>
<td>1982-83</td>
<td>5.79</td>
<td>3</td>
<td>43.00</td>
<td>0.41</td>
<td>10.48</td>
<td>172.77</td>
<td>0.74</td>
<td>0.37</td>
</tr>
<tr>
<td>1983-84</td>
<td>5.91</td>
<td>4</td>
<td>47.00</td>
<td>0.45</td>
<td>10.83</td>
<td>176.87</td>
<td>0.74</td>
<td>0.40</td>
</tr>
<tr>
<td>1984-85</td>
<td>6.45</td>
<td>5</td>
<td>52.00</td>
<td>0.53</td>
<td>11.65</td>
<td>169.98</td>
<td>0.76</td>
<td>0.46</td>
</tr>
<tr>
<td>1985-86</td>
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<td>6</td>
<td>59.00</td>
<td>0.63</td>
<td>12.56</td>
<td>165.59</td>
<td>0.73</td>
<td>0.40</td>
</tr>
<tr>
<td>1986-87</td>
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<td>7</td>
<td>64.00</td>
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<td>14.81</td>
<td>152.51</td>
<td>0.66</td>
<td>0.44</td>
</tr>
<tr>
<td>1987-88</td>
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<td>8</td>
<td>72.00</td>
<td>0.51</td>
<td>16.76</td>
<td>144.51</td>
<td>0.71</td>
<td>0.42</td>
</tr>
<tr>
<td>1988-89</td>
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<td>9</td>
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<td>18.70</td>
<td>135.83</td>
<td>0.67</td>
<td>0.45</td>
</tr>
<tr>
<td>1989-90</td>
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<td>94.00</td>
<td>0.67</td>
<td>20.79</td>
<td>130.69</td>
<td>0.59</td>
<td>0.44</td>
</tr>
<tr>
<td>1990-91</td>
<td>9.53</td>
<td>11</td>
<td>85.00</td>
<td>0.77</td>
<td>23.79</td>
<td>124.10</td>
<td>0.59</td>
<td>0.39</td>
</tr>
<tr>
<td>1991-92</td>
<td>12.06</td>
<td>12</td>
<td>80.00</td>
<td>0.83</td>
<td>31.10</td>
<td>103.84</td>
<td>0.59</td>
<td>0.38</td>
</tr>
<tr>
<td>1992-93</td>
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<td>13</td>
<td>95.00</td>
<td>0.95</td>
<td>36.51</td>
<td>92.10</td>
<td>0.58</td>
<td>0.38</td>
</tr>
<tr>
<td>1993-94</td>
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<td>14</td>
<td>100.00</td>
<td>1.00</td>
<td>42.63</td>
<td>100.00</td>
<td>0.55</td>
<td>0.36</td>
</tr>
<tr>
<td>1994-95</td>
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<td>15</td>
<td>92.61</td>
<td>1.2</td>
<td>44.93</td>
<td>103.30</td>
<td>0.32</td>
<td>0.31</td>
</tr>
<tr>
<td>1995-96</td>
<td>13.47</td>
<td>16</td>
<td>83.68</td>
<td>1.1</td>
<td>49.18</td>
<td>101.00</td>
<td>0.51</td>
<td>0.29</td>
</tr>
<tr>
<td>1996-97</td>
<td>13.42</td>
<td>17</td>
<td>86.01</td>
<td>1.22</td>
<td>51.44</td>
<td>95.41</td>
<td>0.44</td>
<td>0.30</td>
</tr>
<tr>
<td>1997-98</td>
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<td>18</td>
<td>96.88</td>
<td>1.24</td>
<td>49.96</td>
<td>100.40</td>
<td>0.57</td>
<td>0.33</td>
</tr>
<tr>
<td>1998-99</td>
<td>15.30</td>
<td>19</td>
<td>96.56</td>
<td>1.87</td>
<td>56.03</td>
<td>94.52</td>
<td>0.46</td>
<td>0.36</td>
</tr>
<tr>
<td>1999-00</td>
<td>16.04</td>
<td>20</td>
<td>92.57</td>
<td>2.38</td>
<td>59.88</td>
<td>95.29</td>
<td>0.45</td>
<td>0.27</td>
</tr>
<tr>
<td>2000-01</td>
<td>18.03</td>
<td>21</td>
<td>93.15</td>
<td>2.62</td>
<td>59.25</td>
<td>99.30</td>
<td>0.50</td>
<td>0.28</td>
</tr>
<tr>
<td>2001-02</td>
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<td>90.09</td>
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<td>60.08</td>
<td>100.90</td>
<td>0.51</td>
<td>0.30</td>
</tr>
<tr>
<td>2002-03</td>
<td>17.70</td>
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<td>88.45</td>
<td>1.97</td>
<td>62.95</td>
<td>98.90</td>
<td>0.46</td>
<td>0.28</td>
</tr>
<tr>
<td>2003-04</td>
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<td>90.73</td>
<td>2.02</td>
<td>65.22</td>
<td>99.04</td>
<td>0.42</td>
<td>0.27</td>
</tr>
<tr>
<td>2004-05</td>
<td>19.71</td>
<td>25</td>
<td>92.60</td>
<td>2.03</td>
<td>67.11</td>
<td>98.88</td>
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<td>0.27</td>
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<tr>
<td>2005-06</td>
<td>20.63</td>
<td>26</td>
<td>97.96</td>
<td>2.05</td>
<td>65.14</td>
<td>102.20</td>
<td>0.31</td>
<td>0.27</td>
</tr>
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</table>

Table 7.6
Correlation Matrix of Determinants of Manufactured Exports

<table>
<thead>
<tr>
<th></th>
<th>E/O</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
<th>Share of R&amp;D Expenditure to Output (R&amp;D/O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/O</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
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<td>1.000</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Export Profitability Index</td>
<td>0.974 (*)</td>
<td></td>
<td>0.784 (*)</td>
<td>0.920 (*)</td>
<td>0.979 (*)</td>
<td>-0.869 (*)</td>
<td>-0.905 (*)</td>
<td>-0.844 (*)</td>
</tr>
<tr>
<td>Relative Export Prices</td>
<td>0.923 (*)</td>
<td>0.981 (*)</td>
<td>0.920 (*)</td>
<td>0.869 (*)</td>
<td>-0.885 (*)</td>
<td>-0.912 (*)</td>
<td>-0.800 (*)</td>
<td>-0.822 (*)</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td></td>
<td>0.931 (*)</td>
<td></td>
<td>-0.761 (*)</td>
<td>-0.805 (*)</td>
<td>-0.822 (*)</td>
<td>-0.869 (*)</td>
<td>-0.869 (*)</td>
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<tr>
<td>Real Effective Exchange Rate</td>
<td></td>
<td>-0.889 (*)</td>
<td>-0.907 (*)</td>
<td>0.861 (*)</td>
<td>0.656 (*)</td>
<td></td>
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<tr>
<td>Unit Labour Cost</td>
<td></td>
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<td></td>
<td></td>
<td>0.773 (*)</td>
</tr>
<tr>
<td>Share of R&amp;D Expenditure To Output</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>1.000</td>
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</table>

Source: Based on Data Given in Table 7.5
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.7
Determinants of Competitiveness of Manufactured Exports: Results of Simple Regression Analysis

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Exchange Rate</th>
<th>R²</th>
<th>R²</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.746</td>
<td>0.638 ** (12.290)</td>
<td>-0.010 (-0.753)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>0.949</td>
<td>0.945</td>
<td>213.99</td>
</tr>
<tr>
<td>4.030</td>
<td>0.521 ** (6.980)</td>
<td>0.977 (1.223)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.951</td>
<td>0.947</td>
<td>222.75</td>
</tr>
<tr>
<td>4.801</td>
<td>0.589 ** (9.251)</td>
<td>-0.004 (-0.294)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.948</td>
<td>0.943</td>
<td>209.39</td>
</tr>
<tr>
<td>6.846</td>
<td>0.545 ** (7.687)</td>
<td>-3.534 (-0.926)</td>
<td></td>
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<td></td>
<td>0.950</td>
<td>0.945</td>
<td>216.76</td>
</tr>
<tr>
<td>10.066</td>
<td>0.515 ** (11.850)</td>
<td>-13.672 ** (-2.597)</td>
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<td>0.960</td>
<td>0.956</td>
<td>272.962</td>
</tr>
<tr>
<td>4.033</td>
<td>0.214 ** (1.677)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>0.143 * (3.132)</td>
<td>0.963</td>
<td>0.960</td>
<td>302.40</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.5
Note: Figures in parentheses are t-values
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.8
Multiple Step-up Regression for Manufactured Exports

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Exchange Rate</th>
<th>Relative Export Prices</th>
<th>Unit Labour Cost</th>
<th>Real Effective Exchange Rate</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Export Profitability Index</th>
<th>$R^2$ (d.f)</th>
<th>$\bar{R}^2$ (F-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.033</td>
<td>0.214</td>
<td>0.143 *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.963</td>
<td>0.960</td>
</tr>
<tr>
<td>(10.522)</td>
<td>(1.677)</td>
<td>(3.132)</td>
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<td></td>
<td></td>
<td></td>
<td>(24,2)</td>
<td>(302.30)</td>
</tr>
<tr>
<td>4.035</td>
<td>0.207</td>
<td>0.137 *</td>
<td>0.272 (0.364)</td>
<td></td>
<td></td>
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<td>0.964</td>
<td>0.959</td>
</tr>
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<td>(10.327)</td>
<td>(1.576)</td>
<td>(2.766)</td>
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<td>(23,3)</td>
<td>(193.98)</td>
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<tr>
<td>6.091</td>
<td>0.178</td>
<td>0.126 *</td>
<td>0.447 (0.563)</td>
<td>-2.585 (-0.730)</td>
<td></td>
<td></td>
<td></td>
<td>0.964</td>
<td>0.958</td>
</tr>
<tr>
<td>(2.142)</td>
<td>(1.266)</td>
<td>(2.414)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>(22,4)</td>
<td>(142.53)</td>
</tr>
<tr>
<td>5.368</td>
<td>0.186</td>
<td>0.132 **</td>
<td>0.339 (0.387)</td>
<td>-2.765 (-0.756)</td>
<td>0.004 (0.325)</td>
<td></td>
<td></td>
<td>0.982</td>
<td>0.956</td>
</tr>
<tr>
<td>(1.467)</td>
<td>(1.296)</td>
<td>(2.339)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(21,5)</td>
<td>(109.19)</td>
</tr>
<tr>
<td>7.352</td>
<td>0.225</td>
<td>0.106</td>
<td>0.341 (0.381)</td>
<td>-2.416 (-0.628)</td>
<td>0.001 (0.066)</td>
<td>-3.638 (-0.388)</td>
<td></td>
<td>0.965</td>
<td>0.954</td>
</tr>
<tr>
<td>(1.161)</td>
<td>(1.267)</td>
<td>(1.198)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(20,6)</td>
<td>(87.15)</td>
</tr>
<tr>
<td>3.908</td>
<td>0.170</td>
<td>0.125</td>
<td>0.282 (0.309)</td>
<td>-1.692 (-0.416)</td>
<td>0.010 (0.549)</td>
<td>-6.495 (-0.618)</td>
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<td>0.966</td>
<td>0.952</td>
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<tr>
<td>(0.466)</td>
<td>(0.846)</td>
<td>(1.319)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(19,7)</td>
<td>(78.29)</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.5
Note: Figures in parentheses are ‘t’ values
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.9
Competitiveness of India’s Chemicals Exports and its Determinants (1980-81 to 2005-06)

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Exports to Output (%)</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate in terms of SDRs (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (in Lakhs) (ULC)</th>
<th>Share of R&amp;D Expenditure to Total Expenditure (%) (R&amp;D/T)</th>
<th>Share of R&amp;D Expenditure to Output (%) (R&amp;D/O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>3.84</td>
<td>1</td>
<td>62.74</td>
<td>0.32</td>
<td>10.26</td>
<td>179.64</td>
<td>0.48</td>
<td>10.46</td>
<td>0.33</td>
</tr>
<tr>
<td>1981-82</td>
<td>4.91</td>
<td>2</td>
<td>62.34</td>
<td>0.35</td>
<td>10.24</td>
<td>178.95</td>
<td>0.46</td>
<td>10.39</td>
<td>0.32</td>
</tr>
<tr>
<td>1982-83</td>
<td>3.44</td>
<td>3</td>
<td>58.22</td>
<td>0.41</td>
<td>10.48</td>
<td>172.77</td>
<td>0.41</td>
<td>10.31</td>
<td>0.29</td>
</tr>
<tr>
<td>1983-84</td>
<td>3.36</td>
<td>4</td>
<td>69.72</td>
<td>0.45</td>
<td>10.83</td>
<td>176.87</td>
<td>0.57</td>
<td>9.22</td>
<td>0.32</td>
</tr>
<tr>
<td>1984-85</td>
<td>4.31</td>
<td>5</td>
<td>72.36</td>
<td>0.53</td>
<td>11.65</td>
<td>169.98</td>
<td>0.44</td>
<td>8.57</td>
<td>0.33</td>
</tr>
<tr>
<td>1985-86</td>
<td>2.77</td>
<td>6</td>
<td>64.99</td>
<td>0.63</td>
<td>12.56</td>
<td>165.59</td>
<td>0.39</td>
<td>10.19</td>
<td>0.31</td>
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<tr>
<td>1986-87</td>
<td>3.17</td>
<td>7</td>
<td>61.71</td>
<td>0.56</td>
<td>14.81</td>
<td>152.51</td>
<td>0.31</td>
<td>15.04</td>
<td>0.52</td>
</tr>
<tr>
<td>1987-88</td>
<td>6.05</td>
<td>8</td>
<td>75.62</td>
<td>0.51</td>
<td>16.76</td>
<td>144.51</td>
<td>0.29</td>
<td>9.55</td>
<td>0.32</td>
</tr>
<tr>
<td>1988-89</td>
<td>7.25</td>
<td>9</td>
<td>78.04</td>
<td>0.52</td>
<td>18.70</td>
<td>135.83</td>
<td>0.20</td>
<td>8.52</td>
<td>0.29</td>
</tr>
<tr>
<td>1989-90</td>
<td>8.86</td>
<td>10</td>
<td>90.54</td>
<td>0.67</td>
<td>20.79</td>
<td>130.89</td>
<td>0.46</td>
<td>9.28</td>
<td>0.28</td>
</tr>
<tr>
<td>1990-91</td>
<td>9.35</td>
<td>11</td>
<td>75.87</td>
<td>0.77</td>
<td>23.79</td>
<td>124.10</td>
<td>0.45</td>
<td>7.63</td>
<td>0.22</td>
</tr>
<tr>
<td>1991-92</td>
<td>11.66</td>
<td>12</td>
<td>75.27</td>
<td>0.83</td>
<td>31.10</td>
<td>103.84</td>
<td>0.43</td>
<td>9.09</td>
<td>0.23</td>
</tr>
<tr>
<td>1992-93</td>
<td>10.31</td>
<td>13</td>
<td>103.58</td>
<td>0.95</td>
<td>36.51</td>
<td>92.10</td>
<td>0.39</td>
<td>9.57</td>
<td>0.24</td>
</tr>
<tr>
<td>1993-94</td>
<td>13.26</td>
<td>14</td>
<td>100.00</td>
<td>1.00</td>
<td>42.63</td>
<td>100.00</td>
<td>0.34</td>
<td>10.29</td>
<td>0.24</td>
</tr>
<tr>
<td>1994-95</td>
<td>14.15</td>
<td>15</td>
<td>91.77</td>
<td>1.2</td>
<td>44.93</td>
<td>103.30</td>
<td>0.25</td>
<td>17.08</td>
<td>0.36</td>
</tr>
<tr>
<td>1995-96</td>
<td>13.46</td>
<td>16</td>
<td>86.75</td>
<td>1.1</td>
<td>49.18</td>
<td>101.00</td>
<td>0.30</td>
<td>18.17</td>
<td>0.35</td>
</tr>
<tr>
<td>1996-97</td>
<td>13.34</td>
<td>17</td>
<td>84.67</td>
<td>1.22</td>
<td>51.44</td>
<td>95.41</td>
<td>0.28</td>
<td>13.42</td>
<td>0.25</td>
</tr>
<tr>
<td>1997-98</td>
<td>15.51</td>
<td>18</td>
<td>79.50</td>
<td>1.24</td>
<td>49.96</td>
<td>100.40</td>
<td>0.35</td>
<td>7.81</td>
<td>0.17</td>
</tr>
<tr>
<td>1998-99</td>
<td>12.65</td>
<td>19</td>
<td>85.05</td>
<td>1.87</td>
<td>56.03</td>
<td>94.52</td>
<td>0.26</td>
<td>12.09</td>
<td>0.23</td>
</tr>
<tr>
<td>1999-00</td>
<td>13.42</td>
<td>20</td>
<td>77.96</td>
<td>2.38</td>
<td>58.88</td>
<td>95.29</td>
<td>0.28</td>
<td>13.23</td>
<td>0.19</td>
</tr>
<tr>
<td>2000-01</td>
<td>16.98</td>
<td>21</td>
<td>76.03</td>
<td>2.62</td>
<td>59.25</td>
<td>99.30</td>
<td>0.32</td>
<td>13.43</td>
<td>0.21</td>
</tr>
<tr>
<td>2001-02</td>
<td>18.84</td>
<td>22</td>
<td>69.82</td>
<td>2.06</td>
<td>60.08</td>
<td>100.90</td>
<td>0.34</td>
<td>8.15</td>
<td>0.15</td>
</tr>
<tr>
<td>2002-03</td>
<td>22.06</td>
<td>23</td>
<td>66.13</td>
<td>1.97</td>
<td>62.95</td>
<td>98.90</td>
<td>0.32</td>
<td>7.86</td>
<td>0.15</td>
</tr>
<tr>
<td>2003-04</td>
<td>24.11</td>
<td>24</td>
<td>72.23</td>
<td>2.02</td>
<td>65.22</td>
<td>99.04</td>
<td>0.31</td>
<td>7.57</td>
<td>0.14</td>
</tr>
<tr>
<td>2004-05</td>
<td>26.51</td>
<td>25</td>
<td>66.59</td>
<td>2.03</td>
<td>67.11</td>
<td>99.68</td>
<td>0.29</td>
<td>7.30</td>
<td>0.13</td>
</tr>
<tr>
<td>2005-06</td>
<td>26.07</td>
<td>26</td>
<td>62.67</td>
<td>2.05</td>
<td>65.14</td>
<td>102.20</td>
<td>0.27</td>
<td>7.04</td>
<td>0.12</td>
</tr>
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</table>

Table 7.10
Correlation Matrix of Chemicals

<table>
<thead>
<tr>
<th></th>
<th>E/O</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
<th>Share of R&amp;D Expenditure to Total Expenditure (R&amp;D/T)</th>
<th>Share of R&amp;D Expenditure to Output (R&amp;D/O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/O</td>
<td>1.000</td>
<td>0.953 (*)</td>
<td>0.078</td>
<td>0.845 (*)</td>
<td>0.935 (*)</td>
<td>-0.791 (*)</td>
<td>-0.512 (*)</td>
<td>-0.211 (*)</td>
<td>-0.791 (*)</td>
</tr>
<tr>
<td>Time</td>
<td>1.000</td>
<td>0.182</td>
<td>0.923 (*)</td>
<td>0.981 (*)</td>
<td>-0.885 (*)</td>
<td>-0.618 (*)</td>
<td>-0.083</td>
<td>-0.752 (*)</td>
<td>-0.031 (*)</td>
</tr>
<tr>
<td>Export Profitability Index</td>
<td>1.000</td>
<td>0.056</td>
<td>0.216</td>
<td>-0.547 (*)</td>
<td>-0.202</td>
<td>0.289</td>
<td></td>
<td></td>
<td>-0.711 (*)</td>
</tr>
<tr>
<td>Relative Export Prices</td>
<td>1.000</td>
<td>0.931 (*)</td>
<td>-0.761 (*)</td>
<td>-0.533</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td>-0.730 (*)</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>1.000</td>
<td>-0.889 (*)</td>
<td>-0.605 (*)</td>
<td>0.017</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.031 (*)</td>
</tr>
<tr>
<td>Real Effective Exchange Rate</td>
<td>1.000</td>
<td>0.614 (*)</td>
<td>-0.095</td>
<td>0.613 (*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.711 (*)</td>
</tr>
<tr>
<td>Unit Labour Cost</td>
<td>1.000</td>
<td>-0.285</td>
<td>0.198</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.730 (*)</td>
</tr>
<tr>
<td>Share of R&amp;D Expenditure to Total Expenditure</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.031 (*)</td>
</tr>
<tr>
<td>Share of R&amp;D Expenditure to Output</td>
<td></td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.711 (*)</td>
</tr>
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</table>

Source: Based on Data Given in Table 7.9
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.11
Determinants of Competitiveness of Chemicals: Results of Simple Regression Analysis

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Export Prices</th>
<th>Exchange Rate</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Share of R&amp;D Expenditure to Total Expenditure</th>
<th>R²</th>
<th>R²</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4.031</td>
<td>0.921</td>
<td>-0.006</td>
<td></td>
<td>-0.006</td>
<td>(1.431)</td>
<td>(1.618)</td>
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<td>0.917</td>
<td>0.910</td>
<td>126.83</td>
<td></td>
</tr>
<tr>
<td>-0.297</td>
<td>1.104</td>
<td>-2.318</td>
<td>-2.318</td>
<td>-0.0004</td>
<td>(-0.334)</td>
<td>(1.445)</td>
<td></td>
<td>0.915</td>
<td>0.908</td>
<td>123.99</td>
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<tr>
<td>-0.296</td>
<td>0.886</td>
<td></td>
<td>0.0006</td>
<td>0.0006</td>
<td>(-0.318)</td>
<td>(2.864)</td>
<td></td>
<td>0.907</td>
<td>0.899</td>
<td>112.72</td>
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<td>-9.838</td>
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<td></td>
<td>0.005</td>
<td>0.005</td>
<td>(-1.953)</td>
<td>(1.922)</td>
<td></td>
<td>0.920</td>
<td>0.913</td>
<td>132.66</td>
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</tr>
<tr>
<td>-4.831</td>
<td>0.976</td>
<td></td>
<td></td>
<td></td>
<td>(-1.620)</td>
<td>(13.388)</td>
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<td>0.917</td>
<td>0.909</td>
<td>126.39</td>
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</tr>
<tr>
<td>4.924</td>
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<td></td>
<td></td>
<td></td>
<td>(7.901)</td>
<td>(8.984)</td>
<td></td>
<td>0.920</td>
<td>0.913</td>
<td>131.98</td>
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<tr>
<td>-0.296</td>
<td>0.904</td>
<td></td>
<td></td>
<td></td>
<td>(-0.325)</td>
<td>(15.336)</td>
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<td>-0.324</td>
<td>0.933</td>
<td>0.904</td>
<td>235.20</td>
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</table>

Source: Based on Data Given in Table 7.9
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent level
### Table 7.12
Multiple Step-up Regression for Chemicals

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Exchange Rate</th>
<th>Relative Export Prices</th>
<th>Real Effective Exchange Rate</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Total Expenditure</th>
<th>Export Profitability Index</th>
<th>$R^2$ (d.f.)</th>
<th>$R^2$ (F-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.296</td>
<td>0.886</td>
<td>0.007</td>
<td>0.007</td>
<td>-2.662</td>
<td>-0.296</td>
<td>0.007</td>
<td>0.007</td>
<td>0.907</td>
<td>(24.2)</td>
<td>0.899</td>
</tr>
<tr>
<td>-0.295</td>
<td>0.951</td>
<td>0.060</td>
<td>-2.662</td>
<td>0.886</td>
<td>0.951</td>
<td>0.060</td>
<td>0.886</td>
<td>0.916</td>
<td>(23.3)</td>
<td>0.905</td>
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<tr>
<td>-16.941</td>
<td>1.151</td>
<td>0.196</td>
<td>-4.965 * (-3.176)</td>
<td>0.951</td>
<td>-16.941</td>
<td>1.151</td>
<td>1.151</td>
<td>0.947</td>
<td>(22.4)</td>
<td>0.937</td>
</tr>
<tr>
<td>-10.907</td>
<td>0.999</td>
<td>0.203</td>
<td>-5.049 * (-3.505)</td>
<td>0.951</td>
<td>-10.907</td>
<td>0.999</td>
<td>0.999</td>
<td>0.957</td>
<td>(21.5)</td>
<td>0.946</td>
</tr>
<tr>
<td>-13.954</td>
<td>1.070</td>
<td>0.200</td>
<td>-5.112 * (-3.525)</td>
<td>0.951</td>
<td>-13.954</td>
<td>1.070</td>
<td>1.070</td>
<td>0.959</td>
<td>(20.6)</td>
<td>0.946</td>
</tr>
<tr>
<td>-13.334</td>
<td>0.987</td>
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<td>-4.869 * (-2.922)</td>
<td>0.951</td>
<td>-13.334</td>
<td>0.987</td>
<td>0.987</td>
<td>0.959</td>
<td>(19.7)</td>
<td>0.943</td>
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<tr>
<td>-10.067</td>
<td>0.950</td>
<td>0.228</td>
<td>-4.903 * (-2.863)</td>
<td>0.951</td>
<td>-10.067</td>
<td>0.950</td>
<td>0.950</td>
<td>0.959</td>
<td>(18.8)</td>
<td>0.940</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.9
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent level
ii). India’s Textiles Exports

Determinants of the exports competitiveness of Textiles are shown in Table 7.13. Table shows that share of Textiles exports in output increased from 11.34 percent in 1980-81 to 44.62 percent in 2005-06 indicating massive increase in competitiveness. Regarding factors affecting competitiveness, Table shows that value of Export Profitability rapidly decreased in 2002-03 and in 2004-05 (value decreased from 105.62 in 2001-02 to 99.02 in 2002-03 and from 104.86 in 2003-04 to 97.27 in 2004-05). Unit Labour Cost (ULC) decreased with some fluctuations from Rs. 1.08 lakhs in 1980-81 to Rs. 0.66 lakhs in 2005-06. Share of R&D Expenditure to Total Expenditure (R&D/T) after reaching maximum in 1982-83, decreased to 1.29 percent in 2005-06 with some fluctuation in-between. Share of R&D Expenditure to Output (R&D/O) after reaching maximum of 0.56 percent in 1993-94 decreased to 0.03 percent in 2005-06.

Correlation Matrix

Table 7.14 shows the correlation of share of Textile’s export to output (export competitiveness) with its determinants and intercorrelation amongst determinants. Table shows that export competitiveness was significantly correlated with all the determinants (except with Share of R&D Expenditure to Output). Export competitiveness was significantly and positively related with Export Profitability, Relative Export Prices and Exchange Rate, while it was significantly and negatively related with REER, Unit Labour Cost, and Share of R&D Expenditure to Total Expenditure (R&D/T). Export Profitability was positively and significantly correlated with Relative Export Prices and Exchange Rate, while it was negatively and significantly correlated with REER, Unit Labour Cost and Share of R&D Expenditure to Total Expenditure (R&D/T). Relative Export Prices were significantly correlated with Export Profitability, REER and Unit Labour Cost. Exchange Rate, REER and Unit Labour Cost were significantly correlated among themselves.

Simple Regression Analysis

Table 7.15 presents the results of simple regression analysis for Textiles. The results reveal that of 7 variables considered, only 3 variables namely Export Profitability, Exchange Rate and REER significantly affected export competitiveness. Export Profitability along with
time positively and significantly affected export competitiveness and explained about 93.7 percent variations in it. Share of R&D Expenditure to Output (R&D/O) along with time positively and non-significantly, while Unit Labour Cost and Share of R&D Expenditure to Total Expenditure (R&D/T) negatively and non-significantly affected the export competitiveness. Exchange Rate along with time positively and significantly, affected export competitiveness and explained 92.9 percent variations in export competitiveness. REER along with time negatively and significantly affected export competitiveness and explained 94.3 percent variations in export competitiveness. Relative Export Prices along with time positively and non-significantly affected export competitiveness, it explained about 92.9 percent variations in it.

**Multiple (Step-up) Regression Analysis**

Table 7.16 presents the results of multiple (step-up) regression analysis for Textiles. The results of multiple (step-up) regression analysis show that in the first step of the equation, Exchange rate has been found to be positively and significantly affecting export competitiveness. It explained about 92.9 percent variations in export competitiveness.

The addition of REER in the equation in the second step, resulted in a substantial improvement in the value of \( R^2 \) and adjusted \( R^2 \) (\( R^2 \) increased from 0.929 to 0.951 and adjusted \( R^2 \) from 0.923 to 0.944). REER negatively and significantly affected export competitiveness.

The addition of Relative Export Prices in the equation in the third step lead to a slight improvement in the value of \( R^2 \) and adjusted \( R^2 \). REP positively and non-significantly affected competitiveness. The addition of Export Profitability in fourth step lead to decline in value of adjusted \( R^2 \), while \( R^2 \) remained the same. Export Profitability negatively and non-significantly affected the export competitiveness.

The addition of Unit Labour Cost (ULC) in the regression equation in the fifth step and R&D/T in sixth step resulted in slight improvement in the value of \( R^2 \) and adjusted \( R^2 \). ULC positively and non-significantly, while R&D/T negatively and significantly affected export competitiveness.
### Table 7.13
Competitiveness of India’s Textiles Exports and its Determinants (1980-81 to 2005-06)

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Exports to Output(%)</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange rate in terms of SDRs</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost (in Lakhs)</th>
<th>Share of R&amp;D Expenditure to Total Expenditure(%)</th>
<th>Share of R&amp;D Expenditure to Output(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>11.34</td>
<td>1</td>
<td>81.02</td>
<td>0.32</td>
<td>10.26</td>
<td>179.64</td>
<td>1.08</td>
<td>2.17</td>
<td>0.05</td>
</tr>
<tr>
<td>1981-82</td>
<td>10.60</td>
<td>2</td>
<td>83.56</td>
<td>0.35</td>
<td>10.24</td>
<td>178.95</td>
<td>1.10</td>
<td>2.58</td>
<td>0.06</td>
</tr>
<tr>
<td>1982-83</td>
<td>8.80</td>
<td>3</td>
<td>77.64</td>
<td>0.41</td>
<td>10.48</td>
<td>172.77</td>
<td>1.21</td>
<td>4.58</td>
<td>0.08</td>
</tr>
<tr>
<td>1983-84</td>
<td>8.07</td>
<td>4</td>
<td>74.30</td>
<td>0.45</td>
<td>10.83</td>
<td>176.87</td>
<td>1.13</td>
<td>2.56</td>
<td>0.05</td>
</tr>
<tr>
<td>1984-85</td>
<td>10.31</td>
<td>5</td>
<td>78.80</td>
<td>0.53</td>
<td>11.65</td>
<td>169.98</td>
<td>1.17</td>
<td>3.11</td>
<td>0.07</td>
</tr>
<tr>
<td>1985-86</td>
<td>9.31</td>
<td>6</td>
<td>90.17</td>
<td>0.63</td>
<td>12.56</td>
<td>165.59</td>
<td>1.12</td>
<td>3.60</td>
<td>0.09</td>
</tr>
<tr>
<td>1986-87</td>
<td>9.41</td>
<td>7</td>
<td>77.72</td>
<td>0.56</td>
<td>14.81</td>
<td>152.51</td>
<td>1.12</td>
<td>3.36</td>
<td>0.10</td>
</tr>
<tr>
<td>1987-88</td>
<td>23.48</td>
<td>8</td>
<td>78.16</td>
<td>0.51</td>
<td>16.76</td>
<td>144.51</td>
<td>1.13</td>
<td>2.98</td>
<td>0.08</td>
</tr>
<tr>
<td>1988-89</td>
<td>22.83</td>
<td>9</td>
<td>99.24</td>
<td>0.52</td>
<td>18.70</td>
<td>135.83</td>
<td>1.08</td>
<td>2.61</td>
<td>0.07</td>
</tr>
<tr>
<td>1989-90</td>
<td>23.76</td>
<td>10</td>
<td>90.35</td>
<td>0.67</td>
<td>20.79</td>
<td>130.89</td>
<td>0.88</td>
<td>2.74</td>
<td>0.06</td>
</tr>
<tr>
<td>1990-91</td>
<td>25.59</td>
<td>11</td>
<td>87.34</td>
<td>0.77</td>
<td>23.79</td>
<td>124.10</td>
<td>0.83</td>
<td>2.13</td>
<td>0.05</td>
</tr>
<tr>
<td>1991-92</td>
<td>33.83</td>
<td>12</td>
<td>101.60</td>
<td>0.83</td>
<td>31.10</td>
<td>103.84</td>
<td>0.88</td>
<td>1.54</td>
<td>0.04</td>
</tr>
<tr>
<td>1992-93</td>
<td>35.96</td>
<td>13</td>
<td>111.76</td>
<td>0.95</td>
<td>36.51</td>
<td>92.10</td>
<td>0.90</td>
<td>1.85</td>
<td>0.04</td>
</tr>
<tr>
<td>1993-94</td>
<td>34.15</td>
<td>14</td>
<td>100.00</td>
<td>1.00</td>
<td>42.63</td>
<td>100.00</td>
<td>0.68</td>
<td>2.80</td>
<td>0.56</td>
</tr>
<tr>
<td>1994-95</td>
<td>35.46</td>
<td>15</td>
<td>102.37</td>
<td>1.2</td>
<td>44.93</td>
<td>103.30</td>
<td>0.38</td>
<td>2.04</td>
<td>0.04</td>
</tr>
<tr>
<td>1995-96</td>
<td>36.01</td>
<td>16</td>
<td>104.33</td>
<td>1.1</td>
<td>49.18</td>
<td>101.00</td>
<td>0.79</td>
<td>1.95</td>
<td>0.03</td>
</tr>
<tr>
<td>1996-97</td>
<td>37.92</td>
<td>17</td>
<td>101.94</td>
<td>1.22</td>
<td>51.44</td>
<td>95.41</td>
<td>0.61</td>
<td>1.78</td>
<td>0.03</td>
</tr>
<tr>
<td>1997-98</td>
<td>35.55</td>
<td>18</td>
<td>109.09</td>
<td>1.24</td>
<td>49.96</td>
<td>100.40</td>
<td>0.73</td>
<td>1.05</td>
<td>0.02</td>
</tr>
<tr>
<td>1998-99</td>
<td>43.09</td>
<td>19</td>
<td>111.89</td>
<td>1.87</td>
<td>56.03</td>
<td>94.52</td>
<td>0.69</td>
<td>1.88</td>
<td>0.04</td>
</tr>
<tr>
<td>1999-00</td>
<td>43.20</td>
<td>20</td>
<td>110.44</td>
<td>2.38</td>
<td>58.88</td>
<td>95.29</td>
<td>0.70</td>
<td>1.91</td>
<td>0.04</td>
</tr>
<tr>
<td>2000-01</td>
<td>47.93</td>
<td>21</td>
<td>107.59</td>
<td>2.62</td>
<td>59.25</td>
<td>99.30</td>
<td>0.70</td>
<td>1.51</td>
<td>0.04</td>
</tr>
<tr>
<td>2001-02</td>
<td>50.40</td>
<td>22</td>
<td>105.62</td>
<td>2.06</td>
<td>60.08</td>
<td>100.90</td>
<td>0.78</td>
<td>1.85</td>
<td>0.04</td>
</tr>
<tr>
<td>2002-03</td>
<td>52.75</td>
<td>23</td>
<td>99.02</td>
<td>1.97</td>
<td>62.95</td>
<td>98.90</td>
<td>0.72</td>
<td>1.73</td>
<td>0.04</td>
</tr>
<tr>
<td>2003-04</td>
<td>51.42</td>
<td>24</td>
<td>104.86</td>
<td>2.02</td>
<td>65.22</td>
<td>99.04</td>
<td>0.74</td>
<td>1.56</td>
<td>0.04</td>
</tr>
<tr>
<td>2004-05</td>
<td>45.17</td>
<td>25</td>
<td>97.27</td>
<td>2.03</td>
<td>67.11</td>
<td>99.68</td>
<td>0.70</td>
<td>1.47</td>
<td>0.03</td>
</tr>
<tr>
<td>2005-06</td>
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<td>26</td>
<td>102.70</td>
<td>2.05</td>
<td>65.14</td>
<td>102.20</td>
<td>0.66</td>
<td>1.29</td>
<td>0.03</td>
</tr>
</tbody>
</table>

## Table 7.14
### Correlation Matrix of Determinants of Textiles

<table>
<thead>
<tr>
<th></th>
<th>E/O</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
<th>Share of R&amp;D Expenditure to Total Expenditure (R&amp;D/T)</th>
<th>Share of R&amp;D Expenditure to Output (R&amp;D/O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/O</td>
<td>1.000</td>
<td></td>
<td>0.956 (*)</td>
<td>0.843 (*)</td>
<td>0.894 (*)</td>
<td>0.962 (*)</td>
<td>0.926 (*)</td>
<td>-0.823 (*)</td>
<td>-0.775 (*)</td>
</tr>
<tr>
<td>Time</td>
<td>1.000</td>
<td></td>
<td>0.784 (*)</td>
<td>0.923 (*)</td>
<td>0.981 (*)</td>
<td>0.885 (*)</td>
<td>0.810 (*)</td>
<td>-0.743 (*)</td>
<td>-0.127</td>
</tr>
<tr>
<td>Export Profitability Index</td>
<td>1.000</td>
<td></td>
<td>0.732 (*)</td>
<td>0.817 (*)</td>
<td>-0.901 (*)</td>
<td>-0.775 (*)</td>
<td>-0.720 (*)</td>
<td>-0.073</td>
<td></td>
</tr>
<tr>
<td>Relative Export Prices</td>
<td>1.000</td>
<td></td>
<td>0.931 (*)</td>
<td>-0.761 (*)</td>
<td>-0.724 (*)</td>
<td>-0.660</td>
<td>-0.169</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td>-0.889 (*)</td>
<td>-0.847 (*)</td>
<td>-0.758 (*)</td>
<td>-0.099</td>
<td></td>
</tr>
<tr>
<td>Real Effective Exchange Rate</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td>0.864 (*)</td>
<td>0.734 (*)</td>
<td>0.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Labour Cost</td>
<td></td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td>0.717 (*)</td>
<td>-0.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of R&amp;D Expenditure to Total Expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.311</td>
</tr>
<tr>
<td>Share of R&amp;D Expenditure To Output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Source: Based on Data Given in Table 7.13*

*Significant at 1 percent level

**Significant at 5 percent level
### Table 7.15
Determinants of Competitiveness of Textiles: Results of Regression Analysis

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Total Expenditure</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Exchange Rate</th>
<th>Real Effective Exchange Rate</th>
<th>Relative Export Prices</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-19.033</td>
<td>1.522</td>
<td>0.302</td>
<td>*</td>
<td>-10.245</td>
<td>-2.729</td>
<td></td>
<td></td>
<td></td>
<td>0.937</td>
<td>0.931</td>
<td>169.84</td>
</tr>
<tr>
<td>16.829</td>
<td>1.664</td>
<td>-10.245</td>
<td>(-1.482)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.921</td>
<td>0.915</td>
<td>134.92</td>
</tr>
<tr>
<td>13.831</td>
<td>1.685</td>
<td>0.923</td>
<td>138.71</td>
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<td></td>
<td></td>
<td></td>
<td>138.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.481</td>
<td>3.227</td>
<td>3.227</td>
<td>0.914</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.907</td>
<td>0.907</td>
<td>122.88</td>
</tr>
<tr>
<td>4.797</td>
<td>0.665</td>
<td>0.929</td>
<td>150.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.923</td>
<td>0.923</td>
<td>150.84</td>
</tr>
<tr>
<td>35.103</td>
<td>1.249</td>
<td>0.943</td>
<td>192.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.939</td>
<td>0.939</td>
<td>192.03</td>
</tr>
<tr>
<td>4.780</td>
<td>1.572</td>
<td>1.707</td>
<td>123.68</td>
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<td></td>
<td></td>
<td></td>
<td>0.915</td>
<td>0.908</td>
<td>123.68</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.13
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.16
Multiple (Step-up) Regression Analysis for Textiles

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Exchange Rate</th>
<th>Real Effective Exchange Rate</th>
<th>Relative Export Prices</th>
<th>Export Profitability Index</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Total Expenditure</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>$R^2$ (d.f)</th>
<th>$R^2$ (F-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.797</td>
<td>0.665</td>
<td>0.450 **</td>
<td>0.450 **</td>
<td>0.450 **</td>
<td>-0.154 **</td>
<td>0.450 **</td>
<td>0.929</td>
<td>0.923 (24.2)</td>
<td>0.923</td>
<td>0.923 (150.84)</td>
</tr>
<tr>
<td>31.569</td>
<td>0.433</td>
<td>0.325 **</td>
<td>-0.154 **</td>
<td>-0.154 **</td>
<td>-0.181 **</td>
<td>-0.154 **</td>
<td>0.951</td>
<td>0.944 (23.3)</td>
<td>0.944</td>
<td>0.944 (142.40)</td>
</tr>
<tr>
<td>36.397</td>
<td>0.220</td>
<td>3.679 **</td>
<td>3.679 **</td>
<td>-0.181 **</td>
<td>-0.010 **</td>
<td>-0.181 **</td>
<td>0.954</td>
<td>0.946 (22.4)</td>
<td>0.946</td>
<td>0.946 (109.47)</td>
</tr>
<tr>
<td>38.926</td>
<td>0.278</td>
<td>0.224 **</td>
<td>-0.010 **</td>
<td>-0.010 **</td>
<td>0.929 **</td>
<td>-0.010 **</td>
<td>0.954</td>
<td>0.943 (21.5)</td>
<td>0.943</td>
<td>0.943 (83.46)</td>
</tr>
<tr>
<td>37.948</td>
<td>0.128</td>
<td>0.308 **</td>
<td>-0.217 **</td>
<td>-0.217 **</td>
<td>-0.030 **</td>
<td>-0.217 **</td>
<td>0.956</td>
<td>0.942 (20.6)</td>
<td>0.942</td>
<td>0.942 (68.54)</td>
</tr>
<tr>
<td>48.333</td>
<td>0.030</td>
<td>-0.230 **</td>
<td>-0.230 **</td>
<td>-0.230 **</td>
<td>4.220 **</td>
<td>-0.230 **</td>
<td>0.959</td>
<td>0.943 (19.7)</td>
<td>0.943</td>
<td>0.943 (60.56)</td>
</tr>
<tr>
<td>48.186</td>
<td>0.040</td>
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<td>4.235 **</td>
<td>-0.230 **</td>
<td>-0.080 **</td>
<td>-0.230 **</td>
<td>0.310</td>
<td>0.959 (18.8)</td>
<td>0.959</td>
<td>0.940 (50.05)</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.13
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent
Finally, Share of R&D Expenditure to Output was added in the regression equation. It positively and non-significantly affected export competitiveness. All variables explained about 95.9 percent variations in export competitiveness.

From all the above regression equations, third equation (i.e. combination of Exchange rate, REER and Relative Export Prices) has been found to be the most important regression equation affecting export competitiveness, when adjusted $R^2$ was maximum.

### iii). India’s Machinery & Transport Equipment Exports

Table 7.17 presents the determinants of the exports of Machinery & Transport Equipment. Table shows that share of exports of Machinery & Transport Equipment in output increased from 4.97 percent in 1980-81 to 10.66 percent in 2005-06 indicating increase in competitiveness. Regarding factors affecting competitiveness, Table shows that value of Export Profitability index increased with fluctuations from 77.64 in 1980-81 to 125.91 to 2005-06. Unit Labour Cost (ULC) decreased with fluctuations from Rs. 0.80 lakhs in 1980-81 to Rs. 0.40 lakhs in 2005-06.

### Correlation Matrix of Machinery & Transport Equipment

Table 7.18 shows the correlation of share of exports of Machinery & Transport Equipment to output (export competitiveness) with its determinants and intercorrelation amongst the determinants. The table shows that export competitiveness was significantly correlated with all the determinants. Export competitiveness was positively related with Export Profitability, Relative Export Prices and Exchange Rate, while it was negatively related with REER and Unit Labour Cost. Export Profitability was positively and significantly correlated with Relative Export Prices and Exchange Rate, while it was negatively and significantly correlated with REER and Unit Labour Cost. Relative Export Prices, REER and Unit Labour Cost were significantly correlated among themselves.

### Simple Regression Analysis

Table 7.19 presents the results of simple regression analysis for Machinery & Transport Equipment. The results of regression analysis reveal that of 5 variables considered, only
variable REER significantly affected export competitiveness. REER along with time positively and significantly affected export competitiveness and explained 84.7 percent variations in export competitiveness. Relative Export Prices along with time positively and non-significantly affected export competitiveness and explained 83.2 percent variations in it. Export Profitability and Unit Labour Cost (individually) along with time positively and non-significantly affected export competitiveness. Exchange rate along with time positively and non-significantly affected export competitiveness and explained about 82 percent variations in export competitiveness.

**Multiple (Step-up) Regression**

Table 7.20 shows the results of multiple (step-up) regression for Machinery & Transport Equipment. The results show that in the first step of the regression equation, Exchange Rate has been found to be positively and non-significantly affected export competitiveness. It explained about 82 percent variations in export competitiveness.

The addition of Relative Export Prices (REP) in the equation in second step resulted in a substantial improvement in the value of $R^2$ and adjusted $R^2$ ($R^2$ increased from 0.820 to 0.836 and adjusted $R^2$ from 0.804 to 0.814). REP positively and non-significantly affected export competitiveness.

The addition of Export Profitability in the equation in the third step and REER in the fourth step, lead to a significant improvement in the value of $R^2$ and adjusted $R^2$ ($R^2$ increased from 0.836 to 0.881 and adjusted $R^2$ from 0.814 to 0.851). Export Profitability positively and non-significantly, while REER positively and significantly affected export competitiveness.

Finally, Unit Labour Cost was added in the regression equation. It positively and non-significantly affected export competitiveness. All variables explained about 89.2 percent variations in export competitiveness.

All the above combinations of regression equations have been identified as important combinations affecting export competitiveness, as adjusted $R^2$ has been increasing in all the above combinations.
<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Exports to Output(%)</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange Rate in terms of SDRs</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost (in Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(E/O)</td>
<td>(T)</td>
<td>(EPI)</td>
<td>(REP)</td>
<td>(ER)</td>
<td>(REER)</td>
<td>(ULC)</td>
<td></td>
</tr>
<tr>
<td>1980-81</td>
<td>4.97</td>
<td>1</td>
<td>77.64</td>
<td>0.32</td>
<td>10.26</td>
<td>179.64</td>
<td>0.80</td>
</tr>
<tr>
<td>1981-82</td>
<td>4.98</td>
<td>2</td>
<td>84.13</td>
<td>0.35</td>
<td>10.24</td>
<td>178.95</td>
<td>0.78</td>
</tr>
<tr>
<td>1982-83</td>
<td>4.09</td>
<td>3</td>
<td>90.72</td>
<td>0.41</td>
<td>10.48</td>
<td>172.77</td>
<td>0.76</td>
</tr>
<tr>
<td>1983-84</td>
<td>3.59</td>
<td>4</td>
<td>94.46</td>
<td>0.45</td>
<td>10.83</td>
<td>176.87</td>
<td>0.79</td>
</tr>
<tr>
<td>1984-85</td>
<td>3.83</td>
<td>5</td>
<td>89.64</td>
<td>0.53</td>
<td>11.65</td>
<td>169.98</td>
<td>0.74</td>
</tr>
<tr>
<td>1985-86</td>
<td>3.59</td>
<td>6</td>
<td>76.70</td>
<td>0.63</td>
<td>12.56</td>
<td>165.59</td>
<td>0.80</td>
</tr>
<tr>
<td>1986-87</td>
<td>3.85</td>
<td>7</td>
<td>80.34</td>
<td>0.56</td>
<td>14.81</td>
<td>152.51</td>
<td>0.54</td>
</tr>
<tr>
<td>1987-88</td>
<td>3.97</td>
<td>8</td>
<td>68.40</td>
<td>0.51</td>
<td>16.76</td>
<td>144.51</td>
<td>0.78</td>
</tr>
<tr>
<td>1988-89</td>
<td>4.51</td>
<td>9</td>
<td>74.67</td>
<td>0.52</td>
<td>18.70</td>
<td>135.83</td>
<td>0.78</td>
</tr>
<tr>
<td>1989-90</td>
<td>5.11</td>
<td>10</td>
<td>73.12</td>
<td>0.67</td>
<td>20.79</td>
<td>130.89</td>
<td>0.71</td>
</tr>
<tr>
<td>1990-91</td>
<td>5.23</td>
<td>11</td>
<td>77.67</td>
<td>0.77</td>
<td>23.79</td>
<td>124.10</td>
<td>0.66</td>
</tr>
<tr>
<td>1991-92</td>
<td>6.45</td>
<td>12</td>
<td>98.43</td>
<td>0.83</td>
<td>31.10</td>
<td>103.84</td>
<td>0.67</td>
</tr>
<tr>
<td>1992-93</td>
<td>5.94</td>
<td>13</td>
<td>94.78</td>
<td>0.95</td>
<td>36.51</td>
<td>92.10</td>
<td>0.65</td>
</tr>
<tr>
<td>1993-94</td>
<td>7.18</td>
<td>14</td>
<td>100.00</td>
<td>1.00</td>
<td>42.63</td>
<td>100.00</td>
<td>0.66</td>
</tr>
<tr>
<td>1994-95</td>
<td>6.71</td>
<td>15</td>
<td>86.41</td>
<td>1.2</td>
<td>44.93</td>
<td>103.30</td>
<td>0.39</td>
</tr>
<tr>
<td>1995-96</td>
<td>6.58</td>
<td>16</td>
<td>63.17</td>
<td>1.1</td>
<td>49.18</td>
<td>101.00</td>
<td>0.56</td>
</tr>
<tr>
<td>1996-97</td>
<td>7.76</td>
<td>17</td>
<td>82.06</td>
<td>1.22</td>
<td>51.44</td>
<td>95.41</td>
<td>0.54</td>
</tr>
<tr>
<td>1997-98</td>
<td>8.01</td>
<td>18</td>
<td>97.88</td>
<td>1.24</td>
<td>49.96</td>
<td>100.40</td>
<td>0.59</td>
</tr>
<tr>
<td>1998-99</td>
<td>8.26</td>
<td>19</td>
<td>110.55</td>
<td>1.87</td>
<td>56.03</td>
<td>94.52</td>
<td>0.62</td>
</tr>
<tr>
<td>1999-00</td>
<td>8.21</td>
<td>20</td>
<td>104.38</td>
<td>2.38</td>
<td>58.88</td>
<td>95.29</td>
<td>0.58</td>
</tr>
<tr>
<td>2000-01</td>
<td>11.87</td>
<td>21</td>
<td>96.99</td>
<td>2.62</td>
<td>59.25</td>
<td>99.30</td>
<td>0.64</td>
</tr>
<tr>
<td>2001-02</td>
<td>12.61</td>
<td>22</td>
<td>102.15</td>
<td>2.06</td>
<td>60.08</td>
<td>100.90</td>
<td>0.60</td>
</tr>
<tr>
<td>2002-03</td>
<td>12.82</td>
<td>23</td>
<td>107.26</td>
<td>1.97</td>
<td>62.95</td>
<td>98.90</td>
<td>0.58</td>
</tr>
<tr>
<td>2003-04</td>
<td>14.89</td>
<td>24</td>
<td>120.57</td>
<td>2.02</td>
<td>65.22</td>
<td>99.04</td>
<td>0.50</td>
</tr>
<tr>
<td>2004-05</td>
<td>12.17</td>
<td>25</td>
<td>111.06</td>
<td>2.03</td>
<td>67.11</td>
<td>99.68</td>
<td>0.45</td>
</tr>
<tr>
<td>2005-06</td>
<td>10.66</td>
<td>26</td>
<td>125.91</td>
<td>2.05</td>
<td>65.14</td>
<td>102.20</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Table 7.18
Correlation Matrix of Determinants of Machinery & Transport Equipment

<table>
<thead>
<tr>
<th></th>
<th>E/O</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/O</td>
<td>1.000</td>
<td></td>
<td>0.898 (***)</td>
<td>0.733 (*)</td>
<td>0.891 (*)</td>
<td>-0.701 (*)</td>
<td>-0.646 (*)</td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td>1.000</td>
<td>0.681 (*)</td>
<td>0.923 (*)</td>
<td>0.981 (*)</td>
<td>-0.885 (*)</td>
<td>-0.794 (*)</td>
</tr>
<tr>
<td>Export Profitability Index</td>
<td>1.000</td>
<td></td>
<td>0.706 (*)</td>
<td>0.679 (*)</td>
<td>-0.474 (**)</td>
<td>-0.519 (*)</td>
<td></td>
</tr>
<tr>
<td>Relative Export Prices</td>
<td>1.000</td>
<td></td>
<td>0.931 (*)</td>
<td>-0.761 (*)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Rate</td>
<td></td>
<td>1.000</td>
<td>-0.889 (*)</td>
<td>-0.790 (*)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Effective Exchange Rate</td>
<td></td>
<td>1.000</td>
<td>0.721 (*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Labour Cost</td>
<td></td>
<td></td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.17
*Significant at 1 percent level
**Significant at 5 percent level
Table 7.19  
Determinants of Competitiveness of Machinery & Transport Equipment: Results of Simple Regression Analysis

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Unit Labour Cost</th>
<th>Real Effective Exchange Rate</th>
<th>Exchange Rate</th>
<th>R²</th>
<th>( \bar{R}² )</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.522</td>
<td>0.324</td>
<td>0.004</td>
<td></td>
<td></td>
<td></td>
<td>0.834</td>
<td>0.819</td>
<td>57.65</td>
<td></td>
</tr>
<tr>
<td>1.936</td>
<td>0.223</td>
<td></td>
<td>1.954</td>
<td></td>
<td></td>
<td>0.832</td>
<td>0.817</td>
<td>56.95</td>
<td></td>
</tr>
<tr>
<td>-1.773</td>
<td>0.450</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.816</td>
<td>0.801</td>
<td>51.17</td>
<td></td>
</tr>
<tr>
<td>-5.935</td>
<td>0.561</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.847</td>
<td>0.834</td>
<td>63.78</td>
<td></td>
</tr>
<tr>
<td>1.937</td>
<td>0.134</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.009</td>
<td>0.820</td>
<td>0.804</td>
<td>52.31</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.17  
Note: Figures in parentheses are 't' values  
*Significant at 1 percent level  
**Significant at 5 percent level
Table 7.20
Multiple Step-up Regression for Machinery & Transport Equipment

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Exchange Rate</th>
<th>Relative Export Prices</th>
<th>Export Profitability Index</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>R² (d.f)</th>
<th>( \bar{R}^2 ) (F-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.937(3.246)</td>
<td>0.134(0.676)</td>
<td>0.094(1.324)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.820(24.2)</td>
<td>0.804(52.31)</td>
</tr>
<tr>
<td>1.938(3.335)</td>
<td>0.090(0.478)</td>
<td>0.051(0.769)</td>
<td>1.663(1.494)</td>
<td></td>
<td></td>
<td></td>
<td>0.836(23.3)</td>
<td>0.814(37.493)</td>
</tr>
<tr>
<td>-0.840(-0.443)</td>
<td>0.070(0.379)</td>
<td>0.050(0.825)</td>
<td>1.205(1.075)</td>
<td>0.030(1.536)</td>
<td></td>
<td></td>
<td>0.853(22.4)</td>
<td>0.825(30.448)</td>
</tr>
<tr>
<td>-7.310(-2.099)</td>
<td>0.175(0.963)</td>
<td>0.118(1.654)</td>
<td>0.344(0.310)</td>
<td>0.020(0.843)</td>
<td>0.040 **(2.149)</td>
<td>0.881(21.5)</td>
<td>0.851(29.479)</td>
<td></td>
</tr>
<tr>
<td>-12.067(-2.527)</td>
<td>0.236(1.293)</td>
<td>0.143(1.993)</td>
<td>-0.257(-0.221)</td>
<td>0.020(0.865)</td>
<td>0.040 **(2.351)</td>
<td>5.162(1.418)</td>
<td>0.892(20.6)</td>
<td>0.858(26.142)</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.17
Note: Figures in parentheses are ‘t’ values
*Significant at 1 percent level
**Significant at 5 percent level
iv). India’s Other Manufactured Goods Exports

Table 7.21 presents the determinants of the export competitiveness of Other Manufactured Goods. Table shows that share of the exports of Other Manufactured Goods in output increased from 5.54 percent in 1980-81 to 10.47 percent in 2005-06 indicating increase in competitiveness. Regarding factors affecting competitiveness, Table shows that value of Export Profitability Index increased from 24.39 in 1980-81 to 110.65 in 2005-06 with some fluctuations. Unit Labour Cost (ULC) of Other Manufactured Goods decreased with fluctuations from Rs. 0.78 lakhs in 1980-81 to Rs. 0.41 lakhs in 2005-06. Share of R&D Expenditure to Total Expenditure (R&D/T) increased from 1.06 percent in 1980-81 to 4.90 percent in 2005-06 with some fluctuations in-between. Share of R&D Expenditure to Output (R&D/O) increased from 0.42 percent in 1980-81 to 1.05 percent in 1984-85, afterwards tended to decrease and reached at same level as of 1980-81 in 2005-06.

Correlation Matrix

Table 7.22 shows the correlation of share of exports of Other Manufactured Goods to output (export competitiveness) with its determinants and intercorrelation amongst the determinants. The table shows that export competitiveness was significantly correlated with all the variables (except R&D/O). Export competitiveness was positively related with Export Profitability, Relative Exports Prices, Exchange Rate and R&D/T, while it was negatively related with REER and Unit Labour Cost. Export Profitability was positively and significantly correlated with Relative Export Prices, Exchange Rate and Share of R&D Expenditure to Total Expenditure (R&D/T), while it was negatively and significantly correlated with REER, Unit Labour Cost and Share of R&D Expenditure to Output (R&D/O). Relative Export Prices were significantly correlated with Exchange Rate, REER, Unit Labour Cost and R&D/T. Exchange Rate, REER and Unit Labour Cost were significantly correlated among themselves. Unit Labour Cost was significantly and positively related with R&D/T, while it was significantly and negatively related with R&D/O.

Simple Regression Analysis

Table 7.23 presents the results of regression analysis for Other Manufactured Goods. The results reveal that of 7 variables considered, only one variable namely Share of R&D
Expenditure to Output (R&D/O) significantly affected export competitiveness. Share of R&D Expenditure to Output (R&D/O) positively and significantly affected export competitiveness and explained about 44.2 percent variations in it. Export Profitability and Share of R&D Expenditure to Total Expenditure (R&D/T) individually positively and non-significantly affected export competitiveness. Relative Export Prices, Exchange Rate, REER and Unit Labour Cost individually along with time negatively and non-significantly affected export competitiveness.

**Multiple (Step-up) Regression analysis**

Table 7.24 presents the results of multiple (step-up) regression analysis for Other Manufactured Goods. The results show that in the first step of regression equation, Share of R&D Expenditure to Total Expenditure has been found to be positively and non-significantly affecting export competitiveness. It explained about 37.7 percent variations in export competitiveness.

The addition of Export Profitability in the regression equation in the second step and REER in third step resulted in a substantial improvement in the value of \( R^2 \) and adjusted \( R^2 \) (\( R^2 \) increased to 0.555 and adjusted \( R^2 \) to 0.470). Export profitability positively and non-significantly, while REER negatively and significantly affected export competitiveness. The R&D/T became significant in third step of the equation.

The addition of Exchange rate in the equation in fourth step resulted in a drastic reduction in the value adjusted \( R^2 \) (i.e. it decreased from 0.470 to 0.444), while \( R^2 \) remained the same. It positively and non-significantly affected the export competitiveness.

Unit Labour Cost was added in the equation in the fifth step. It negatively and non-significantly affected export competitiveness. The value of \( R^2 \) and adjusted \( R^2 \) further improved. The addition of Relative Export Prices in the equation in sixth step lead to reduction in the value of adjusted \( R^2 \), while the value of \( R^2 \) improved to 0.589.

Finally, R&D/O was added in the regression equation. It positively and non-significantly affected the export competitiveness. All the variables explained about 60.9 percent variations in export competitiveness.

From all the above combinations, third combination (i.e. R&D/T, Export Profitability and REER) has been found to be the most important combination affecting export competitiveness, when adjusted \( R^2 \) was maximum.
v). India’s Non-Metallic Minerals Exports

Table 7.25 shows the determinants of the export competitiveness of Non-Metallic Minerals. Table shows that share of the exports of Non-Metallic Minerals in output increased from 38.44 percent in 1980-81 to 68.99 percent in 2005-06 indicating increase in competitiveness. Regarding factors affecting competitiveness, Table shows that value of Export Profitability index has been widely fluctuating (as value increased from 48.50 in 1980-81 to 164.84 in 1999-00 but again decreased to 88.24 in 2005-06). Unit Labour Cost (ULC) of Non-Metallic Minerals has been decreasing with fluctuations and value decreased from Rs 0.82 lakhs in 1980-81 to Rs 0.28 lakhs in 2005-06.

Correlation Matrix

Table 7.26 shows that correlation of share of the exports of Non-Metallic Minerals to output (export competitiveness) with its determinants and intercorrelation amongst determinants. Table shows that export competitiveness was significantly correlated with all the determinants (except with Unit Labour Cost). Export competitiveness was positively related with Relative Export Prices and Exchange Rate, while it was negatively related with REER. Export Profitability was positively and significantly correlated with Relative Export Prices, Exchange Rate, while negatively and significantly correlated with REER. Relative Export Prices, Exchange Rate and REER were significantly correlated among themselves.

Simple Regression Analysis

The results of regression analysis for Non-Metallic Minerals are presented in Table 7.27. The results reveal that of 5 variables considered, two variables namely Export Profitability and REER significantly affected export competitiveness. Export Profitability along with time positively and significantly affected export competitiveness and explained about 80.8 percent variations in it. REER along with time negatively and significantly affected export competitiveness and explained about 79.2 percent variations in it. Relative Export Prices, Exchange Rate and Unit Labour Cost individually along with time positively and non-significantly affected export competitiveness and explained about 70.5 percent, 74.4 percent and 72 percent variations respectively in it.
Multiple (Step-up) Regression Analysis

Table 7.28 shows the results of multiple (step-up) regression analysis for Non-Metallic Minerals. The results show that in the first step of the regression equation, Relative Export Prices (REP) have been found to be positively and non-significantly affected export competitiveness. It explained about 70.5 percent variations in export competitiveness. REER was added in the equation in second step. It resulted in substantial improvement in the value of $R^2$ and adjusted $R^2$ ($R^2$ increased from 0.705 to 0.815 and adjusted $R^2$ from 0.780 to 0.789). REER negatively and significantly affected export competitiveness.

The addition of Exchange Rate in the equation in third step lead to further improvement in the value of $R^2$, while adjusted $R^2$ slightly declined ($R^2$ increased to 0.821 and adjusted $R^2$ to 0.787). Exchange Rate positively and non-significantly affected export competitiveness.

Export profitability was added in the equation in fifth step. It lead to substantial improvement in the value of $R^2$ and adjusted $R^2$ ($R^2$ increased from 0.821 to 0.841 and adjusted $R^2$ from 0.787 to 0.801). It positively and non-significantly affected export competitiveness.

Finally, Unit Labour Cost was added in the equation leading to improvement in the value of $R^2$ and adjusted $R^2$. It positively and non-significantly affected export competitiveness. All variables explained about 85.2 percent variations in export competitiveness.

From all the above combinations of regression equations as well final combination (Relative Export Prices, REER, Exchange Rate, Export Profitability and Unit Labour Cost) has been found to be the most important combinations affecting export competitiveness, when adjusted $R^2$ was maximum.
### Table 7.21
Comparative Competitiveness of India’s Other Manufactured Goods Exports and their Determinants (1980-81 to 2005-06)

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Exports to Output (%)</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange Rate in terms of SDRs</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost (in Lakhs)</th>
<th>Share of R&amp;D Expenditure to Total Expenditure(%)</th>
<th>Share of R&amp;D Expenditure to Output(%)</th>
</tr>
</thead>
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Table 7.22
Correlation Matrix of Determinants of Other Manufactured Goods

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<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
<th>Share of R&amp;D Expenditure to Total Expenditure (R&amp;D/T)</th>
<th>Share of R&amp;D Expenditure to Output (R&amp;D/O)</th>
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<td>0.568 (*)</td>
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<td>0.594 (*)</td>
<td>0.442 (**)</td>
<td>-0.575 (*)</td>
<td>-0.454 (**)</td>
<td>0.607 (*)</td>
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<tr>
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Source: Based on Data Given in Table 7.21

*Significant at 1 percent level
**Significant at 5 percent level
### Table 7.23

**Competitiveness of Other Manufactured Goods: Results of Simple Regression Analysis**

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<th>Constant</th>
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<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange Rate</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>Share of R&amp;D Expenditure to Total Expenditure</th>
<th>R²</th>
<th>R²</th>
<th>F-Value</th>
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<td>0.002</td>
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<td>6.570</td>
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<td>(-0.913)</td>
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<tr>
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<td>-0.005</td>
<td>-1.116</td>
<td>-0.003</td>
<td>-0.001</td>
<td>0.364</td>
<td>0.275</td>
<td>5.753</td>
<td>0.333</td>
<td>6.082</td>
</tr>
<tr>
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<td>(-0.913)</td>
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*Source: Based on Data Given in Table 7.21*

*Note: Figures in parentheses are 't' values*

*Significant at 1 percent level*

**Significant at 5 percent level*
Table 7.24
Multiple (Step-up) Regression analysis for Other Manufactured Goods

<table>
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<tr>
<th>Constant</th>
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<th>Share of R&amp;D Expenditure to Total Expenditure</th>
<th>Export Profitability Index</th>
<th>Real Effective Exchange Rate</th>
<th>Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>Relative Export Prices</th>
<th>Share of R&amp;D Expenditure to Output</th>
<th>$R^2$ (d.f)</th>
<th>$\bar{R}^2$ (F-value)</th>
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<td>0.059</td>
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<td>(2.217)</td>
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<td>(-1.050)</td>
<td>(19.7)</td>
<td>(3.68)</td>
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<td>14.531</td>
<td>-0.282</td>
<td>1.246</td>
<td>-0.008</td>
<td>0.004</td>
<td>0.050</td>
<td>2.920</td>
<td>-0.684</td>
<td>1.987</td>
<td>0.609</td>
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<td>(1.843)</td>
<td>(-1.187)</td>
<td>(1.6003)</td>
<td>(-0.297)</td>
<td>(-1.191)</td>
<td>(0.642)</td>
<td>(-1.111)</td>
<td>(-0.618)</td>
<td>(0.931)</td>
<td>(18.8)</td>
<td>(3.31)</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.21
Note: Figures in parentheses are t-values
* Significant at 1 percent level
** Significant at 5 percent level
<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Exports to Output(%)</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange Rate in terms of SDRs</th>
<th>Real Effective Exchange Rate</th>
<th>Unit Labour Cost (in Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(E/O)</td>
<td>(T)</td>
<td>(EPI)</td>
<td>(REP)</td>
<td>(ER)</td>
<td>(REER)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980-81</td>
<td>38.44</td>
<td>1</td>
<td>48.50</td>
<td>0.32</td>
<td>10.26</td>
<td>179.64</td>
<td>0.82</td>
</tr>
<tr>
<td>1981-82</td>
<td>39.28</td>
<td>2</td>
<td>53.57</td>
<td>0.35</td>
<td>10.24</td>
<td>178.95</td>
<td>0.80</td>
</tr>
<tr>
<td>1982-83</td>
<td>36.18</td>
<td>3</td>
<td>51.24</td>
<td>0.41</td>
<td>10.48</td>
<td>172.77</td>
<td>0.65</td>
</tr>
<tr>
<td>1983-84</td>
<td>39.33</td>
<td>4</td>
<td>49.94</td>
<td>0.45</td>
<td>10.83</td>
<td>176.87</td>
<td>0.61</td>
</tr>
<tr>
<td>1984-85</td>
<td>30.93</td>
<td>5</td>
<td>49.69</td>
<td>0.53</td>
<td>11.65</td>
<td>169.98</td>
<td>0.56</td>
</tr>
<tr>
<td>1985-86</td>
<td>32.21</td>
<td>6</td>
<td>50.62</td>
<td>0.63</td>
<td>12.56</td>
<td>165.59</td>
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<td>1986-87</td>
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<td>7</td>
<td>57.29</td>
<td>0.56</td>
<td>14.81</td>
<td>152.51</td>
<td>0.64</td>
</tr>
<tr>
<td>1987-88</td>
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<td>56.92</td>
<td>0.51</td>
<td>16.76</td>
<td>144.51</td>
<td>0.59</td>
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<tr>
<td>1988-89</td>
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<td>9</td>
<td>73.65</td>
<td>0.52</td>
<td>18.70</td>
<td>135.83</td>
<td>0.60</td>
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<tr>
<td>1989-90</td>
<td>55.79</td>
<td>10</td>
<td>93.18</td>
<td>0.67</td>
<td>20.79</td>
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<td>0.55</td>
</tr>
<tr>
<td>1990-91</td>
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<td>11</td>
<td>94.84</td>
<td>0.77</td>
<td>23.79</td>
<td>124.10</td>
<td>0.45</td>
</tr>
<tr>
<td>1991-92</td>
<td>57.77</td>
<td>12</td>
<td>102.89</td>
<td>0.83</td>
<td>31.10</td>
<td>103.84</td>
<td>0.39</td>
</tr>
<tr>
<td>1992-93</td>
<td>71.08</td>
<td>13</td>
<td>103.00</td>
<td>0.95</td>
<td>36.51</td>
<td>92.10</td>
<td>0.52</td>
</tr>
<tr>
<td>1993-94</td>
<td>71.81</td>
<td>14</td>
<td>100.00</td>
<td>1.00</td>
<td>42.63</td>
<td>100.00</td>
<td>0.53</td>
</tr>
<tr>
<td>1994-95</td>
<td>89.21</td>
<td>15</td>
<td>90.17</td>
<td>1.2</td>
<td>44.93</td>
<td>103.30</td>
<td>0.32</td>
</tr>
<tr>
<td>1995-96</td>
<td>57.84</td>
<td>16</td>
<td>82.28</td>
<td>1.1</td>
<td>49.18</td>
<td>101.00</td>
<td>0.40</td>
</tr>
<tr>
<td>1996-97</td>
<td>68.58</td>
<td>17</td>
<td>81.14</td>
<td>1.22</td>
<td>51.44</td>
<td>95.41</td>
<td>0.34</td>
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<td>1997-98</td>
<td>84.11</td>
<td>18</td>
<td>128.35</td>
<td>1.24</td>
<td>49.96</td>
<td>100.40</td>
<td>0.43</td>
</tr>
<tr>
<td>1998-99</td>
<td>88.18</td>
<td>19</td>
<td>149.00</td>
<td>1.87</td>
<td>56.03</td>
<td>94.52</td>
<td>0.46</td>
</tr>
<tr>
<td>1999-00</td>
<td>85.44</td>
<td>20</td>
<td>164.84</td>
<td>2.38</td>
<td>58.88</td>
<td>95.29</td>
<td>0.39</td>
</tr>
<tr>
<td>2000-01</td>
<td>84.23</td>
<td>21</td>
<td>102.32</td>
<td>2.62</td>
<td>59.25</td>
<td>99.30</td>
<td>0.41</td>
</tr>
<tr>
<td>2001-02</td>
<td>73.64</td>
<td>22</td>
<td>85.42</td>
<td>2.06</td>
<td>60.08</td>
<td>100.90</td>
<td>0.43</td>
</tr>
<tr>
<td>2002-03</td>
<td>80.78</td>
<td>23</td>
<td>101.12</td>
<td>1.97</td>
<td>62.95</td>
<td>98.90</td>
<td>0.50</td>
</tr>
<tr>
<td>2003-04</td>
<td>75.72</td>
<td>24</td>
<td>93.05</td>
<td>2.02</td>
<td>65.22</td>
<td>99.04</td>
<td>0.42</td>
</tr>
<tr>
<td>2004-05</td>
<td>81.71</td>
<td>25</td>
<td>100.82</td>
<td>2.03</td>
<td>67.11</td>
<td>99.68</td>
<td>0.34</td>
</tr>
<tr>
<td>2005-06</td>
<td>68.99</td>
<td>26</td>
<td>88.24</td>
<td>2.05</td>
<td>65.14</td>
<td>102.20</td>
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### Table 7.26
Correlation Matrix of Determinants of Non Metallic Minerals

<table>
<thead>
<tr>
<th></th>
<th>E/O</th>
<th>Time</th>
<th>Export Profitability Index (EPI)</th>
<th>Relative Export Prices (REP)</th>
<th>Exchange Rate (ER)</th>
<th>Real Effective Exchange Rate (REER)</th>
<th>Unit Labour Cost (ULC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E/O</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Profitability Index</td>
<td>1.00</td>
<td></td>
<td>0.696(*)</td>
<td>0.712(*)</td>
<td>-0.803(*)</td>
<td>-0.366(*)</td>
<td></td>
</tr>
<tr>
<td>Relative Export Prices</td>
<td></td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.889(*)</td>
<td>-0.536(*)</td>
<td></td>
</tr>
<tr>
<td>Real Effective Exchange Rate</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>0.546(*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Labour Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.25

*Significant at 1 percent level
**Significant at 5 percent level
Table 7.27
Determinants of Competitiveness of Non-Metallic Minerals: Results of Simple Regression Analysis

<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Export Profitability Index</th>
<th>Relative Export Prices</th>
<th>Exchange Rate</th>
<th>Unit Labour Cost</th>
<th>Real Effective Exchange Rate</th>
<th>$R^2$</th>
<th>$-R^2$</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.505</td>
<td>1.338 **</td>
<td>0.286 *</td>
<td>0.286</td>
<td>1.833 ** **</td>
<td>3.365</td>
<td>0.808</td>
<td>0.791</td>
<td>48.420</td>
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</tr>
<tr>
<td>(3.639)</td>
<td>(4.179)</td>
<td>(3.548)</td>
<td>(3.548)</td>
<td>(2.461)</td>
<td>(0.422)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.686</td>
<td>-0.472</td>
<td>0.946</td>
<td>19.170</td>
<td>0.720</td>
<td>0.744</td>
<td>33.720</td>
<td>0.680</td>
<td>27.521</td>
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</tr>
<tr>
<td>(7.611)</td>
<td>(-0.186)</td>
<td>(1.930)</td>
<td>(1.781)</td>
<td>(8.181)</td>
<td>(0.422)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>21.321</td>
<td>2.357 **</td>
<td>19.170</td>
<td>0.720</td>
<td>0.720</td>
<td>0.722</td>
<td>21.321</td>
<td>0.696</td>
<td>29.562</td>
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</tr>
<tr>
<td>(1.879)</td>
<td>(6.873)</td>
<td>(1.781)</td>
<td>(1.781)</td>
<td>(1.879)</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>100.905</td>
<td>0.681</td>
<td>-0.386</td>
<td>0.792</td>
<td>0.774</td>
<td>43.905</td>
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</tr>
<tr>
<td>(4.655)</td>
<td>(1.316)</td>
<td>(-3.147)</td>
<td>(-3.147)</td>
<td>(4.655)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.25
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent level
<table>
<thead>
<tr>
<th>Constant</th>
<th>Time</th>
<th>Relative Export Prices</th>
<th>Real Effective Exchange Rate</th>
<th>Exchange Rate</th>
<th>Export Profitability Index</th>
<th>Unit Labour Cost</th>
<th>$R^2$ (d.f)</th>
<th>$\bar{R^2}$ (F-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.686</td>
<td>1.833 *</td>
<td>3.365</td>
<td>1.833</td>
<td></td>
<td></td>
<td>0.705</td>
<td>(24,2)</td>
<td>0.780</td>
</tr>
<tr>
<td>(7.611)</td>
<td>(2.461)</td>
<td>(0.422)</td>
<td>(2.461)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(27.52)</td>
</tr>
<tr>
<td>111.97</td>
<td>-0.509</td>
<td>4.050</td>
<td>-0.449 *</td>
<td></td>
<td></td>
<td>0.815</td>
<td>(23,3)</td>
<td>0.789</td>
</tr>
<tr>
<td>(5.084)</td>
<td>(-0.574)</td>
<td>(1.623)</td>
<td>(-3.602)</td>
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<td></td>
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<td>(32.23)</td>
</tr>
<tr>
<td>104.22</td>
<td>-1.278</td>
<td>8.041</td>
<td>-0.405 *</td>
<td></td>
<td></td>
<td>0.821</td>
<td>(22,4)</td>
<td>0.787</td>
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<tr>
<td>(4.380)</td>
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<td>(1.053)</td>
<td>(-2.997)</td>
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<td></td>
<td>(24.13)</td>
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<tr>
<td>63.078</td>
<td>-0.713</td>
<td>1.548</td>
<td>-0.218</td>
<td></td>
<td></td>
<td>0.841</td>
<td>(21,5)</td>
<td>0.801</td>
</tr>
<tr>
<td>(1.810)</td>
<td>(-0.568)</td>
<td>(0.183)</td>
<td>(-1.236)</td>
<td></td>
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<td></td>
<td></td>
<td>(21.15)</td>
</tr>
<tr>
<td>60.615</td>
<td>-0.279</td>
<td>2.584</td>
<td>-0.259</td>
<td></td>
<td></td>
<td>16.282</td>
<td>(20,6)</td>
<td>0.805</td>
</tr>
<tr>
<td>(1.754)</td>
<td>(-0.216)</td>
<td>(0.307)</td>
<td>(-1.456)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(18.22)</td>
</tr>
</tbody>
</table>

Source: Based on Data Given in Table 7.25
Note: Figures in parentheses are 't' values
*Significant at 1 percent level
**Significant at 5 percent level
From the above analysis it is revealed that variable Exchange Rate positively and significantly affected the Total Exports, Total Manufactured Exports and exports of Textiles, while for all other categories of exports, it turned out to be non-significant. REER negatively and significantly affected the exports of Textiles and Non-Metallic Minerals. Whereas, for all other categories it non-significantly affected the export competitiveness. Export Profitability turned out to be positive and significant in case of Textiles and Non-Metallic Minerals, while it was found to be non-significant in case of all other categories. Relative Export Prices negatively and significantly affected the export competitiveness only in case of Total Exports, while it turned out to be non-significant in case of all other categories. Unit Labour Cost was found non-significant in case of all categories. Share of R&D Expenditure to Output negatively and significantly affected Total Manufactured Exports, while positively and significantly affected Other Manufactured Goods. Whereas, it non-significantly affected export competitiveness of all other categories. R&D/T negatively and significantly affected the export of Chemicals, while it turned out to be non significant in case of all other categories.

Results of step-up multiple regression reveal that the most important combination for total exports has been found to be the combination of Exchange Rate, Unit Labour Cost and Share of R&D Expenditure to Output. Exchange rate has been found to be the most important variable affecting export competitiveness of Manufactured Exports. The combination of Exchange Rate, Share of R&D Expenditure to Output, REER, Unit Labour Cost and Relative Export Prices has been found to be most important affecting export competitiveness of Chemicals. The combination of Exchange Rate, REER and Relative Export Prices have been found to be the most important affecting export competitiveness of Textiles The most important combination affecting export competitiveness of Other Manufactured Goods has been found to be the combination of Share of R&D
Expenditure to Total Expenditure, Export Profitability and REER. The combination of Relative Export Prices, REER, Exchange Rate, Export Profitability and Unit Labour Cost has been found to be most important variables affecting export competitiveness of Non-Metallic Minerals. The combinations of all variables [i.e. (Exchange Rate), (Exchange Rate, Relative Export Prices), (Exchange Rate, Relative Export Prices and Export Profitability), (Exchange Rate, Relative Export Prices, Export Profitability and REER), (Exchange Rate, Relative Export Prices, Export Profitability, REER and Unit Labour Cost)] are equally important affecting the export competitiveness of Machinery & Transport Equipment, as adjusted $R^2$ has been increasing in all the above combinations.