CHAPTER EIGHT
DIVERSIFICATION AND SOME MAJOR INDUSTRY CHARACTERISTICS
As noticed in Chapters V and VI, there is a cluster of industries which are characterised by high attraction power, that is, in which entries are most frequently made by diversifying companies. But, now the question arises as to what are the characteristics of such industries or with what group of economic variables do these industries distinguish themselves from other industries which have failed to become cynosure of diversifying companies. To answer this type of question, a set of hypotheses about the characteristics of diversifying industries were set up in Chapter II. This Chapter explores the possibilities of their empirical verification.

Diversification, whether adopted as a policy of aggression, defence, stability, or growth by a business enterprise, is a function of multiple variables and therefore, multiple regression analysis is the most appropriate statistical technique for understanding the influence of the variables involved. But due to the non-availability of necessary data, particularly relating to the magnitude of activity heterogeneity expressed in terms of a proportion of either employment or capital invested in primary industry
to all industries entered by the companies, multiple regression analysis is not used. Instead each explanatory characteristic is correlated separately with the number of activities added by the companies. This procedure of using one explanatory characteristic at a time is hedged with a limitation that it does not precisely portray the net effect of a given characteristic in explaining the variation of activity additions or diversification. Nevertheless, the relationship of the frequency of activity additions with each explanatory variable at a time is of immense interest because an inference like a positive correlation between frequency of activity additions and growth of an industry carries one to a conclusion that the process of diversification, by accentuating the flow of resources towards rapidly growing industries, contributes to the latter’s growth. Similarly, a positive association between diversification and high seller concentration of the industries may be interpreted that diversification is an important countervailing force to the monopolistic tendencies of the industries. Again, if the data reveal a negative association between diversification and cyclical vicissitudes of industries, it can be safely concluded that diversification checks business instability. Likewise many more illustrations can be given and all these inferences are not affected by the presence of correlation between several variables used simultaneously to analyse diversification. Due to this reason a separate correlation analysis of
frequency of activity additions with one explanatory characteristic at a time is adopted. This sort of analysis definitely contributes to the knowledge about consequences of diversification.¹

While examining trends in diversification over time in Chapter VI it is seen that the information about activity composition is available for 89 companies out of the 100 companies sample and among the former, 5 companies commenced their manufacturing activities during 1951-60. In order to correlate the frequency of activity additions with the explanatory variables about characteristics of industries, manufacturing activity additions² of 84 companies for the period 1951-67 are considered as this group of companies commenced their manufacturing operations before 1951. The various explanatory variables used, the methods of their computation and sources of basic information are discussed in Appendix I.

INDUSTRY GROWTH

As viewed in Chapter II that 'Growth commodity

¹This is because the presence of an association of an explanatory variable with diversification means that the explanatory variable exerts an influence on diversification whereas an absence of relationship implies that diversification is least influenced by the industry characteristics under investigation.

²Henceforth the term activity would refer to manufacturing activity.
industries are normally characterised by cost reduction either due to economies of scale or governmental subsidies and protections, the return on investments from such prospective industries is, therefore, expected to be high. Since the reaping of high profits is one of the major objectives of a company, it, therefore, follows that, in the absence of rapid growth possibilities within the primary industry of a company, there is more possibility for the companies to diversify into such industries.

For an empirical examination of the validity of the hypothesis, the average annual growth rates of 51 manufacturing industries and 16 manufacturing industrial groups for the period 1954-63 (given in Appendices VI and VII respectively) are grouped into four quartiles and each of the activity additions is classified on the basis of its growth into one of the quartiles of growth. The distribution of the frequencies of activity additions is given in Table 48, which discloses that the frequency of activity additions increases with an increase in the magnitude of industry growth. Since the number of activity additions is higher in the upper two classes of industry growth than what is expected under the null hypothesis (that the distribution of activity addition is independent of growth of industries) the inference emerging is that there is a positive association between industry growth and diversification.

The results are essentially similar and comparatively
TABLE 48. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO GROWTH OF INDUSTRIES.

<table>
<thead>
<tr>
<th>Industry growth groups</th>
<th>Total activity additions</th>
<th>Activity additions in non-primary industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>19</td>
<td>52</td>
</tr>
<tr>
<td>II</td>
<td>21</td>
<td>52</td>
</tr>
<tr>
<td>III</td>
<td>70</td>
<td>52</td>
</tr>
<tr>
<td>IV</td>
<td>78</td>
<td>52</td>
</tr>
<tr>
<td>Unclassified</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Primary industry</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.

more striking, because of the higher value of chi-square, when the frequency of activity additions outside the 2-digit primary industries are examined. This further supports the validity of the hypothesis that activity additions are made into high growth industries irrespective of the fact whether these industries are technologically adjacent to the primary industries of the companies or not.

Similar results are obtained when the 16, 2-digit industrial groups are arranged in growth quartiles and the
activity additions are distributed among them on the basis of their 2-digit industry growth. The necessary data are set up in Table 49.

**TABLE 49. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO GROWTH OF INDUSTRIAL GROUPS.**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Total activity additions</th>
<th>Activity additions in non-primary industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theo-</td>
</tr>
<tr>
<td></td>
<td>(Frequencies)</td>
<td>(Frequencies)</td>
</tr>
<tr>
<td>I</td>
<td>50</td>
<td>72.75</td>
</tr>
<tr>
<td>II</td>
<td>15</td>
<td>72.75</td>
</tr>
<tr>
<td>III</td>
<td>69</td>
<td>72.75</td>
</tr>
<tr>
<td>IV</td>
<td>157</td>
<td>72.75</td>
</tr>
<tr>
<td>Unclassified</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
<td>107</td>
</tr>
</tbody>
</table>

291 184

295 295

*Significant at 1 per cent level.*

**TECHNOLOGICAL SENSITIVENESS**

For the reasons considered in Chapter II that diversification moves are more expected to be towards those industries which are susceptible to technological changes and since technological susceptibility of industries is measured
in terms of four variables namely capital intensiveness, 
change in the scale of production, labour productivity and 
technical personnel ratio, the association of frequency of 
activity additions with each of these four aspects of 
technological sensitiveness is examined in Tables 50 to 53.

TABLE 50. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO 
CAPITAL INTENSIVENESS.

<table>
<thead>
<tr>
<th>Capital Intensiveness Group</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
<th>Chi-square</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>13</td>
<td>69.25</td>
<td>4</td>
<td>45</td>
</tr>
<tr>
<td>II</td>
<td>56</td>
<td>69.25</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>III</td>
<td>81</td>
<td>69.25</td>
<td>52</td>
<td>45</td>
</tr>
<tr>
<td>IV</td>
<td>127</td>
<td>69.25 137.5* 84</td>
<td>45</td>
<td>72.8*</td>
</tr>
<tr>
<td></td>
<td><strong>----</strong></td>
<td><strong>----</strong></td>
<td><strong>----</strong></td>
<td><strong>----</strong></td>
</tr>
<tr>
<td>Unclassified</td>
<td>18</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td><strong>----</strong></td>
<td><strong>----</strong></td>
<td>107</td>
<td></td>
</tr>
<tr>
<td></td>
<td>277</td>
<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>295</td>
<td>295</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.

In these tables a procedure similar to the preceding 
section is adopted for distributing the number of activity 
additions in one of the four classes of the explanatory
TABLE 51. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO TECHNICAL PERSONNEL RATIO.

<table>
<thead>
<tr>
<th>Technical Personnel Ratio Groups</th>
<th>Total Activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical Chi-Square</td>
</tr>
<tr>
<td>I</td>
<td>36</td>
<td>69.25</td>
</tr>
<tr>
<td>II</td>
<td>57</td>
<td>69.25</td>
</tr>
<tr>
<td>III</td>
<td>61</td>
<td>69.25</td>
</tr>
<tr>
<td>IV</td>
<td>123</td>
<td>69.25 60.8*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unclassified</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>295</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.

The four classes of the characteristics as usual are stratified after arraying the data which for capital intensiveness, technical personnel ratio and labour productivity are given in Appendix VIII and those for changes in the scale of production are given in Appendix IX.

Except for Table 53, in each of the tables it is seen that the number of activity additions increases with an increase in the magnitude of the explanatory variable. This implies that there is a positive correlation between the
TABLE 52. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO LABOUR PRODUCTIVITY.

<table>
<thead>
<tr>
<th>Labour</th>
<th>Total activity additions</th>
<th>Activity additions in non-primary industries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Frequencies)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>19</td>
<td>69.25</td>
</tr>
<tr>
<td>II</td>
<td>76</td>
<td>69.25</td>
</tr>
<tr>
<td>III</td>
<td>78</td>
<td>69.25</td>
</tr>
<tr>
<td>IV</td>
<td>104</td>
<td>69.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>277</td>
<td></td>
</tr>
<tr>
<td>Unclassified</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>295</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.

frequency of activity additions and the technological sensitiveness of the industries. In Table 53, though this trend is distorted, when the number of activity additions in the highest group of the explanatory variable are compared with the expected frequencies under the hypothesis of the absence of association between diversification and technological sensitiveness, the former are greatly in excess over the latter and this carries one to the conclusion that
### TABLE 53: DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO CHANGE IN SCALE OF PRODUCTION.

<table>
<thead>
<tr>
<th>Change in* scale of production</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>20</td>
<td>56.5</td>
</tr>
<tr>
<td>II</td>
<td>58</td>
<td>64.5</td>
</tr>
<tr>
<td>III</td>
<td>29</td>
<td>56.5</td>
</tr>
<tr>
<td>IV</td>
<td>127</td>
<td>56.5</td>
</tr>
</tbody>
</table>

| Unclassified                  | 61     |            | 146        |
| Primary                       |        | 107        |

| Sum                            | 295    | 295        |

*Of the 29 industries given in Appendix VI, the distribution of industries for the first group to the last one is 7, 8, 7 and 7 respectively.

**Significant at 1 per cent level.

An increasing scale of production of the industries has a significant influence in attracting entries from the diversifying firms.

Since the results are similar when activity additions are considered outside the primary industry groups of the companies, the inevitable inference is that the companies
are induced to diversify into those activities which are very sensitive to technological changes irrespective of the nature of technology of activities within their primary industrial groups. But while comparing the values of chi-square of the total activity additions with those of activity additions in non-primary industries, it is seen that in each of the tables, the latter are less than the former. This means that the relationship between the technological sensitiveness of industries and diversification is of a less accentuated form when the diversification moves are considered outside the primary industrial groups of the companies.

CYCLICAL VICISSITUDE

As considered in Chapter II, one of the important factors which induces diversification is the entrepreneur's urge for stability. In order to meet this objective the companies prefer to diversify into cyclical stable industries. The empirical verification of the hypothesis is made out in Tables 54 to 57 which examine the relationship between various measures of dispersion or instability in the profitability of manufacturing industries and the frequency of activity additions. The four measures used, namely coefficient of variation, range as percentage of mean, modified year to year change as percentage of mean, and frequency of cyclical variation are discussed in Appendix I and their empirical data are given in Appendix X.
So far as the first three measures are concerned, the 20 industries in Appendix X are arrayed into four quartiles; whereas with respect to the fourth measure, the industries are classified into three groups viz., the lower (having 6 or less number of frequencies), the middle (having 7 to 8 frequencies) and the higher (having 9 and above frequencies) having 7, 8 and 5 industries respectively.
TABLE 55. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO RANGE AS PERCENTAGE OF MEAN.

<table>
<thead>
<tr>
<th>Range as percentage of mean</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>80</td>
<td>64</td>
</tr>
<tr>
<td>II</td>
<td>85</td>
<td>64</td>
</tr>
<tr>
<td>III</td>
<td>28</td>
<td>64</td>
</tr>
<tr>
<td>IV</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>256</td>
<td>166</td>
</tr>
<tr>
<td>Unclassified</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>295</td>
<td>295</td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.

It will thus be seen that except for a few lapses, particularly for those measures which are slightly deficient in portraying the magnitude of business instability, the frequencies of activity additions decline with an increase in the magnitude of the measures of instability and this implies a negative association between cyclical vicissitudes and diversification. Further, since in each of the lowest classes of the measures of instability of Tables 55 to 57,
The frequencies of activity additions are much more than what these are expected under the null hypothesis (that an entry into an industry is independently distributed of its magnitude of cyclical variation) the analysis of empirical material of the study, therefore, demonstrates that industries with a lower magnitude of business instability attract more diversification entries.

Similar is the conclusion when activity additions

<table>
<thead>
<tr>
<th>Groups of year to year change as percentage of mean</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>113</td>
<td>64</td>
</tr>
<tr>
<td>II</td>
<td>106</td>
<td>64</td>
</tr>
<tr>
<td>III</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>IV</td>
<td>36</td>
<td>64</td>
</tr>
<tr>
<td>Unclassified</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
<td>107</td>
</tr>
<tr>
<td>Unclassified</td>
<td>295</td>
<td>295</td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.
### TABLE 57. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO FREQUENCY OF CYCLICAL VARIATIONS.

<table>
<thead>
<tr>
<th>Frequency of cyclical variation groups</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>130</td>
<td>89.6</td>
</tr>
<tr>
<td>II</td>
<td>81</td>
<td>102.4</td>
</tr>
<tr>
<td>III</td>
<td>45</td>
<td>64.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unclassified</td>
<td>256</td>
<td>166</td>
</tr>
<tr>
<td>Primary</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>295</td>
<td>295</td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.*

outside the 2-digit primary industry of the companies are correlated with the measures of business instability. This further confirms the validity of the hypothesis that the entrepreneur's urge for stability definitely induces diversification even outside the technical propinquity of its primary activities.

### SELLER CONCENTRATION

Similarly, to test the hypothesis as set up in Chapter II that large companies are more prone to diversify
into industries which are characterised by a high degree of seller concentration, the frequency of activity additions is associated with the concentration ratios of industries (after arraying the latter into four quartiles) in Table 58.

The data on concentration ratio for 104 industries is given in Appendix XI.

TABLE 58. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO INDUSTRY CONCENTRATION RATIOS.

<table>
<thead>
<tr>
<th>Industry concentration ratio groups</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>28</td>
<td>42.25</td>
</tr>
<tr>
<td>II</td>
<td>24</td>
<td>42.25</td>
</tr>
<tr>
<td>III</td>
<td>54</td>
<td>42.25</td>
</tr>
<tr>
<td>IV</td>
<td>63</td>
<td>42.25 26.2*</td>
</tr>
<tr>
<td>Unclassified</td>
<td>126</td>
<td>87</td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>295</td>
<td>295</td>
</tr>
</tbody>
</table>

*Significant at 1 per cent level.*
There is however no regular trend\(^3\) in activity additions for the industry concentration groups, yet Table 58 indicates that in the upper two quartiles of industry concentration ratio groups, the frequencies of activity additions are in excess of the theoretical frequencies calculated under the assumption that there is no association between frequency of activity additions and the concentration ratio of an industry. Similarly, the position is reversed for the lower two quartiles in which the actual frequencies of activity additions are less than the theoretical ones. This, therefore, implies a positive association between seller concentration of an industry and frequency of activity additions. In other words the empirical material of the study asserts that the propensity of a large company to diversify into an industry is influenced by monopolistic or imperfect competitive tendencies of the industry. Since

\(^3\)The diffusion in the increasing trend of frequencies of activity additions with an increase in the magnitude of industry concentration ratio is largely due to the deficiency of data because on the one hand, as examined in Tables 23, 24 and 25 of Chapter VI that during 1951-60, 1961-64 and 1965-67 as many as 40, 67 and 77 entries respectively were made into general machinery industry and of these entries 25 (62.5%), 50 (74.6%) and 58 (75.3%) were held by companies of other than general machinery industry, and on the other that in Appendix XI a set of 104 manufacturing industries about which data are available for calculation of concentration ratios for 1958, does not contain the industries of general engineering — a 2-digit industrial group (with code number as 36) particularly in view of the fact that the industries of this group are characterised by high concentration ratios as discussed in the report of the Monopolies Inquiry Commission, 1965 (See Appendix XII).
a similar conclusion holds good when frequencies of activity additions outside the primary 2-digit industrial groups of companies are considered, the validity of the hypothesis is further strengthened.

Again to examine the relationship between concentration and diversification, Spearman's coefficients of rank correlation are calculated between the percentage of products in a 'high' concentration group to the total products considered for each of the selected industrial groups studied by the Monopolies Inquiry Commission, 1965, on the one hand, and the total activity additions and activity additions in the non-primary industries on the other hand. In this case the frequencies of activity additions made into the selected eleven industrial groups during 1951-67 are obtained by taking differences between industries of Tables 22 and 25 for columns 14 (total activities) and 16 (total less primary activities), and thus the frequencies obtained both for total activity additions and activity additions in non-primary industry are given by industries in Table 59. Similarly, from the data of the distribution of products into various concentration groups as given by Monopolies Inquiry Commission, 1965, and reproduced in Appendix XII of this study, the percentage of products in a high concentration group to total products are calculated and these are also given in Table 59. Since the coefficients of rank correlation of the percentage of products in a high concentration
<table>
<thead>
<tr>
<th>Industry</th>
<th>Percentage of products in high concentration group</th>
<th>Total activity additions in non-primary industries</th>
<th>Total activity additions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. CONSUMER GOODS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Food products</td>
<td>0.0</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2. Textiles</td>
<td>9.4</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>3. Tobacco</td>
<td>N.A</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>B. INTERMEDIATE GOODS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Paper and Paper Products</td>
<td>71.5</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>5. Chemicals and chemical Products</td>
<td>94.5</td>
<td>55</td>
<td>38</td>
</tr>
<tr>
<td>C. CAPITAL GOODS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Basic metals</td>
<td>89.2</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>8. Metal products</td>
<td>N.A</td>
<td>N.A</td>
<td>N.A</td>
</tr>
<tr>
<td>9. General Machinery</td>
<td>90.2</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>10. Electrical Machinery</td>
<td>59.0</td>
<td>45</td>
<td>17</td>
</tr>
<tr>
<td>11. Transport equipment</td>
<td>96.1</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>

Group with the total activity additions and also with activity additions outside primary industry are +0.48 and +0.66 respectively, and as these coefficients are statistically
significant, at a one per cent level of significance, the hypothesis that large companies are more apt to diversify into highly concentrated industries is quod erat demonstrandum.

**SIZE-RATIO OF PLANT**

Though the degree of seller concentration of an industry is an important variable in attracting large firms, yet in industries characterised by low seller concentration i.e., highly competitive, there can also be a greater possibility of diversification entries by large companies if the technology of the former assures a high size-ratio of the plant and thereby strengthens the competitive power of the large sized entrants. To empirically examine this hypothesis, in Table 60, the activity additions are correlated with the size ratio of the plant of the industries after arraying the latter into four groups. The data on the size ratio of the plant for 104 industries is given in Appendix VIII.

In Table 60, despite the absence of regularity in the trend of actual frequencies of activity additions distributed over the four groups of the size ratio of plant, and analysis of the data suggests that the number of activity additions is higher in the upper two groups of size ratio of plants than is expected under the assumption that activity additions are independently distributed. Thus, there is a strong association between activity additions and size ratio of plants. Since the same conclusion holds good when the
TABLE 60. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO SIZE-RATIO OF PLANT.

<table>
<thead>
<tr>
<th>Groups of * size-ratio of plant</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>29</td>
<td>45.5</td>
</tr>
<tr>
<td>II</td>
<td>16</td>
<td>40.6</td>
</tr>
<tr>
<td>III</td>
<td>60</td>
<td>39.0</td>
</tr>
<tr>
<td>IV</td>
<td>64</td>
<td>43.9</td>
</tr>
<tr>
<td>Unclassified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>169</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>126</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>295</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The plant size ratios of four groups in order of magnitude are up to 5, 6 to 10, 11 to 16 and 17 and over the number of industries (out of 104 as given in Appendix VIII) in each group are 28, 25, 24 and 27 respectively.

**Significant at 1 per cent level.

activity additions are considered outside the primary industries of the companies, the validity of the hypothesis that large companies are definitely concerned to diversify their activities into the industries which promise high size-ratio of plant (irrespective of the nature of their primary industry group) stands proved.
PROFITABILITY

Again, as elaborated in Chapter II, profitability plays a decisive role in attracting diversification entries. To examine the empirical validity of the hypothesis, the industries are arrayed into four profitability groups in Table 61 which studies the association of activity additions (for 1961-64) with the average annual profitability index of industries (for 1961-63). The data on the index of the profitability for 15 industries and 3 groups of industries are given in Appendix XIII.

Though the frequency of activity additions in the highest profitability group is less as compared to other groups and to the theoretical ones (under the null hypothesis that there is no relationship between profitability and activity additions) yet when the data of the highest profitability group is merged with the preceding group, an inkling of the positive relationship between the two attributes emerges as in this case the observed frequencies for the highest group are greatly in excess over the corresponding theoretical frequencies.

Much of the diffusion in the increasing trend of activity additions with an increase in the magnitude of industry profitability, is attributed to the deficiency of data as three 2-digit industries viz., general machinery, electrical machinery and transport equipment are combined into one industry by the agency which provides index numbers.
TABLE 61. DISTRIBUTION OF ACTIVITY ADDITIONS ACCORDING TO PROFITABILITY OF INDUSTRIES.

<table>
<thead>
<tr>
<th>Industry* profitability groups</th>
<th>Total activity additions (Frequencies)</th>
<th>Activity additions in non-primary industries (Frequencies)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Theoretical</td>
</tr>
<tr>
<td>I</td>
<td>22</td>
<td>27.5</td>
</tr>
<tr>
<td>II</td>
<td>16</td>
<td>27.5</td>
</tr>
<tr>
<td>III</td>
<td>50</td>
<td>27.5</td>
</tr>
<tr>
<td>IV</td>
<td>16</td>
<td>20.5</td>
</tr>
<tr>
<td></td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Unclassified</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>122</td>
<td></td>
</tr>
</tbody>
</table>

*Of the 15 manufacturing industries given in Appendix XIII the distribution of industries for the first group to the last one is 4, 4, 4 and 3 respectively.

**Significant at 1 per cent level.

of industry profitability. In the association of diversification with industry profitability, the deficiency of data is a matter of great concern when it is seen in Chapter VI that a large number of diversification entries have taken place into the general machinery industry as compared to either in the electrical machinery industry or in the transport equipment industry.
However, if an analysis is made on the basis of activity additions for three groups of manufacturing industries among which all the activity additions can be classified, the positive association between profitability and frequencies of activity additions becomes more apparent as is evident in Table 62.

TABLE 62. INDUSTRY GROUP-WISE DISTRIBUTION OF ACTIVITY ADDITION AND AVERAGE INDEX NUMBER OF PROFIT RATE.

<table>
<thead>
<tr>
<th>Industry group</th>
<th>Total activity additions</th>
<th>Activity additions in non-primary industry</th>
<th>Profit index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Processing and manufacture — metals, chemical and products thereof.</td>
<td>82</td>
<td>66</td>
<td>107.1</td>
</tr>
<tr>
<td>2. Processing and manufacture — not elsewhere classified.</td>
<td>15</td>
<td>8</td>
<td>106.4</td>
</tr>
<tr>
<td>3. Processing and manufacture — food stuffs, textiles and products thereof.</td>
<td>25</td>
<td>3</td>
<td>89.1</td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>TOTAL</td>
<td>122</td>
<td>122</td>
<td></td>
</tr>
</tbody>
</table>

Since in both the Tables 61 and 62, a positive association between profitability of an industry and the
frequency of activity additions is observed even when the activity additions are considered outside the primary industries of the companies, the analysis, therefore, suggests that the nature of primary industry is not a barrier to the profitability of an industry in attracting the entries from diversifying firms. In fact, as seen from Table 61, the association between activity addition in non-primary industries and profitability is more pronounced because of a higher value of chi-square and this implies that a large number of diversification moves outside the primary industries are largely affected due to the high profitability of the industries.

To sum up, it is seen that (a) the growth rate of an industry is an important parameter in attracting entries from diversifying companies, and there is a greater tendency of the companies to enter into the industries which may not be technologically adjacent to the primary industry of the companies but experience a high growth rate, (b) Industries which are more susceptible to technological changes are more frequently entered than the ones which are immune to technological changes. But, the companies while considering technological sensitiveness of the industries attach more significance to the technological basis of their primary industry, (c) Industries which are subject to cyclical vicissitudes and other economic instabilities are not as strong in attracting diversifying companies as the ones for which the magnitude of oscillations over time is comparatively
small. (d) The direction of diversification moves is very popular towards industries which are characterised by either a high degree of seller concentration or high plant size ratio as such industries promise a perceptible control over the markets to the diversifying concerns. (e) The profitability of an industry is also a factor which influences the extent of diversification into it.