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EFFICIENCY OF SMALL SCALE INDUSTRIAL UNITS IN WEST BENGAL: AN EMPIRICAL ANALYSIS *

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Abstract : The small scale industrial units are found to survive in the most technologically advanced countries of the world. It not only survives but also accounts for a considerable share of total manufacturing output and employment of the economy. In a capitalistic market economy if a particular sector survives, it must have competitive efficiency to fight the battle of competition. This paper attempts to understand the factors that might explain the variation in efficiency within the small enterprises sector. It is an empirical work that analyses the reality to the extent it is reflected in a given set of data on 200 small scale units of West Bengal, obtained from a National Survey of Small Scale Industries conducted by Indian Institute of Management (Ahmedabad) in 1995-96. That is why, the study should not be considered as anything beyond a case study. The said survey did collect information on the output in the form of value of turnover (at current prices) but nothing in the area of cost of production was available, which would enable a rational study on efficiency. However, there had been another important parameter – the information on the percentage of installed capacity utilised by a firm. We decided to utilise this information as a proxy to the level of efficiency of a firm because there is a relationship between cost, productive efficiency and level of installed capacity utilised by a firm. Under the assumption of either a constant return to a factor and / or better management of inventory and marketing devices, the index of capacity utilisation (or the percentage of installed capacity utilisation) can serve as a good proxy to the efficiency of a firm. The factors that explain the variation in efficiency may as well be captured in terms of a discussion that considers capacity utilisation as a proxy to efficiency. In this discussion, a clue is taken from such theoretical understanding and an econometric model is run, with the help of binary logistic regression in which the index of the level of capacity utilisation is taken as the explained variable; the explanatory variables being such factors as the location of the unit, present turnover, form of ownership, family background of the entrepreneur, nature of activity, market characteristics, whether engaged in advertising activity, if yes, advertisement budget, turnover prior to 1991-92, growth in the market of the firm since 1991-92, sources of competition and margin on sales.

This model considers the scenario of a typical Indian firm (capacity utilisation being equal to or less than 50 percent of installed capacity), counterpoised to the firms which are better placed in terms of capacity utilisation (using greater than 50 percent of installed capacity). The question that this model tries to answer is, what are the factors that would contribute to a firm's movement from mediocrity to excellence. In other words, the regression attempts to indicate factors that would lead to better utilisation of installed capacity, which *inter alia*, would lead to cost efficiency by way of reduction in overheads and decrease in idle capacity.

Key Words : Efficiency, Capacity Utilisation, Survey, Productivity, Proxy to efficiency, Location of unit, Form of ownership, Nature of activity, Market characteristics, Advertisement budget of the unit, Effect of liberalisation on the unit.

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Dennis Anderson (*Small Industry in Developing Countries: A Discussion of Issues, World Development*, 1982) has pointed out that, with industrialisation there is a secular decline in the share of the household and artisan sector of the economy, which faces the reality of near extinction in the advanced countries of the world. Summarising the historical experience, he observes that the process of industrialisation moves through three distinct phases. In the early phase of industrialisation, which he denotes as Phase I, there exists a powerful household and artisan sector that accounts for the employment of a sizeable section of the workforce. But the importance of this sector declines over time and small industries along with large industries go on increasing. In fact, both these sectors increase their share in the economy at an increasing rate. In Phase II, the household and the artisan sector faces a decline. The gap is met by the small and the large sector. However, while the share of the small now increases at a decreasing rate, the share of the large sector still increases at an increasing rate. In Phase III, which is described as the stage of industrialisation of the present day economies of USA and Japan, the artisan and the household sector faces near extinction but the declining trend is not observed in case of small firms. The small survives and reaches a plateau from which it is never dislodged. Anderson, however noted that some small firms expand into large scale firms, but some others remain small and survive by creating marketing or production niches.

The evidences collected from various countries of the world also do not support the hypothesis that, like the household and artisan sector, the small industries face near extinction in the advanced stages of industrialisation. On the contrary, it survives and accounts for a considerable share of total manufacturing output and employment of the economy, even in the advanced countries of the world.

In a capitalistic market economy if a particular sector survives, it must have competitive efficiency to fight the battle of competition. *What explains this efficiency*? A small scale unit does not enjoy the economies of scale – the major advantage that a large scale unit enjoys. Seldom does it get the advantages of technological innovations – innovations usually help the large scale sector. More often than not, the state policies are found to remain tilted in favour of the big industries which can exercise powerful influence in the organs of the state for shaping the policies in their favour. Even then the small survives. It survives, not due to the protectionist policy of the state - the state hardly protects a sector unless there is political compulsion. Even when there is protectionist policy it favours a tiny segment of the small sector, the majority of the units of the small sector survives even when there is no protection or when the economy opens up and the sector faces competition from the outside world.

The efficiency of the small sector is therefore, an issue that attracts many a researcher on the subject. There is a vast literature on the survival and growth of small enterprises. The consensus seems to be that there exists multiple factors explaining the efficiency and therefore the survival of small, some of which are specific to a type of industry, type of region or the specificity of the industrial milieu in which the concerned unit operates. Some of the explanatory factors are economic, some are sociopolitical in nature.

What explains the variation in efficiency within the small scale sector ? A model was developed by Gimeno, Folta, Cooper and Woo (Administrative Science Quaterly, 1997) explaining why some firms survive while others with equal economic performance do not. They opine that organistaional survival depends on the firm's own threshold of performance. This is determined by the entrepreneur's human capital characteristics, such as alternative employment opportunities, income from entrepreneurship and cost of switching to other occupations. Using a sample of 1547 entrepreneurs of new businesses in USA, the study suggests that firms with low thresholds may choose to continue or survive despite comparatively low performance.

This study attempts to understand the factors that might explain the variation in efficiency within the small enterprises sector. Mostly, it is an empirical work that analyses the reality to the extent it is reflected in a given set of data obtained from a National Survey of Small Scale Industries conducted by Professor S. Morris of Indian Institute of Management (Ahmedabad) in 1995-96 and the West Bengal section was supervised by Professor R. Khasnabis of Department of Business Management, Calcutta University. It was based on 200 small scale units in selected districts of West Bengal. That is why, the study should not be considered as anything beyond a case study. In other words, the study is confined to the reality of the small scale sector to the extent the data set captures the Indian scenario. The information on necessary socioeconomic variables that might explain the variation in efficiency was not available from the officially published data of the Small Industries Development Organisation (SIDO) or the National Sample Survey Organisation (NSSO). But the causal factors that might explain the variation in efficiency of the small scale sector - the central issue of this paper had to be addressed on the basis of a data set, which was smaller than the coverage of the SIDO or the NSSO.

The survey gathered information about different economic, sociological and technological aspects of the small units, namely, the locale, the nature of business and ownership, motivation behind starting a small unit, the kind of market in which the small business operates, the volume of turnover, profit margin, level of capacity utilisation, the sources of competition for the small firms, the scenario after the introduction of the new economic policy and the ways and means by which they survive in the world ruled by the 'big'.

The data set mentioned has been utilised for getting some stylised information on the sources of variation in cost efficiency within the small sector. In order to make best use of the data set, a proxy for cost efficiency had to be set. As one knows, it is difficult, if not impossible to get the information on the various elements of cost of any small scale industrial unit. In the first place, such data are not maintained properly in the business records of small units. Again, even if the entrepreneur has an understanding about the various elements of cost that he incurs, it is least likely that he will divulge such information to an outsider even for the sake of a survey, unless he is compelled to do so. The information that one may collect after putting much labour on it may yield results, which could turn out to be shaky.

Neither the SIDO nor the NSSO, not even this Survey that the Government of India sponsored, collect information on cost in a way the standard accounting

practices would advice (the information which would be otherwise available from the Profit and Loss Account and Balance Sheet of incorporated bodies). The said survey did collect information on the output in the form of value of turnover (at current prices) but nothing in the area of cost of production was available from the results of the field survey. However, there had been another important parameter – the information on the percentage of installed capacity utilised by a firm. We decided to utilise this information as a proxy to the level of efficiency of a firm because there is a relationship between cost, productive efficiency and level of installed capacity utilised by a firm.

As more and more of the installed capacity is used the fixed cost per unit of production is reduced. Variable cost following the Law of Variable Proportions, total cost and hence average cost declines and reaches an optimum, which is the level of optimum efficiency of a firm. Further, enhancement of the level of utilisation of installed capacity will increase the average cost if the Law of Variable Proportions operates. In real life however, it is often observed that a unit finds it advantageous to go on utilising the installed capacity without taking care of the situation as regards its impact on the variable component of the cost because the negative effect of variable cost is more than compensated by utilising the favourable market conditions and better management of inventory. (Sen, Micro Economics, 1989). Ordinarily therefore, under the assumption of either a constant return to a factor and / or better management of inventory and marketing devices, the index of capacity utilisation (or the percentage of installed capacity utilisation) can serve as a good proxy to the efficiency of a firm.

Instead of seeking an explanation on cost efficiency one may reset the issue and attempt to address it in terms of another attribute that has correspondence to cost efficiency and information on which might be more readily available. Technically, this is called the use of a proxy variable.[i] (Stundermund, A. H. and Carsidy, Henry J, 1987). For this exercise capacity utilisation (percentage of installed capacity utilised) has been considered as the proxy to the measure of efficiency of a firm. There are reasons to believe that the quality of information pertaining to this proxy variable would be better.

Efficiency is related to the level of utilisation of capacity. The factors that explain the variation in efficiency may as well be captured in terms of a discussion that considers capacity utilisation as a proxy to efficiency. In this discussion, a clue is taken from such theoretical understanding and an econometric model is run, in which the index of the level of *capacity utilisation* is taken as the explained variable; the explanatory variables being such factors as the *location of the unit, present turnover, form of ownership, family background of the entrepreneur, nature of activity, market characteristics, whether engaged in advertising activity, if yes, advertisement budget, turnover prior to 1991-92, growth in the market of the firm since 1991-92, sources of competition and margin on sales.*

The present work is different from what one gets from the ordinary regression analysis in which the contribution of each explanatory factor is captured in terms of the estimated values of the regression coefficient and the overall power of the

model is described in terms of the value of multiple regression (R square). Such models are deterministic in nature. The underlying idea is that the social scientist cannot predict with quantitative precision the contribution of a factor in explaining a social or economic phenomenon. Nowadays, however, the social scientists have better quantitative tools, thanks to the research in regression analysis, with which a social scientist can consider a probabilistic situation. The deterministic models can be supplemented or replaced with such models. The improvement that one may claim out of such an exercise is that, the scientist is not now compelled to predict with quantitative precision, the contribution of a particular factor in explaining a social or economic phenomenon. On the other hand, one may, with the help of these new tools, explain the probability of reaching an alternative scenario, compared to a given situation, with inclusion or exclusion of a particular variable in the model. The impact of the variable in changing the probability can also be assessed.

Therefore, a new tool was put to use in the framework of a binary logistic regression. It was perceived that, instead of developing a deterministic empirical exercise the reality could be understood in a better way, if the issue was reset. So an attempt was made to discover the probability of reaching a better or worse scenario with respect to capacity utilisation, as a particular explanatory factor becomes operative in a milieu of the small units. For this, capacity utilisation, the proxy variable was taken as a categorical variable – the firms were categorised according to the different levels of capacity utilisation. The problems of moving from a worse scenario to a better one in terms of capacity utilisation associated with various explanatory factors have been studied. Finally, an attempt is made to theorise the phenomenon of intra industry variation in efficiency within the small sector in terms of a select set of explanatory variables.

The Model

The hypothesis is that the level of capacity utilisation of a firm depends on the set of variables listed above. In other words, the model suggests that a firm is more productive if it is located in a certain kind of locality; a particular kind of activity makes the firm more profit worthy; a certain kind of market is more favourable to the performance of the small business and a particular family background of entrepreneur help the firm attain efficiency. Efficiency is also explained by the kind of competition faced by the small unit. The model includes twelve such variables altogether in its set of explanatory variables. The extent to which such factors contribute to the observed variation in the level of capacity utilisation of the firms, is proposed to be tested by a regression model. Ordinarily, with the capacity utilisation (C_u) as the explained qualitative variable, the regression model assumes a functional relation that can be expressed in unspecified form as follows :

$C_u = f [L_u, T_o, F_o, F_b, N_a, M_c, A_y, A_b, T_{pl}, S_c, G_{pl}, M_s]$-----(1) Where, L_u, T_o, F_o, F_b, N_a, M_c, A_y, A_b, T_{pl}, S_c, G_{pl}, M_s stand for the different independent variables, namely,

L_u = Location of the unit, T_o = Turnover, F_o = Form of Ownership,

F_b = Family background of the entrepreneur, N_a = Nature of activity,

M_c = Market characteristics, A_y = Advertisement activity, A_b = Advertisement budget,
T_{pl} = Difference between present turnover and turnover in 1991-92,
S_c = Sources of competition faced by the firms,
G_{pl} = Growth in the market since 1991-92 according to the entrepreneur and
M_s = Margin on sales.

A linear regression with twelve explanatory variables might then be suggested. Mathematically the regression equation is represented as :

$$C_u = \beta_0 + \beta_1 L_u + \beta_2 T_o + \beta_3 F_o + \beta_4 F_b + \beta_5 N_a + \beta_6 M_c + \beta_7 A_y + \beta_8 A_b + \beta_9 T_{pl} + \beta_{10} S_c + \beta_{11} G_{pl} + \beta_{12} M_s \quad \text{---------- (2)}$$

The regression would estimate the beta coefficient (which would include β_0 as the intercept term of the regression model).

There are however practical problems in running this linear regression. Many of the variables are qualitative in nature. When a qualitative variable appears in the set of explanatory variables, one may take recourse to the introduction of categorical explanatory variables in the form of dummy variables. In this case however, it will not solve the problem because the explained variable, capacity utilisation (C_u), is also a categorical variable. Although percentage is a quantitative variable, in this case the percentage comes not exactly as a specific quantitative value but a range of values, such as less than 30 per cent, within the range of 30 to 50 per cent and so on. The practitioner has no alternative but to turn the explained variable into a categorical variable – a category representing a range of percentage of capacity utilised. Consequently, the regression model has to be reset in terms of a model that includes categories as explained variables. As one knows, such a problem is usually tackled by the practitioners by introducing a logistic regression which is not a simple linear regression as indicated in (2). It assumes a log linear relationship involving all the explanatory variables – qualitative as well as quantitative.

As the model is reset in terms of a logistic regression, it becomes more powerful than an ordinary linear regression in addressing the problem that the present study attempts to tackle. As in case of linear regression, the logistic regression would of course test whether the set of independent variables jointly explains a reasonable *percentage in variation of capacity utilisation* within the select group of small firms. This may be assessed by considering the R Square which would estimate the joint effect of each of the explanatory variables on the explained variable. However with the available data set, there is another way of explaining interrelation among the variables that might be explored and that might explain the variation in efficiency (proxied by the percentage of capacity utilisation) in a more meaningful way. (Cox and Snell's and Nagelkerke's R Square approximates what one would get in case of linear regression. A logistic regression would also estimate the effectivity of each. Nagelkerke, N.J.D.; 1991).

This possibility is explored by the coefficients of the estimated logistic regression and in this way, the logistic regression adds more power to the regression analysis. It would explain the probability of 'better or worse performance' of a firm, in terms of the explained variable (capacity utilisation in this case) as a particular explanatory

variable becomes operative. To explain this point a tentative example is used. *Form of ownership* is an explanatory variable in this case. The ordinary regression would estimate the regression coefficient of this variable. It would describe the percentage change in explained variable as a result of a change in the explanatory variable. When the explanatory variable is qualitative, as in case of the form of ownership the ordinary regression would describe this in terms of a dummy variable (what percentage change will result out of a movement from one category to another). The model that is proposed would test whether the change of a particular form of ownership (say from proprietorship to partnership) could contribute to enhancement (or deterioration) in the extent of capacity utilised by a firm so that the firm would (or would not) move from one category to the other. The measure is probabilistic. The intensity of this probable effect of such a change in the explanatory variable can be assessed by the value of the corresponding regression coefficient.

The Variables

The Dependent Variable

In this case, the dependent variable is capacity utilisation. Capacity utilisation is taken as a percentage of the installed capacity. The relevant data was collected by running a questionnaire, in which the respondent was supposed to provide information on current level of capacity utilisation. It was a multiple choice close ended question in which the respondents were provided a set of options, namely, C_{u1} = utilisation of less than 30 per cent of installed capacity; C_{u2} = utilisation of 30 percent to 50 percent of installed capacity; C_{u3} = utilisation of 50 percent to 70 percent of installed capacity; C_{u4} = utilisation of more than 70 percent of installed capacity. The inputs were stored accordingly in terms of four categories. The explained variable should therefore, be taken as categories and run a general model. However, it is proposed to take one category and its complementary, that is, two categories at a time (i.e., C_{u1} and C_{u2} and others, including C_{u3} and C_{u4}) to focus a particular category. Technically, the proposed model in this case would be called binary logistic model.

The Independent Variables

The variation in utilisation of installed capacity is supposed to be explained by twelve variables that have been identified earlier. But again, in order to use them in a logistic model they are to be specified either as a qualitative (categorical) or as a quantitative variable. The values of the independent variables have been collected from the results of the survey. There had been various possibilities with respect to the outcome of the survey. Such possibilities were captured by specifying the variables in further details. For example, *location of the unit* was a qualitative variable. It was classified into four different categories, which were mutually exclusive, namely, rural, urban, semi urban and others (i.e., location not defined). Similarly, being a qualitative variable, *form of ownership* was spread over a number of alternatives, like sole proprietorship, partnership, private limited companies, public limited companies and cooperatives. Family background of the entrepreneur was

also spread over diverse number of options like manufacturing, trade, services, agriculture, etc. Information was collected on nature of activities which included manufacturing, processing, jobwork, trading, servicing, repairing. The respondents mentioned about the competition they faced from other small firms, large Indian firms and multinational corporation's products as well as smuggled and imported goods. The business position of the firm in comparison to their condition prior to 1991-92 was also noted as to have declined or stagnated or grown rapidly/gradually. These were all qualitative variables.

In the computer worksheet, these variables have been numbered for tracking them down, as per their number in the structured questionnaire. For example, question number S5 in the survey questionnaire asked about the location of the unit. The respondent was given a choice among four alternatives, namely, (1) urban, (2) rural, (3) semi-urban and (4) others. The variables were also recorded accordingly as S5(1), S5(2), S5(3) and S5(4). Similarly question number S11 found out about the ownership pattern of the surveyed unit, giving alternatives (1) proprietorship, (2) partnership and so on.

There are 12 such independent variables utilised in the model mentioned later. Out of them, nine are *qualitative* variables that have been converted into categories which in this model work as *indicator variables* (Indicator variables are the outcomes of the Indicator Variable Coding Scheme in Logistic Regression). Following the indicator variable *coding scheme* an entire set of new variables has been generated. (To give meaningful codes to the indicator variables the standardised indicator variable coding scheme is followed. The values of the independent qualitative variable must be recorded by creating a new set of variables that correspond in some way to the original categories. If the indicator variables are used for coding the coefficients for the new variables represent the effect of each category compared to a reference category)

Consider for example, S11#1, which represents the legal status as per the ownership pattern of a unit. It is qualitative in nature but here it has been converted into an indicator variable. While doing so, three categories emerged, namely, S11#1(1) denoting proprietorship units; S11#1(2) denoting partnership units and S11#1(3) combining private and public limited companies and cooperatives. (The units reported to be operating as limited companies and cooperatives have been clubbed together because there were so few respondents in this combined category that their impact, if considered separately would not be rewarding.) Out of these, in a logistic regression one, would serve as the reference category.

The *reference category* is the basic category. Out of the categories that one derives there would be one reference category. In case of legal status (S11), the reference category is chosen to be S11#1(3). *The reference category is the basic category that will not be present in the regression results. However, that is the pivot on which the other variables stand. The estimated coefficient of other indicator variable shall have to be interpreted with respect to the reference category (to what extent it performs better or worse compared to the reference category).* In the SPSS coding scheme that we have followed there is an in-built program, that turns

categorical variables into indicator variables and by default it takes one of the independent variables as the reference category (the last one is such a variable).

We use the indicator variable coding scheme for creating the new variables, coefficients of which represent the effect of each category compared to a reference category. The coefficient of the reference category is 0. For example, S11#1(1) is the indicator variable for firms under proprietorship, which is coded 1, when it exists and 0 otherwise. Similarly the variable S11#1(2) includes the firms under partnership, coded 1 if it exists and 0 otherwise. Reference category in both the cases is S11#1(3), which is the indicator for private and public limited companies and cooperatives clubbed together. Similarly all other qualitative variables have been broken up into sub parts while converting them into indicator variables. As a result a total of 31 variables have emerged. The details about them are given in the Annexure.

Current turnover, in Rupees lakhs and the advertisement budget, if any, measured in Rupees lakhs are quantitative variables. Besides, margin on sales that reported the profit earned by the unit as a percentage of its turnover, is also a quantitative independent variable. The three quantitative variables used as independent variables in the models are, S10 representing current turnover (in Rupees Lakhs) reported by the unit, S21VID representing the advertisement budget (in Rupees) and S27(II) representing the margin on sales in percentage terms.

Logistic Regression

As has been already pointed out the ordinary regression based on quantitative information is not found to be applicable in this case because the explained variable, the percentage of installed capacity utilised, being a qualitative variable is considered as a categorical variable in this case. The suggested model that can take care of such an explanatory variable is a logistic regression model. A logistic regression captures the effect of the explanatory variables on the explained variable in probabilistic terms – the probability of odds[ii] against the event. The event in this case is the utilisation of capacity below (or upto) and above a specified level described in binary numbers 0 and 1. The expected outcome of the model is a probabilistic description of the effect of a change in the set of explanatory variables – qualitative or quantitative – on the explained variable that comes in binary form.[iii] In this particular case, in the set of explained variables we have taken the binary numbers as the qualitative variables. The form being so, the model is expected to estimate the probability of the 'event not occurring'.

As stated earlier, it is assumed that the form of the function (2) is logistic. To be specific, the form was taken as binary logistic regression. Accordingly, a logistic regression analysis has been done using SPSS package utilising all the above mentioned variables. Since the suggested model is a *Binary Logistic Regression*, in which the dependent variable can assume only two values, some 'cut off' levels have been set up for capacity utilisation (being the dependent variable). The question that the model would address would be : *What are the factors that explain a firm's entry in a group that utilises the capacity below (or equal) or above the cut off* ? Put in

a different way, the model would estimate the contribution of an explanatory variable to the event of a firm's entry to more (above the cut off) or less efficient groups of firms - efficiency being indicated by the percentage of installed capacity utilised by the firm.

The question of selecting the cut off is therefore very important in this exercise. The proposed regression has nothing to suggest about the level that may be selected as cut off. In the Indian small industries scenario, on an average the small industries utilise about 50 per cent of their installed capacity.[iv] It is therefore decided to fix the cut off of capacity utilisation at the level of 50 per cent. In other words, the firms were organised into two groups, namely, those which have reported to utilise 50 per cent or less of their installed capacity and those whose performance is better. The factors that explain the placement of the firms in two different categories were then sought for by applying a logistic regression.

Such an exercise has an indirect bearing on the evaluation of firm efficiency. The firms which are more efficient are expected to utilise the installed capacity in such a way that they would operate at least at a level which is higher than 50 per cent of the installed capacity. With the suggested model under logistic regression, it is expected to get some idea about the factors that would contribute favourably (and also those which contribute unfavourably), to the firm in its endeavor towards gaining efficiency. A regression model that was run covering all these 179 units spread over 21 NIC categories is expected to lay bare the factors that explain the variation in efficiency in the firms in the small scale sector.

Capacity utilisation, the dependent variable in this model is measured in terms of percentage of installed capacity. It is categorised into two classes, that is, the firms which utilise upto 50 per cent of installed capacity form one category and those which utilise more than that are grouped into another. The unit with capacity utilisation less than or equal to 50 percent takes the value 0, others with higher than 50 percent capacity utilisation takes the value 1. The independent variables are those listed in the Annexure.

The Statistical Properties of the Models: General Observations

The results of the models were derived by using the standard statistical packages of SPSS 10.0. In SPSS 10.0, binary logistic regression is under ***Analyse – Regression – Binary Logistic.*** Unlike Ordinary Least Square (OLS) regression, logistic regression does not assume linearity of relationship between the explained variable and the set of explanatory variables. It also does not require variables to be distributed normally, does not assume homoscedasticity and in general, is based on less stringent requirements than OLS. The success of the logistic regression can be assessed from the classification table, showing correct and incorrect classifications of the dependent (dichotomous in the case) variable. Also, goodness-of-fit tests are available as indicators of success.

The logit coefficients are calculated by maximum likelihood estimation (MLE). It seeks to maximise the log likelihood, which reflects how likely it is that, the observed values of the dependent may be predicted from the observed values

of the independent variables. MLE is an iterative algorithm in which an initial function is estimated, residuals are tested and a re-estimate is made with an improved function. The process is repeated until a *convergence* is reached.

In this case, from the SPSS package the 'Backward Selection' criterion was adopted to derive the results of the models. The package has a built-in mechanism to generate a categorical variable coding scheme, which was utilised to create a set of categorical variables (mentioned earlier) with respect to the indicator (qualitative) variables. After this, it applies an iterative algorithm to estimate the logit coefficients following the MLE method. In the SPSS output, the final results with respect to the suggested models are contained in the last part of the output headed 'Variables in the Equation'. It gives the B coefficients, which are interpreted as Log odds [odds are given in the last column Exp. (B)]. The concept of Log odds has to be interpreted carefully in order to get the proper implication of the results. It is the log odds for one outcome versus the other that is assumed to vary linearly against a set of predictors. *The coefficient for a specific explanatory variable represent the change in the log odds that would result from a unit change in the specific explanatory variable, when all other explanatory variables are assumed to be fixed.* This yields the 'odd ratio' which is an approximation of the relative risk or relative gain or the *probability of moving from one scenario to another,* with respect to the dependent variable.

With respect to each explanatory variable there exists a test of significance. The necessary statistic is the Wald Statistic (the square of the ratio of the coefficient to its standard error). However, as a test statistic, Wald is not very reliable because with a huge absolute value of the regression coefficient, the estimated Standard Error is too large (which gives rise to a too small value of Wald Statistic). The consequence would be that, it would fail to reject the Null Hypothesis (that the coefficient is 0) when in fact it should.

The suggested alternative test is the Log-Likelihood ratio test, which is used to assess the overall significance of the model. The maximum likelihood value is obtained from fitting the model and the natural log of the maximum likelihood value is multiplied by – 2. The resulting value lies between $-\alpha$ (indicating non-significance) and $+\alpha$ (showing extreme significance).

The log likelihood ratio test is utilised in SPSS package while running the logistic in an iterative algorithm. It examines the change in the log likelihood when each of the variables is entered into the equation containing the other variable. This in fact is the great merit of Backward LR as a method for variable selection. This method has been used here for deriving the results.

In SPSS 10.0 results summary there exists a package for omnibus tests[v] for model coefficients. The omnibus test table contains a column for chi-square, which is known as model chi-square. Model chi-square is a likelihood ratio test which reflects the difference between errors, not knowing the independent variables and errors when independents are included in the model. When probability (of model chi-square) is less than or equal to 0.05 we reject the null hypothesis that knowing the independents makes no difference in predicting the dependent in logistic regression.

Thus, a researcher would wish to have model chi square to be significant at 0.05 per cent or better for a model that is being applied to the data set.

Given this general discussion on the logistic regression as a tool of analysis, the results of the regression shall be interpreted covering the data set involving 179 small scale industries units.

But before that discussion, a few words on the limitations of the study should be mentioned. In the first place the results of the logistic regression do not contain a coefficient which is exactly analogous to R-Square in multiple regression. Cox and Snell's R-Square and a further modification in Nagelkerke's R-Square attempts to initiate the interpretation of multiple R-Square. However, such R squares do not represent what one gets in Karl Pearson's multiple regression (R-Square) on the strength of the regression. While interpreting the results we do not therefore, discuss the R-Square values, as it is the standard practice in regression analysis. Secondly, there might exist the problem of multi-collinearity. The variance inflation factor (VIF), the reciprocal of tolerance ($1-R^2$) (which is used for checking whether multi-collinearity is suspected) is not calculated in logistic regression. One will not therefore, be sure whether and to what extent the probability of multi - collinearity exists in the output of the logistic regression. VIF is not calculated because there is no direct counterpart to R-square, being logistic regression. To the extent our independent variable is linearly related to another independent variable, multi-collinearity could be a problem in logistic regression. However, unlike OLS regression, logistic regression does not assume linearity of relationship among independent variables. The Box-Tidwell transformation and orthogonal polinomial contrasts are ways of testing linearity among independent variables. A high odd ratio could be the evidence of multi-collinearity. However, a high odd ratio in itself does not indicate that there exists multi-collinearity in the logistic regression. A low value of Nagelkerke's R square may indicate that the possibility of the existence of multi-collinearity is rather weak because it is the closest approximation to OLS R square.

With these limitations in mind the results of the regression that have been generated are presented below.

Interpreting the Model

This model considers the scenario of a typical Indian firm (capacity utilisation being equal to or less than 50 per cent of installed capacity), counterpoised to the firms which are better placed in terms of capacity utilisation (using greater than 50 per cent of installed capacity). The question that this model tries to answer is, what are the factors that would contribute to a firm's movement from mediocrity to excellence. In other words, the regression attempts to indicate factors that would lead to better utilisation of installed capacity, which *inter alia*, would lead to cost efficiency by way of reduction in overheads and decrease in idle capacity. The prediction is based on 9 independent qualitative variables converted into 31 indicator variables and 3 quantitative variables.

Before interpreting the summary results of the Model it is important to note whether the statistical exercise is justified or not. As has been pointed out in the

previous section, in logistic regression this is tested by what is known as, the omnibus test. It tests the null hypothesis that knowing the independents makes no difference in predicting the dependent in logistic regression. With respect to this model this test was performed (Table 2). The results of the omnibus test (0.021), being less than 0.05, we reject the null hypothesis that the inclusion of the independent variables is gainful, it does improve the prediction as regards the behaviour of capacity utilisation.

The overall test of significance, in the form of 2 Log Likelihood was also performed (Table 3). The result has been observed to be highly in favour of the model. The value, 145.676 indicate that the set of independent variables included in the equation has satisfied the overall test of significance. The power of prediction of this model (78 percentage correct) is robust, giving it an extra element of dependability. As observed in the Classification Table[a] (Table 4) with respect to the dependent variable, capacity utilisation in this case (S27 1A#3), there are 6 missing cases, but since that accounts for only 3.4 per cent of the reported units (Table 1), it is expected not to affect the model adversely.

The results of the logistic regression described in the final Table 5 may now be interpreted. There are 12 *variables* in the equation with a constant term being – 25.327. The coefficient of the logistic regression are given in column B, SE denotes standard error and Wald is calculated as the square of the ratio of the coefficient to its standard error. Since the beta coefficients are in the form of log odds, the odds ratio is given in the last column of the table as Exp (B). The test of significance for individual beta coefficient given by the Wald Statistic does not to lead us to reject the null hypothesis that B is not significantly different from zero in many of the cases. Since the overall reliability of the model has been justified by the omnibus test and the 2 log likelihood ratio and Wald is not the most dependable guide in assessing the statistical worth of the beta coefficient, it is not much relied upon.

In the estimated regression, there is a constant term that is the intercept in a logistic model. This denotes the base line log odds for a group, when the explanatory variables are ignored. As we get from the Model, the constant term has a negative sign which implies that in the absence of the selected explanatory variable, that is, when the selected explanatory variables become inoperative, there is a negative impact on capacity utilisation. In other words, the explanatory variables do contribute to the small firms' endeavour to enhance its efficiency (which is proxied by capacity utilisation).

As the results indicate the beta coefficient of turnover, as an explanatory variable is positive but very small in magnitude (0.038). This implies that a change in turnover shall have a positive impact on the percentage of installed capacity utilisation by the firm, but the magnitude of such impact is very poor. As the turnover increases, that is, sales increases there is a possibility that the profit would decline, the turnover being constrained by profit (as in Baumol's model), turnover does not seem to have an impact of very high magnitude on the optimising behaviour of a firm and thus, on its aim to increase efficiency. The second quantitative variable is advertisement budget (S21 VI D) whose corresponding Beta Coefficient has an

estimated value of 0.413 which is considerably high. The burden of evidence is in favour of the argument that, advertisement budget has a positive impact on the capacity utilisation of a firm and the intensity of the impact is reasonably high with special reference to this model. Advertisement possibly creates a product differentiation, as a consequence to which the firm gets an additional leverage in the market; so much so that the inventory is deflated and the firm finds it necessary to increase the intensity of its capacity utilisation for maximising profit.

Next the impact of the qualitative variables on the capacity utilisation of small firms are considered. There are nine qualitative variables from which thirtyone indicator variables have been generated. Going through the results of the model, it is observed that some of the estimated coefficients have satisfied the Wald test and some have not. Since Wald statistic is not very reliable in judging the statistical worth of a particular regression coefficient and since the test of overall reliability of the model has been satisfied, while analysing the results of the regression all the variables *'included in the model'* are considered and interpreted accordingly.

Taking into consideration the locational issue, as the results indicate, with respect to the firms that have been included in this model, the possibility of utilising more than 50 per cent of installed capacity increases as the firm moves from semiurban to urban and more so when it shifts to rural areas. In the urban segment it enjoys the benefits of external economies of scale due to the existence of better physical infrastructure including a marketing network. On the other hand, in the rural areas it gets the advantages of the availability of low paid unskilled and semi skilled workers that keeps the wage bill low, which will neutralise the lack of advantages through external economies that the urban units enjoy. This point seems to be important because it may explain the observed rural bias of small scale industrial units in India. (As per the Second Census,1988 at an all India level 42.17 per cent of the small scale units are concentrated in the rural sector.)

The variable nature of activity (S14) appears to have a strong interrelationship with capacity utilisation as the values in the B column, are very large. The results indicate that units involved in activities like manufacturing [S14(1)], processing, jobworking, servicing and repairing have higher capacity utilisation in comparison to the units engaged in subcontractual activities. This is probably due to the fact that sub-contracting activities maintain higher idle capacity with the expectations of sudden large orders, which are lucrative.The results also indicate that possibility of better utilisation of installed capacity is likely to increase in servicing, repairing, jobwork, processing and manufacturing (the reference category being sub contracting). Sub contracting being chiefly an urban activity, the results indicate that the small industries in the rural areas which hardly enter into subcontracting activities are likely to utilise the installed capacity in a better way.

However, the family background of such entrepreneurs is an important factor in explaining the efficiency of such enterprises, as the results of the regression analysis indicates. The odds of utilising the installed capacity at more than 50 per cent level increases, had the background of the entrepreneur not been agriculture and other related activities. In other words, the rural enterprises could be efficient

if such businesses are taken up by entrepreneurs having trade or services as family background. This can be rationalised by considering the existing scenario of rural West Bengal in which there is a high rate of growth in agriculture (around 6.5 per cent for the last one decade), which has created demand for trade, services and manufactured goods. While the big businesses try to explore the prospects in rural market in West Bengal, there still exists a space for the small enterprises. The possibility is being exploited by people having some exposure to non-firm enterprise activities, mostly from nearby urban areas. Consequently, the rural enterprises are recording a better performance and therefore the prospect of utilising the installed capacity in a better way is increasing in rural West Bengal.

As one observes form the results of the regression, the units catering to the international market, though very few in number, in this survey, have higher capacity utilisation than those dealing with local, state or national markets. This is again evident from the negative values in the B column corresponding to the variable market characteristics. In the international market only the most efficient firm would survive. A firm which is located in the group of enterprises that cater to the demand of the international market has definitely passed the test of efficiency – efficiency considered at the global level. On the other hand, the possibility of the inclusion of a firm at the national or local level decreases the log odds of moving to the category of greater capacity utilisation. The results, however indicate that the differential is not very high, when the comparison is confined to the group of firms operating at the national level and at the international level. The inefficiency is likely to increase as we consider the firms operating at the state level. The local level firms appear to be somewhat better performers most likely due to the fact that they operate in a sort of captive market that generates steady demand at a reasonable price.

Do the sources of competition affect the performance of firms in the small scale sector ? The answer as we get from the empirical exercise, is positive. If we consider the MNCs and the smuggled goods as the reference category, it is observed that the firms are mostly threatened by competition from these sources. The small firms that compete in the product line in which the MNC and the smuggled goods try to enter do not find it encouraging to go on increasing capacity utilisation possibly because the market is shrinked and there is inventory accumulation which has negative impact on capacity utilisation. If however, the competition is confined to the national level large Indian firms, or the small and large Indian firms, or even among small firms, the odds of increasing capacity utilisation increases with respect to the small enterprises that have been considered in this study. The results also indicate that the scenario is not changed very much if we consider only the large Indian firms as the sources of competition. This probably highlights the inner strength of the small units. (Scherer,1970,Survivorship Studies).

Finally the scenario with respect to the small enterprises after the introduction of the new economic policy is considered. The reference of course is capacity utilisation. The respondents were asked two questions in this area. The first was as regards his perception about the market. The answer was supposed to be subjective, indicating how the entrepreneur *feels* about the market – whether there was a

decline, stagnation or growth in the market. The respondent was also asked a second question in order to know whether there was a difference in turnover with respect to his business, compared to what it had been in 1991-92. The regression coefficient pertaining to the perception of the respondent about the market behaviour since 1991-92 does not have much bearing on the issue of capacity utilisation as such. Only thing that should be highlighted is that the entrepreneurs who have a pessimistic outlook about the market were found to be utilising the installed capacity in a better way. This was possibly due to the fact that, these entrepreneurs had been quite cautious in managing the fixed resources, so much so that, they could maintain efficiency. To put it rigorously, for the entrepreneurs who were of the opinion that the market had declined since 1991-92 would increase the log odds of increasing capacity utilisation above the stipulated level of 50 per cent was high and positive, the reference category being the entrepreneur who expected a slow or rapid growth.

More meaningful however are the results with 'difference between present and 1991-92 turnover' as explanatory variable. There are two categories of firms; those whose volume of turnover had declined after the introduction of the new economic policy and those who had a better business during this period. It was observed that the possibility of better capacity utilisation increases with firms having a higher turnover during the period under survey than in 1991-92. This is consistent with what one would normally expect. The new economic policy that opened up the small sector to more competition from national and international sources might have created a negative impact for such firms or fail to meet competition. Consequently, their turnover has declined (so also the level of optimum profit). As a result a higher percentage of installed capacity remained idle in such firms. On the other hand, a firm that could meet the challenge could utilise the capacity in a better way and thereby reduce idle capacity. In the short run this is the way in which the impact of a new policy could be realised in a sector. In the long run however, this could pave the way for a new alignment of enterprises; some would disappear from the scene and some others with better records of efficiency would survive. This, of course, cannot be judged from the results of this survey. One cannot get an indication of which firms would survive from the information on the growth prospect, as *perceived by the respondents* of this survey.

The odds of greater capacity utilisation increases not in proprietary or partnership firms. In fact the corporate bodies and cooperatives are found to offer better organisational form for pursuing efficiency. Such behaviour is probably caused by managerial advantages enjoyed by corporate and cooperatives that operate on the basis of a functionally differentiated form of management. As one knows, the functional differentiation denoting specialisation increases efficiency of an organisation. It is therefore expected that the sign of the log odds could be negative when the reference category is company and cooperative. However, this finding, which is consistent with the received wisdom does not add much to this exercise on cost efficiency of the small business. Small enterprises are usually organised in the line of partnership and proprietorship. (In our sample 72 per cent of firms is proprietorship and 16 per cent are partnerships.) The typical form of management in such enterprises is undifferentiated type of management exercised by the entrepreneur.

A small firm does exist in an economy. It is also true that they do not face extinction even after almost three centuries of industrialisation. As Anderson has pointed out, even in countries which, operate at Phase Three of industrialisation there exists the small firms even if they have reached a plateau. However the other side of the reality is that the large firms do dominate the economic scenario and there is an inherent tendency of the firms to accommodate capital and expand its scale of operations. In the competitive world of market economy, this is the logic of the development of monopoly capital. Within the group of small firms the same process is operative, although there exists a vast number of small units they survive by exploiting various social and economic opportunities. These factors are very powerful as we observe in this study. However, the small industry also cannot escape the rule of capitalism that creates advantages for the bigger firms. If the limited companies and cooperatives, which operate on a higher scale, are found to be more efficient than the proprietary and partnership firms are, it indicates that the rule of capital is very much operative in the field area. Firms of larger scale would therefore dominate the world of small enterprises. The others might survive as they are found to survive in history but they are destined to remain dominated by the world ruled by the big businesses.

One will feel rewarded if this study is received among the concerned scholars, as one, that attempts to explore reality of the small industries in a modest way.

Logistic regression

Table 1 : Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	173	96.6
	Missing Cases	6	3.4
	Total	179	100.0
Unselected Cases		0	.0
Total		179	100

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
1	0
2	1

Categorical Variables Codings

			Parameter coding				
		Frequency	(1)	(2)	(3)	(4)	(5)
S14	1	130	1.000	.000	.000	.000	.000
	2	9	.000	1.000	.000	.000	.000
	3	21	.000	.000	1.000	.000	.000
	4	6	.000	.000	.000	1.000	.000
	5	6	.000	.000	.000	.000	1.000
	6	1	.000	.000	.000	.000	.000
S211	1	120	1.000	.000	.000		
	2	15	.000	1.000	.000		
	3	36	.000	.000	1.000		
	4	2	.000	.000	.000		
S21VII#1	1	133	1.000	.000	.000		
	2	9	.000	1.000	.000		
	3	28	.000	.000	1.000		
	4	3	.000	.000	.000		
S12#1	1	47	1.000	1.000	.000		
	2	48	.000	.000	1.000		
	3	61	.000	.000	.000		
	4	17	.000	.000			

		Frequency	Parameter coding (1)	(2)	(3)	(4)	(5)
S11#1	1	125	1.000	.000			
	2	30	.000	1.000			
	3	18	.000	.000			
S5#1	1	149	1.000	.000			
	2	18	.000	1.000			
	3	6	.000	.000			
S24#1	1	62	1.000				
	2	34	.000				
	3	77	.000				
S21VIA	1	54	1.000				
	2	19	.000				
S18#2	1	113	1.000				
	2	60	.000				

Block 0 : Beginning Block

Classification Table[a,b]

			Predicted		
			S271A#3		Percentage
	Observed		1	2	Correct
Step 0	S271A#3	1	0	40	.0
		2	0	133	100.0
	Overall Percentage				76.9

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.201	.180	44.390	1	.000	3.325

Variables not in the Equation

			Score	df	Sig.
Step	Variables	S5#1	1.903	2	.386
0		S5#1(1)	.653	1	.419
		S5#1(2)	1.630	1	.202
		S10	1.749	1	.186
		S11#1	.227	2	.893
		S11#1(1)	.196	1	.658

	Score	df	Sig.
S11#1(2)	.199	1	.656
S12#1	4.307	3	.230
S12#1(1)	2.458	1	.117
S12#1(2)	1.366	1	.243
S12#1(3)	.174	1	.677
S14	10.786	5	.056
S14(1)	.737	1	.391
S14(2)	5.619	1	.018
S14(3)	.006	1	.936
S14(4)	1.869	1	.172
S14(5)	.146	1	.703
S21I	4.805	3	.187
S21I(1)	.241	1	.624
S21I(2)	2.632	1	.105
S21I(3)	2.180	1	.140
S21VIA(1)	8.552	1	.003
S21VID	.272	1	.602
S21VII#1	2.939	3	.401
S21VII#1(1)	.103	1	.748
S21VII#1(2)	2.428	1	.119
S21VII#1(3)	.521	1	.470
S24I#1	.966	2	.617
S24I#1(1)	.252	1	.616
S24I#1(2)	.942	1	.332
S27II	.081	1	.776
S18#2(1)	3.774	1	0.52
Overall Statistics	33.972	25	.109

Block 1 : Method = Enter

Table 2 : Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	41.420	25	.021
	Block	41.420	25	.021
	Model	41.420	25	.021

Table 3 : Model Summary

Step	-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1	145.676	.213	.322

Table 4 : Classification Table[a]

Observed			Predicted		
			S27IA#3		Percentage
			1	2	Correct
Step 1	S27IA#3	1	12	28	30.0
		2	10	123	92.5
	Overall Percentage				78.0

a. The cut value is .500

Table 5 : Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step	S5#1			3.392	2	.183	
1[a]	S5#1(1)	1.073	1.141	.884	1	.347	2.924
	S5#1(2)	2.358	1.376	2.937	1	.087	10.570
	S10	.038	.028	1.801	1	.180	1.039
	S11#1			.239	2	.887	
	S11#1(1)	-.557	1.151	.234	1	.628	.573
	S11#1(2)	-.587	1.292	.206	1	.650	.556
	S12#1			3.258	3	.354	
	S12#1(1)	1.395	.823	2.874	1	.090	4.035
	S12#1(2)	.583	.779	.560	1	.454	1.792
	S12#1(3)	.901	.791	1.298	1	.255	2.461
	S14			1.215	5	.943	
	S14(1)	21.902	100.213	.048	1	.827	3.25E+09
	S14(2)	21.353	100.216	.045	1	.831	1.88E+09
	S14(3)	22.282	100.223	.049	1	.824	4.75E+09
	S14(4)	30.766	106.759	.083	1	.773	2.30E+13
	S14(5)	22.547	100.213	.051	1	.822	6.20E+09
	S21I			1.956	3	.582	
	S21I(1)	-.695	32.469	.000	1	.983	.499
	S21I(2)	-1.383	32.460	.002	1	.966	.251
	S21I(3)	-.099	32.463	.000	1	.998	.905
	S21VIA(1)	-1.206	.485	6.173	1	.013	.299
	S21VID	.413	3.455	.014	1	.905	1.511

	B	S.E.	Wald	df	Sig.	Exp(B)
S21VII#1			1.024	3	.795	
S21VII#1(1)	3.718	5.955	.390	1	.532	41.162
S21VII#1(2)	3.028	6.024	.253	1	.615	20.652
S21VII#1(3)	3.811	5.953	.410	1	.522	45.185
S24I#1			1.204	2	.548	
S24I#1(1)	.184	.563	.107	1	.743	1.202
S24I#1(2)	-.492	.611	.649	1	.420	.611
S27II	-.005	.028	.033	1	.855	.995
S18#2(1)	.519	.488	1.131	1	.288	1.681
Constant	-25.327	105.780	.057	1	.811	.000

a. Variable(s) entered on step 1 : S5#1, S10, S11#1, S12#1, S14, S21I, S21VIA, S21VID, S21VII#1, S24I#1, S27II, S18#2.

ANNEXURE

LIST OF VARIABLES

Sl. No.	Code No.	Name of Variable	Type
1.	S 5 # 1	Location of the Unit	Qualitative
2.	S 5 # 1 (1)	Urban	Categorical
3.	S 5 # 1 (2)	Rural	Categorical
4.	S 5 # 1 (3)	Semi-urban and others	Reference
5.	S 10	Turnover (in Rs.Lakhs)	Quantiative
6.	S 11#1	Legal Status of the unit	Qualitative
7.	S 11#1 (1)	Proprietorship	Categorical
8.	S 11#1 (2)	Partnership	Categorical
9.	S 11#1 (3)	Private Limited Company, others clubbed together	Reference
10.	S 12 # 1	Family Background of the Entrepreneur	Qualitative
11.	S 12 # 1 (1)	Manufacturing	Categorical
12.	S 12 # 1 (2)	Trade	Categorical
13.	S 12 # 1 (3)	Service	Categorical
14.	S 12 # 1 (4)	Agriculture and others	Reference
15.	S 14	Nature of Activity	Qualitative
16.	S 14 (1)	Manufacturing	Categorical
17.	S 14 (2)	Processing	Categorical
18.	S 14 (3)	Job Work	Categorical

19.	S 14 (4)	Servicing	Categorical
20.	S 14 (5)	Repairing	Categorical
21.	S 14 (6)	Subcontracting	Reference
22.	S21 I	Market Characteristics	Qualitative
23.	S21 I (1)	Local Market	Categorical
24.	S21 I (2)	State Market	Categorical
25.	S21 I (3)	National Market	Categorical
26.	S21 I (4)	International Market	Reference
27.	S21 V I A (1)	Yes, Advertised	Categorical
28.	S21 VI A (2)	No, Did not Advertise	Reference
29.	S21 VI D	Advertisement Budget (in Rs.)	Quantiative
30.	S21 VII # 1	Sources of Competition	Qualitative
31.	S21 VII # 1(1)	Competition from Small Firms	Categorical
32.	S21 VII # 1(2)	Competition from Large Indian Firms	Categorical
33.	S21 VII # 1(3)	Competition from both Small and Large Firms	Categorical
34.	S21 VII # 1(4)	Competition from Multinationals and Smuggled Goods	Reference
35.	S24 I # 1	Growth since 1991-92	Qualitative
36.	S24 I # 1 (1)	Decline in growth since 1991-92	Categorical
37.	S24 I # 1 (2)	Stagnation in growth since 1991-92	Categorical
38.	S24 I # 1 (3)	Slow or Rapid growth since 1991-92	Reference
39.	S27 II	Margin on Sales (in percent)	Quantiative
40.	S18 # 2 (1)	Positive difference between present turnover and turnover before1991-92	Categorical
41.	S18 # 2 (2)	Negative difference between present turnover and turnover before 1991-92	Reference

NOTES

[i]It sometimes happens that data for a theoretically relevant variable are not available. Proxy variables substitute for theoretically desired variables when data on the desired variables are incomplete or missing altogether.

[ii]The measure of odds is given as : Odds = Prob (event) / 1-Prob(event)

Log odd is logarithmic value of this expression.

[iii]In Logistic regression, one directly estimates the probability of an event occurring. For the case of a single independent variable, the logistic regression model can be written as,

Prob (event) $= \frac{e^{\beta_0+\beta_1 X}}{1+e^{\beta_0+\beta_1 X}}$ Or equivalently, $Prob(event) = \frac{1}{1+e^{-\left(\beta_0+\beta_1 X\right)}}$

[iv]According to the SIDO data the average rate of utilisation of their installed capacity in Indian small firms is 53 per cent.

[v]In SPSS 10.0, model Chi-square is the "Chi-Square" value printed in the "Omnibus Tests" table, reflecting the difference between the initial -2 Log likelihood (- 2LL) shown in the "Iteration history" table and the deviance chi-square shown as -2LL in the "Model Summary" table.

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